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Table of Contents

CREATIVITY RESEARCH: SHOULD WE DO SOMETHING DIFFERENT?

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ABSTRACT

The need for members of business organizations, or many other organizations for that matter, to think originally and creatively is axiomatic. While necessity may be the mother of invention, it does not necessarily mean that because an organization needs people to think creatively it is going to happen. In fact, it often does not happen, much to the detriment of the organization. Although there has been a great deal of research on creativity, little is known about creativity itself.

One reason for this is that creativity research has ignored input from disciplines such as art where creativity is an important component. The reason for ignoring these disciplines is because they reject the notion that creativity can be investigated empirically. Instead, researchers have assumed that creativity can be investigated using scientific methods. Using this assumption, creativity research initially focused on such areas as investigating whether creative people shared common traits. More recently creative processes and external factors that may play a causal role in creativity have been pursued.

Many creative people, not only artists but business people such as Amar Bose agree, however, that creativity does not occur as a result of rational thought but rather an intuitive leap of the mind. The intuitive nature of creativity places it outside of empirical investigation. Does this mean that creativity cannot be studied? No, it does not, but it does mean that the direction, nature, and assumptions of creativity research need to change.

Rather than try to identify determinants of creativity, researchers would be better off looking at two other areas. One area concerns the variables that might encourage, facilitate or aid creative activity in humans. In other words, things can be done to foster creativity not create it. The other area concerns how organizations can understand and recognize creativity outputs. Since creativity is unique, organizations often do not recognize creative output and hence discard it because its uniqueness appears threatening or bizarre. It may be that there is much more creative activity in organizations than is realized or utilized.

INTRODUCTION

There is agreement by practitioner and academic (Ford, 1996; Oldham and Cummings, 1996; Gilson and Shalley, 2004)) alike that creativity is important to organizations. Since life is not static, businesses are required to constantly adapt to changes in their environment. Whether it is new products or services, procedures, methods of operation or a myriad of other things that bear on a firm's success or failure, the key to success is creating original (creative) thought that generates the necessary changes.

Maybe due to this importance or just the fascination people seem to have for creativity, there has been a considerable amount of research done in this area. Research has focused on creativity so that its determinants can be understood. The scope of the research is broad. Early on, research focused on individual traits or clusters of traits that creative people share. Later, research began to look at the creative process and most recently cultural and environmental factors that may influence creativity (Amabile, 1996). While Amabile (1996) is encouraged by the progress made in creativity research, she concedes that little progress has been made in understanding creativity. That is, we

are still not sure what creativity is, who is creative, why people are creative, nor what role external factors or processes play in creativity.

PROBLEMS WITH CURRENT RESEARCH

This lack of understanding creates a conundrum for researchers. Understanding creativity is important for organizations but there is little agreement as to what creativity is, let alone how it can be encouraged. There are at least two related reasons for this conundrum. One reason is that there is no accepted definition of creativity. Kosslyn (Amabile 1996 p. 19) writes that "it is not necessary to begin with a crisp definition of an entity in order to study it…It is hard to define something one knows little about".

This paper takes exception with this argument. It would seem that at least a specific (if not "crisp") notion of creativity must be had before one can study it. Without a clear specific notion of creativity, theoretical underpinnings cannot be built and this can lead to many different constructs being termed creativity. For example, one may question whether creativity can be both a set of traits and a process at the same time or if it is the process itself or the outcomes of the process that are important? Without knowing the answers to these questions, it is improbable that researchers are actually studying the same construct. Thus creativity has become a broad term for many different variables that may or may not address creativity or some aspect of it. When the study is defined as being about creativity, however, there is a certain legitimizing of its validity as to subject matter whether this is true or not.

The second and perhaps more serious issue is that research into creativity leads to the explicit assumption that it can be studied empirically. No less a creative mind than Amar Bose (Clynes, 2004) has said that creativity is not the result of logical rational thought but arises intuitively within the human mind. Even if we could understand the workings of the mind at its most fundamental level, it would probably not be possible to understand creativity since there is something about a person and his or her creativity that is unique to that individual alone.

