

The Three Factors of Creativity Management: Visual, Number, and Word Creativity

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The study focuses on the three factors of Creativity Management namely visual, number, and word. The research examines the concept of creativity from a historical, psychological, and development stage until it is differentiated from innovation. The article corresponds to the evolution of creativity in conjunction with management. Moreover, the study discloses on the need of students in terms of creativity and management by identifying the related factors in conjunction with business application. Results of this study reveal that students are inclined towards visual creativity with a 69% frequency as well as the highest Coefficient of Determination at 0.6611. Bivariate correlations showed that Creativity Management Index was significantly associated with Visual creativity (positive) and Number creativity (negative). Thus, a theoretical framework was advanced and geared towards helping students to spark their creativity, nurture that idea, and harness it to fruition.

JEL Classifications: M1, M12, M19

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INTRODUCTION

Every day, every hour, every minute, and up to every second the world we live in is rapidly changing. The advancement of globalization in conjunction with prevailing technology had made the business world a competitive environment. Every sector is looking for sustainability in various facets from social, economic, and most importantly environmental. Resources are

dwindling due to the continuous consumption of consumers every nanosecond.

Imagine someday you wake up and find out that the world has run out of gas or oil or other fossil fuel types. Think then that one day wherein the world no longer has trees or natural habitats for wildlife but a barren world of endless sand dunes in a desert terrain. Imagine another scenario wherein you find the polar caps melted and flooded the world into a giant aquarium.

What if someday someone out there would think of a novel idea that could help solve the problems we encounter. At the end of it all, it starts from an idea. A simple idea that could grow into multitudes of ideas until one day it would turn into a great innovation.

However, reality strikes at the moment without hesitation in testing humanity's upheaval to survive from a world of crisis. Technology has enabled civilization to prosper and to improve society's understanding of economic and social influences. Yet these drastic changes brought countless problems to all mankind. What does the world need to do in order to stymie such predicament? Innovation has been the fulcrum in solving the world's quandary, but before innovation can occur perhaps creativity must first take into account.

It is a fact that not everyone can be an innovator. Most innovators are found to be outliers of our society and probably in every million, one may exist that could really change the world. Paradigm shift occurs when the world lifts that barrier of thinking. Any individual can open his or her mind that anything is possible to a certain degree of innovation. Where does it all begin? The best place for innovation to launch is during the incubation stage.

Both innovation and creativity are defined as something new. However, the best way to differentiate them is to simply think innovation as the fruit of a tree, while creativity as the seed of the tree. The primordial concern therefore is to develop that seed especially in the incubation stage with a primary focus to the next generation of creative thinkers. This can be realized with an intact group of business students who could be the agents of change in the new world and transcend in their development for generating new ideas.

Idea generation is no longer sequestered on one particular segment but a vector in all directions. Despite technological advances, most businesses find the merging of creativity and

management as unquantifiable task. The dilemma arises from unmanageable creativity with no real definition and guidelines.

Enter Creativity Management, a fusion of both creativity and management into one particular subject. It is the blending of two totally different flavors into a single element that would combine the best of both worlds into a diverse way of ideology and thought process. The best way is to formulate Creativity Management as part of a curriculum study for any business program especially in entrepreneurship and management.

Management follows a rigid set of rules and structures, while creativity is a free flow of cognitive thought. In short, management is ordered while creativity is free-flowing. They are the yin and yang of the business pedagogical practices.

In preparing students for the business world, do we teach them to be creative or simply follow what is on hand with a step-by-step approach on any endeavor? How do you really know what kind of creativity do people exemplify from visual, number, or word creativity?

SIGNIFICANCE OF THE STUDY

The results of the study will be relevant to business academia in creating a new curriculum for creativity management. It will help improve the understanding of various creativity measurements from visual, word, to number creativity in conjunction with application to management courses.

The study would also illuminate a heuristic approach to creativity with respect to business proponents by providing a meta-learning from other fields in psychology that has a relationship with management that would provide relevance in the business industry.

The study would help future researchers in ascertaining the need for new frameworks relevant to different fields of business from

marketing, entrepreneurship, management, and more that has a strong link for potential improvement of business education.

RESEARCH OBJECTIVE

The primary objective of this study is to identify the creative strengths and weaknesses of business students in light of determining the three factors of creativity, namely, visual, number, and word creativity.