Intuitive insight can be referred to as an "Aha" moment or the point at which "creativity" happens. Given this argument, creativity itself cannot be understood or studied empirically because we do not have the capability to study what went on in the mind prior to the Aha moment. Because of this, creativity cannot be called forth on demand using a set of rules or procedures to create it. This argument stands in contrast to the current direction of creativity research and suggests that it should move in new directions.

A NEW DIRECTION

Drazin, Glynn, and Kazanjian (1999) write that while assumptions may be necessary for research to proceed, they also believe that, at least occasionally, assumptions need to be examined because the assumptions set the direction for research. This is true of creative research as well, but there has been little evaluation of the assumptions accepted in creativity research. One such assumption is that research can discover the determinants of creativity and using them, form a theory to call into being creativity on demand.

Because researchers have accepted the assumption that creativity can be studied empirically, it has dictated the direction of that research and the nature of theory building. For example, Amabile (1996), one of the foremost creativity researchers, has developed a theoretical framework of creativity based on the assumption that creativity has determinants that can be known and controlled. She writes that " the componential conceptualization is best considered a working model for a theory of creativity, a proposal of what a formal theory of creative performance might include. Grounded in the diverse data on creativity that have accumulated over the last 30 years, it includes dispositional, cognitive, and social factors that appear to determine creativity (page 82).

The negative impact of the assumption that creativity can be understood and presumably called forth at will cannot be stressed enough. It emboldens researchers to apply empirical methods in trying to discover how to create and understand creativity. While the determinants of creativity will probably never be known, can never be known, and in fact, would diminish humanity if they are known, this belief that we can finally know how to call forth creativity also leads away from legitimate empirical pursuits by producing erroneous assumptions and theories.

Rather than accepting the assumption that creativity can be understood empirically, researchers would be better off making two different assumptions about creativity. One of the assumptions is that creativity can be encouraged or facilitated. In other words, things can be done to foster creativity not create it. This is the assumption made in, for example, art schools. The purpose of art schools is not to teach creativity. In fact, in several discussions with art faculty, the point was firmly made that this is not possible. Instead, they feel that their role is to help students discover their own creativity by providing the appropriate stimulus and environment for students to be creative. This approach can transfer easily to the business arena where organizations are looking for ways to increase creativity from within.

The other area concerns how organizations understand and recognize creativity outputs. Since creativity is unique, organizations often do not recognize creative output, and hence discard it because its uniqueness appears threatening or bizarre. It may be that there is much more creative activity in organizations than is realized or utilized. Research is showing that most humans have creative potential, and organizations could benefit from it. Assuming that this potential exists, then human nature suggests that it will seek an outlet. Suggestion boxes attest to this. There have been many creative ideas resulting for employee suggestions but suggestion boxes are not known for their reliable and continual generation of creative ideas. Organizations need to know how to foster creativity, be tolerant of it, and recognize it when it occurs. With the proper assumptions, the direction of creative research could help uncover organizational factors that encourage it to flourish, and those that might deter creativity or mask it from being recognized when present.

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CONSTRUCTIVISM AND THE ANCIENT ART OF ORIGAMI

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ABSTRACT

This paper provides a framework for thinking about origami construction and constructivism. In an attempt to understand the conceptual and theoretical framework supporting the field of inclusive teaching strategies in relationship to origami, I have prepared a model for origami which represents six types of constructive learning: (1) Hands-on learning, (2) explicit instruction, (3) higher order thinking, (4) multimodal instruction, (5) social learning, and (6) self-management strategies.

INTRODUCTION

By folding and unfolding a piece of paper, students are involved in constructing and deconstructing concepts which eventually leads to a three dimensional product. A teacher must allow students to experience learning in a constructivist method. Origami, an ancient art which compasses hands-on learning, step-by-step instructions, schema building, prior knowledge activating, and spatial reasoning, logical concepts mapping (Ellis, 1938; Marton, Hounsell, & Entwistle, 1984; & Gay, 2000). Through origami construction, students have the opportunity to discover both individual difference and universal commonalities between the western and eastern cultures (Leo, 2001; Harriot & Martin, 2004). They are able to explore the differing perspectives, examine stereotypes, develop global awareness and hopefully, celebrate the diversity in their own classrooms. Origami combines different intelligences. Origami stimulates more parts of the brain than just the antiquated teacher-lecture format. It is an educational approach involving joint intellectual effort by students, or students and teachers together. As students practice origami, they begin to understand and experience some of the complexities and interconnections of life laws and perseverance. Hands-on learning such as origami proves to be effective among the different learning styles and students from diverse population (Bucher, 1999). Teachers can apply the knowledge to involve a student in a total learning experience which enhances the student's ability to think critically, to create a class dialogue, and to pose questions to encourage higher level of thinking.

A MODEL FOR ORIGAMI AND CONSTRUCTIVISM

A study conducted by Sze (2004) found that origami construction can be aligned with varies learning theorists and conceptual frameworks. The model discusses how these learning theorists are applicable to origami construction. Learners make sense of their experiences by constructing their own understanding through their own "mental models". Origami construction is a process of adjusting mental and physical models to accommodate new experience by providing a least restrictive environment, purposeful learning, explicit instruction, multiple intelligences, outcome based performance, student centered learning, scaffolding, schema learning, concept mapping, multimode instruction, self- management, reflective learning, positive reinforcement, problem solving, and cognitive appropriate level instruction. I have prepared a model for origami which represents six types of constructive learning: (1) Hands-on learning, (2) explicit instruction, (3)

higher order thinking, (4) multimodal instruction, (5) social learning, and (6) self-management strategies.

1. HANDS-ON LEARNING

Origami exercises enable the student to visualize the creative process in terms of outcome and process in a short time frame, with a tactile demonstration that is easily accomplished. Origami exercises utilize the five senses, incorporate the multiple intelligences areas, institute cooperative learning, and enrich all disciplinary area of learning including social studies, language arts, mathematics, and science. As students use their fine motor skills to fold and crease paper into fun shapes and structures, they build skills involving spatial reasoning, following precise directions in sequence, fractions, geometry, and more. Completed activity provides a model for students. The educational theorist John Dewey (1902) believed that "learning is active". He felt that students learn best through hands-on activities. Dewey supported the idea that all students have the capability to learn if provided the proper means such as hands-on activities and cooperative learning. Origami is an example of a hands-on activity. The physical classroom, based on Vygotsky's theory, would provide clustered desks or tables and work space for peer instruction and collaboration. Thus the classroom becomes a community of learning.

2. EXPLICIT INSTRUCTION

According to Tolman (1932), learning is always purposive and goal-oriented. Origami learning is an active, constructive process. Students must work actively and purposely to learn new ideas, skills, or information. They are not simply taking in new ideas. They are creating something new with the information and ideas. The class dialogue direct toward issues of the curriculum not addressed in expository text. Teacher poses questions to encourage higher level think and how these ideas are often intertwined with emotions. Through purposeful learning, students are able to apply, compare, and adapt what they have learned and experienced to new situations. Swanson (1999) asserts that direct instruction produces very positive outcomes for students with disabilities. Origami is presented with direct instruction. When the students study paper folding in order to create an object out of paper, they are asked by the teacher to follow a specific set of instructions. The steps will be verbally expressed by the teacher in a very specific sequence. The teacher will ensure that all students have completed one step before they proceed to the next. It is extremely important that the teaching is also demonstrating each step of the procedure in front of the class and each student is independently creating their own item from a piece of paper. Directed instruction allows the teacher to plan instruction to crate a learning environment and modify instruction to accommodate learning styles (Gagne, 1987).