The secondary objective is to understand the proponents in helping substantiate how the curriculum of Creativity Management would focus on whether it is on visual, number, or word creativity. The study would identify the creative factors that the respondent focuses on.

SCOPE AND LIMITATION

The gathering of initial research respondents required the use of convenience sampling. Further re-testing can be used to verify empirical evidence and to ascertain assumptions on the next level of statistics like discriminant analysis or multivariate analysis as well as a Cronbach Alpha in testing the internal validity of other psychometric testing related to this field.

REVIEW OF RELATED LITERATURE

Creative Roots

There are many empirical studies on creativity. It has evolved throughout the years from one generation to another. Graham Wallas (1926) conveyed in his book, *The Art of Thought*, depictions of a creative process, namely: preparation, incubation, intimation, illumination, and verification. In 1927, Alfred North Whitehead (1978) presented the term “creativity” at the

University of Edinburgh by describing a world in a dynamic process of creation and annihilation of primordial atoms called entities.

The harbinger of creativity study was made in the fields of psychology. This was instigated by J. P. Guilford (1950) during a speaking engagement for the American Psychological Association (APA) with a formal psychometric measurement in the fields of creativity. He later proposed the dichotomy of thinking with convergent and divergent production. Convergent thinking entails one to have a solitary solution to any quandary, whilst divergent thinking encompasses a multitude of solutions for a single problem (Guilford, 1967).

The paradoxes in creativity measurements usually have baffled psychologist. The question arises on how do we really measure creativity in its context? This was done successfully by Ellis Paul Torrance by introducing the Torrance Test of Creative Thinking based on the research initiated by Guilford. In this test, Torrance (1966) used four scales of measurements, namely, fluency, flexibility, originality, and elaboration.

Even though creativity quotient has not yet been well developed unlike intelligence quotient (IQ), Robert Sternberg (1985) provided his “Triarchic theory of intelligence” that categorizes intelligence, namely, [1] Analytical (similar to Convergent Thinking), [2] Creative Intelligence or Synthetic (knowledge and skills based thinking), and [3] Practical (street smarts).

Creativity vs. Innovation

There is a huge confusion when defining creativity and innovation. It is imperative to understand the difference between creativity and innovation. Many researchers and business organizations often inter-exchange the meaning of the two. Previously, I pointed to creativity as the seed while innovation as the fruit. Amabile (1983) pointed out that creativity is in fact a skill set that is integral in the process of innovation.

Hence, innovation is the result from the creative beginnings of a thought.

On the other hand, when you try to conceive new ideas, you are simply trying to tap the inner thoughts of an individual in providing a new wave of ideas that serve as a catalyst in a relatively different context not thought before. Eventually that would lead to innovation that breaks through the norms of previous industry standards.

Improvement is the key to many companies' success and be attributed to the continuous search for ways in trying to improve a product or service in gaining competitive advantage from your competitors and satisfy your consumer base (Heyne, Boettke, & Prychitko, 2010).

Cohen and Levinthal (1990) have emphasized absorptive capacity as a way for business organizations to put a value for new information by recognizing, assimilating, and applying for commercial means. In this way, the business organization becomes sensitive to the learning environment in which they operate especially in the decision-making process in allocating resources for any innovative process.

This was termed by Eric von Hippel (1986) as "User Innovation." It is here where end users or consumers put a different spin to an existing product or service. It is where their own creativity forms a part to the development or improvement. Hence, creativity is something you think, while innovation as something you implement and involves application.

Evolution of Creativity Management

Peter Drucker, a management guru, introduced the concept of "Knowledge Worker" in his 1959 book titled *The Landmarks of Tomorrow*. He defined that having workers based on specific expertise whether as engineers, scientists, lawyers, accountants, and other related professional expertise provide a capital based on their knowledge (Drucker, 1959).

Teresa Amabile (1998) postulated on her research, "How to Kill Creativity," three components of creativity: (1) expertise, (2) motivation, and (3) creative-thinking skills. She pioneered Creativity Management as an integral part of business in order to spark innovation through proper motivation whether it is extrinsic and intrinsic .

She also pointed out that intrinsic motivation is greater compared to extrinsic in motivating employees to be more creative (Amabile, 1983). Further study provided insights like paradoxes that may arise from creativity especially in the context of managerial and organizational challenges like cultural economy (DeFillippi, Grabher, & Jones, 2007).