3. HIGHER ORDER THINKING

Origami instruction engages teachers to participate in reflecting on mathematics concepts and skills involved in the creation, pedagogy modeled, equity diversity, and history-cultural consideration. Teachers will become acquainted with the pedagogy and geometry concepts involved for using this media in the classroom. Through paper folding, students learn to examine, transform, apply, represent, prove and communicate while helping develop a sense of spatial relationships (Phibb, 1991). Students require abilities to be used in describing, comparing, representing, and relating objects in the environment. Origami provides a highly engaging and motivating environment within which children extend their geometric experiences and powers of spatial visualization. It gives a venue for their creative nature and invites play, problem solving, and problem posing.

4. MULTIMODAL INSTRUCTION

The theory of multiple intelligences (Gardner, 1993) proposes a major transformation in the way our schools are run. It suggests that teachers be trained to present their lessons in a wide variety of ways using music, cooperative learning, art activities, role play, multimedia, field trips, inner reflection, and much more. Origami combines different intelligences. It is a verbal activity (listening and reading directions), visual activity (model), as well as kinesthetic activity (hands-on). According to the dual coding theory (Paivio,1971), recall and recognition is enhanced by presenting information both visual and verbal form. These types of activities stimulate more parts of the brain than just the teacher-lecture format. The exercise also requires hand-to-eye coordination. For difficult fold, a teacher may have to prepare several precise explanations. The steps provoke the students to think about the next step, being intuitive, trying to picture the final results. The students are usually working in groups of two or more, searching together for understanding, solutions, meanings, or creating a product.

5. SOCIAL LEARNING

A good teacher creates a pleasant atmosphere by sharing jokes or stories while waiting for the students to finish a move. Doing so, a teacher enables a least restrictive environment for children with or without disabilities. Children with disabilities often lack the necessary social, behavioral, study, self-management, academic, and life skills. The importance of inclusive education in regards to students with special needs has been strongly emphasized through Public Law 94-142. Origami allows students to be creative and build their confidence as they share their successes with others. By folding and unfolding a piece of paper, learners are involved in constructing and deconstructing concepts which eventually leads to a three dimensional product. There is a sense of accomplishment which is authentic when students "build" something their own hands.

Behavior that is positively reinforced will reoccur (Skinner, 1954). The theory of Skinner is based upon the idea that learning is a function of change in overt behavior and requires immediate feedback. As the teacher walks around the classroom, demonstrating the folding steps and checking that the students are completing the task, the teacher is administering feedback repeatedly. Immediate feedback which contains accurate information is essential because delaying feedback for "intellectually challenged students results in more errors and a greater number of trials needed to reach solutions (Epstein, Brosvic, Costner, Dihoff, & Lazarus, 2003).

6. SELF-MANAGEMENT STRATEGIES

The teacher encourages the students to observe his or her demonstration of a move before they attempt it. Sometimes it may be helpful to teach each move twice. The social learning theory of Bandura (1977) emphasized the importance of observing and modeling the behaviors, attitudes and emotional reactions of others. The highest level of observational learning is achieved by first organizing and rehearing the modeled behavior symbolically (folding) and then enacting it overtly. Coding modeled behavior into words, labels or images results in better retention than simply observing. Origami is a fun activity with a clear reward at completion. By breaking down the participatory exercise into bite-sized chunks, origami enables each student to gain a feeling of accomplishment. The students are motivated by creating an end product, so they are more likely to turn to other students for assistance. Students learn not to afraid to ask for help from their peers or the teacher. It is only natural that the student's enthusiasm spills over to those around them. It becomes a natural instinct to want help a neighbor who may be struggling with something the "skilled" student already mastered.

SUMMARY

The relationship between origami and constructivism has a direct impact on diversity and special education. Origami represents Japanese ancient art which promotes culturally awareness and sparks intellectual, cultural and social exchange. Like multiple intelligences, constructivism focuses on learner's different gifts and learning skills. Origami construction is a process of adjusting mental and physical models to accommodate new experience. It levels the playing field for at-risk students, students with disabilities and students from a culturally and linguistically diverse background especially in rural schools where resources and exposures are limited.

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GENIUSOLOGY: SCIENTIFIC CLASSIFICATION OF GENIUS

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In memory of Elena, my beloved wife

ABSTRACT

Geniusology (Aleinikov, 2004) as a general science of genius offers theoretical foundations for the study of genius. These theoretical foundations include (but are not limited to) the scientific definition of genius, classification of the field of genius study, methodology of studying the phenomenon of genius, etc. This particular article, as it was promised in our first article (Aleinikov, 2004), deals only with the classification of genius. Classifications of genius may be empirical or theoretical. Empirical classifications start from the lists of known (or subjectively pre-selected) geniuses with the purpose of finding factors or categories from the available entities. A theoretical classification, on the other hand, would rather build a hierarchy of possibilities (a matrix of possible cells) and only then apply it to a list of top achievers. If some of the classification cells remain unfilled or empty first, these cells become the heuristic spots - places for possible search and very probable findings. As an example of such a classification, we can use the Mendeleyev's Periodic Table of Elements, which became a solid scientific foundation for numerous discoveries predicted by the Table. As a result of our scientific classification derived from the universal model of sign, language, and heuristic act (Aleinikov, 1978-1994), the first discoveries in the classification of genius turned out to be geniuses never understood as geniuses, or not seen by the empirical classifications. Among those are: existential genius, communicational genius, instrumental genius, orientational genius, and innovational genius (Aleinikov, 2002).

GENIUS LEARNING: APPLICATION OF GENIUSOLOGY TO THE COURSE "PSYCHOLOGY OF CREATIVITY" (PSY 3390) AT TROY UNIVERSITY MONTGOMERY (CASE STUDY)

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ABSTRACT

This is the first article on the practical application of Geniusology (the science of Genius) to the higher education level. It analyses the steps of becoming a genius learner (or "ideal learner," Aleinikov, 1995) on the material of the course Psychology of Creativity (PSY3390) that took place during the Spring Semester, Term A, at Troy University - Montgomery, Alabama, where one of the authors acted as an instructor, while the other was enrolled as a student.

Psychology of Creativity is a specific course developed as an elective and taught since 2000 to students majoring in Psychology. Name and time wise, it is the third program in the United States (two in California) and the first program in the Southeast. However, it does not copy the Californian programs - it has its own theoretical foundations, theoretical concepts, methodology, literature, and certainly its specific educational results. This is actually the world's first course of Psychology of Creativity that employs Genius Educational Methodology (GEM - Aleinikov, 2002) as its methodological foundation. In short it means that creativity is understood not only as a subject of studying but also as the way of learning. Learning creatively and teaching creatively are as important as the subject of creativity itself - these are the three most important pillars on which the course stands.

This particular article deals only with one of them - learning creatively. Authors of this article also consider that the top level of creativity is represented by the concept of genius and, therefore, the top creativity in learning can be represented by the concept of Genius Learning.

ORGANIZOLOGY: THE MAIN UNIT OF MEASUREMENT FOR THE NEW SCIENCE

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ABSTRACT

Introduction of Organizology, a new science of organization (Aleinikov, 2004), was backed by the fact that none of the previous studies of organization as a natural phenomenon (not just human organization) have ever attempted to create a science. Moreover, all previous attempts to create at least a theory (not a science) have never been able to create a unit of measurement for measuring the organization. This alone could be the reason of not being able to create a science because measuring and measurements do form the logical foundations of any science. Present article is a continuation of the introduction of Organizology. It describes the difficulties of creating a new unit of measurement in the field of organization, offers the new unit of organization (generically expressed by the formula T/L, time divided by space), and explains its essence on several examples from various fields of natural and human organization. Finally, it offers a generic name "aleandr" for the unit of organization.

Authors' Index