When is the best time to invest in creativity? Do you wait when the fruit of labor has reached its pinnacle? Sternberg and Lubart (1992) recommended to buy low and to sell high with their notion of investment theory of creativity. Ideas at inception are the cheapest forms and they are undervalued. There are six resources for creativity namely, (1) Intelligence, (2) Knowledge, (3) Thinking Styles, (4) Personality, (5) Motivation, and (6) Environment (Sternberg & Lubart, 1993).

A model of collective creativity occurs from individual to a collective interaction. This exemplifies group dynamics as a key in shifting problem solving skills from a lone mind-set to a multitude of collective minds through four types of social interaction namely, (1) help seeking, (2) help giving, (3) reflective reframing, and (4) reinforcing (Hargadon & Bechky, 2006).

Pedagogical Approach to Creativity Management:

Teaching creativity is a challenge by itself, adding management to the mix then you have a total different predicament. The drive for a sustainable and replicable pedagogical framework for Creativity Management has been

at the forefront of both psychologist and business educators. Recent studies have connected creative capital and university pedagogy in enhancing a creativity centre approach to higher education (McWilliam & Dawson, 2008).

The prime dilemma for an educator is to know the limits of creativity in higher education. Craft (2003) emphasized social, environment, and ethical limits to creativity.

For an educator, measuring creativity needs to have rubrics that measure creativity more efficiently compared to a general education. English teachers assess creativity in the aspect of arts and literature, but can we really create rubrics that merge two different schools of thoughts in both creativity and management (Wilson, 2007).

It is imperative to develop rubrics in creativity and management that really provide evidence of growth with creativity and management as foci in problem solving activities. This should align in the students' way of thinking on problem solving techniques, imaginative research projects, performance events, and artistic representation (Young, 2009).

Creativity can be measured using the platform presented by Nilsson (2011) on the taxonomy of a creative design. Nilsson postulated that such foci enable the analysis of a work in the context of its antecedents using the following stages:

imitation, variation, combination, transformation, and original creation. In contrast, such taxonomy can be applied to the creativity in business namely, from product design, packaging, operational frameworks, and even for financial and accounting standard settings. Education of creativity can play a key role in determining novelty in the mindset of students.

THEORETICAL FRAMEWORK

Business managers ask how they would influence the three components of creativity. Teresa Amabile (1983) provided through her research study that workplace practices and conditions would help set the tone within every individual in enhancing their creative thinking skills through expertise and motivation.

Amabile (1983) also accentuated the need for safety net when creativity is in use. Students may provide a totally unique idea that may be scrutinized for not being the norms of culture or current niche. The dilemma of expertise would hinder any students since their technical knowledge is relatively few based on their experiences. It is here teachers with working experience, especially in the fields of creative industries, will play a vital role in providing

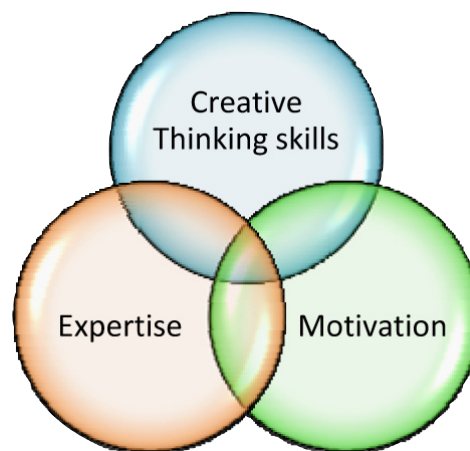


Figure 1.
Amabile's (1983) three factors of creativity.

students in-depth knowledge from technical, social, procedural, and other related expertise.

A student should be passionate enough to do a specific work to be rewarded on things they excel. It is not enough that a curriculum requirement is met, but it must satisfy the students' inner yearnings to achieve something that would liberate their creative spirit to good use. They are not merely motivated by grades but their desire to do it. Motivation should be intrinsic compared to extrinsic (Amabile, 1998).

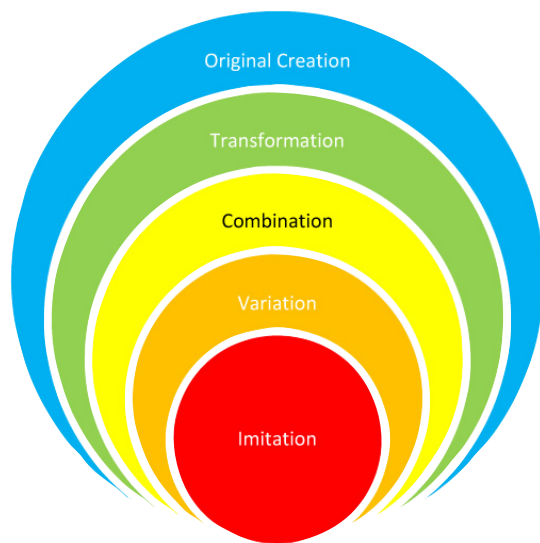


Figure 2.

Nilsson's (2011) taxonomy of creative design.

When students submit a creative work, the common valid question raised is how do you judge the value of such output?

Relatively, Nilsson's (2011) taxonomy of creative design could be integrated to better understand how to define such creativity. Especially in the context of business, such theoretical framework could help develop further understanding of creativity design.

Imitation is the simplest form of creativity. Most businesses would follow the standardized way of doing business whether from product development, marketing, and accounting

standards. Industry leaders usually lead and allow imitators to simply follow a winning formula. Since such practice entails less risk, companies tend to say they are innovators when simply they are imitators. Variation is the second level of the taxonomy that allows a slight modification on an existing product, service, or system. Business that improves a product or service enables good business and promotes healthy competition in sustaining customer needs.

Combination is the third level that could utilize the functionality of two or more existing ideas and integrating it into a better product. Mash-up allows a mix and match that could excel in both worlds of providing the next level of creativity. Transformation, on the other hand, allows a new set of creation from an existing idea that allows further exploration. Finally, when business no longer falls on the four levels, they have reached the original creation.

CONCEPTUAL FRAMEWORK

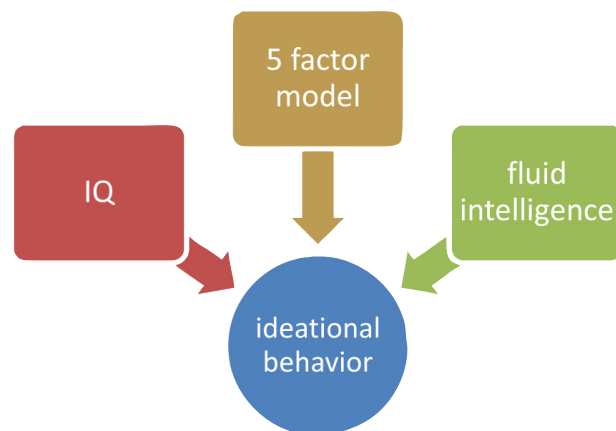


Figure 3.

Batey, Chamorro-Premuzic, and Furhnam's (2010) creativity scores predictor.

Batey et al. (2010) postulated on their study that exploring the extent of ideational behavior in testing the individual differences is a predictor for

creativity scores. Ideational behavior is defined as an indicator of creativity in generating new ideas or concepts from the nature of a plan abstract or concepts in the embodiment of individual notion. The first to assess self-reported creative ideation that clearly reflects an individual usage, appreciation, and skill set with ideas was from the Runco group who developed RIBS - Runco Ideational Behavior Scale (2001). Batey et al. (2010) used this test with an internal reliability of $\alpha = 0.88$ as a construct validity in relation to established measures of individual differences underlying Guilford's SOI comprehensive structure of intellect model.

Batey et al. (2010) established that individual differences in personality traits from Costa and McCrae's Five Factor Model of (1) neuroticism, (2) extraversion, (3) openness to experience, (4) agreeableness, and (5) conscientiousness, as provided by the NEO personality inventory, is a good indicator for business related psychometric testing of creativity scores. They exemplified that personality is a better predictor than intelligence with a 22% variance compared to 4% from cognitive ability.

OPERATIONAL FRAMEWORK

For the initial step in determining creativity measurements, I followed a simple creativity testing which is essentially engrained in verbal

and non-verbal factors. However, in order to ascertain business perspectives, it is best to characterize it into three-factor creativity of visual creativity, number creativity, and word creativity.

Visual creativity (x_1) is based on previous review of related literature starting from Amabile's components of creativity and Dake's definition which stipulates that creativity entails visual stimuli that arouse viewer abstract, allusive, and poetic perception (Dake, 1991). Relating it with business, professionals and students utilize visual creativity in many aspects from designs, theoretical framework, conceptual diagrams, blueprints, mind-map and more.

Number creativity (x_2) is based on several behavioral psychological theories linked to problem solving techniques. It is not, however, limited to mechanical, mathematical, or engineering related problems, but includes social aspects as well like music, pattern recognition, and so forth. Cognitive science provides various models in explaining number creativity from Sternberg Creative or Synthetic Intelligence to Guilford Divergent/Convergent thinking.

Word creativity (x_3) entails a linguistic approach to creativity. Initially, many would associate word creativity to simply the construction of words or the understanding of literature as an art. However, such preconceived notions of word creativity have evolved over the years.

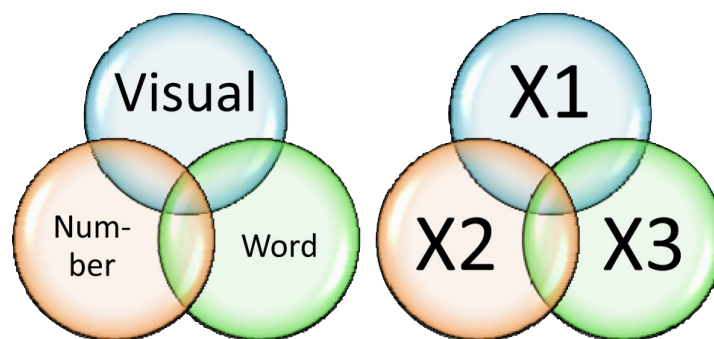


Figure 4.

Three-factor creativity/variables representation.

Word creativity has expanded into multiple disciplines including business. It could provide the ability to speak or write multiple languages that provide a competitive advantage in business. Word creativity is also skewed towards attention to details which is essential in legal environment.

Combinational or fusion creativity could also exist between one or two different factors. For instance, someone could blend well for both visual and word creativity. This could lead to better understanding like a writer or director who can see both the written text and command a visual representation of that text. Another segment could also occur for both visual and numerical creativity that could map out blue print with precise measurements for architects.

Relating to business is a key understanding of a normative view of Creativity Management which would cluster an individual or which part of creativity that could be harnessed and utilized on its fullest.

The basic premise in making it heuristic is to convert categorical data into numerical data that would enable measurements to determine which factors are significant. Let x_1 = visual creativity,

x_2 = number creativity, and x_3 = word creativity. This would also allow combinational or fusion creativity with formulas like $x_1 + x_2$, $x_3 + x_2$, and $x_3 + x_1$. The mathematical aspect of such formula would allow future statistical testing in determining and providing empirical evidence in sustaining the three factors for creativity management.

For future research, an expanded version of Nilsson's model could be extrapolated in having a multiple regression for the creative design. Let imitation = v_1 , variation = v_2 , combination = v_3 , transformation = v_4 , and original creation = v_5 . A mathematical formula can be ascertained to make any findings conclusive in the analysis of a creative design. Such undertaking could be done on the next phase of this study.

The primary proponents are students taking up business courses that may include management, entrepreneurship, integrated business studies, marketing, advertising, finance, legal, and more. The framework would allow the study of proponent's behavior and attitudes towards the creativity one person is inclined to do.

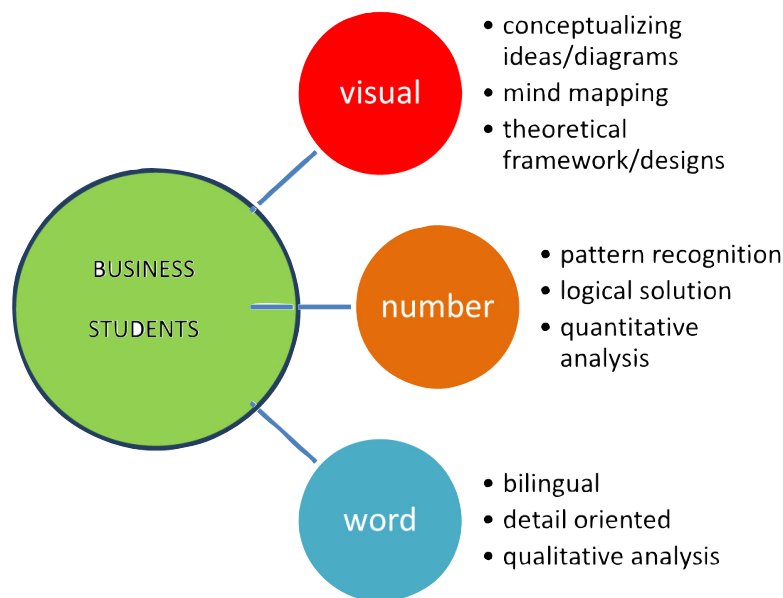


Figure 5.

Operational framework for the three factors of creativity.

Courses that require more quantitative analysis are more susceptible to number creativity in order to understand the dynamics of statistics, mathematics, and decision sciences involved in their program. This may include management, finance, accounting, economics, and other related fields. The argument falls on the theoretical idea of positivism that using logical and mathematical applications in verifying data through empirical results.

Courses that require more qualitative analysis are more predisposed to word creativity in order to synthesize the dynamics of structure, cognitive ability, and detail analysis involved in their program. The argument falls on the theoretical idea of functionalism, anti-positivism, grounded theory, ethnography, and other related fields for the investigation of why and how.

Courses that require a high degree of visual presentation are prevalent for both marketing, advertising, and entrepreneurship courses. Visual creativity is allowed for these courses since it is essential for the development in their respective fields on the expansion of knowledge and the growth of more ideas that may generate from another idea.

However, the diversity of such creativity may exist across different fields that intertwine due to the functionality of different segments needed. For instance, a management student takes up marketing courses in order to enhance his or her visual creativity then take accounting courses to improve his or her number creativity as well as a qualitative courses for his or her word creativity. In this way, creativity equilibrium exists for this student in enhancing his or her knowledge for a better convergence of ideas into a research paper.

The major barrier for creativity exists in management that is due to the stagnation of ideas. Students are usually hindered to think outside the box despite the constant “transformative learning” emphasized by university pedagogical standards.

Business students may exemplify the influence to the richness of ideas through the stimulus of experience he or she may encounter (Amabile, 1998). For instance openness to experience will allow extraverts in utilizing divergent thinking as a means of seeking excitement in the expression of creative skills. They join student’s organization in order to allow a greater degree of freedom in the context of their creativity without the control mechanism laid upon on their own respective programs.

Idea generation is not an easy task if there are constraints that hinder the progress of creativity. Guilford (1967) stated that ideational fluency and originality is based on the number of ideas generated, hence, productivity of ideas. However, originality is a precursor to creativity and to generate an original idea should really be differentiated from Nilsson’s creative design.

RESEARCH METHODOLOGY

The intention of this research undertaking was to research a plethora of different topics under the criteria of creativity and management especially focusing on business creativity. Based on the research findings, the author has formulated survey questionnaires that are fitted to the understanding of students in terms of their creative skills with respect to their management skills. Questionnaires were patterned from the NEO Personality Inventory for the Big Five personality factors. One hundred business students from De La Salle University were surveyed, of whom 50 are male students and 50 are female students, using a convenience sampling method. The survey questionnaires were clustered into three segments namely visual, number, and word creativity.

Respondents were asked to rank accordingly using a simplified version of a 3-point Likert scale with one the highest and three the lowest, using the measurement (rank 1 = 5 points, rank 2 = 3

points and rank 3 = 1 point). Survey questionnaire was used with 10 questions in determining which factor of creativity a respondent would skew relatively to business. The limitation of such questionnaire is that it simply determines and does not define the factors influencing student creativity. However, future research would allow detailed questionnaire with behavioral relationships and in-depth understanding of correlation. Moreover, a creative taxonomy relative to business can be tested in determining the level of creativity in conjunction with this study. This would also allow replication of test for different subjects.

Descriptive statistics such as frequency and measure of location were employed. In addition, to provide empirical evidence to the study, an Analysis of Variance (ANOVA) was utilized to test the hypothesis stipulated in this study. A goodness of fit model can accentuate further the significance of the factors via the coefficient of determination (R square) and the adjusted R square for standardized results.

RESULTS

Comparing the means of the three factors, the one with the highest mean of 34.55 pertains to Visual creativity. This means that students perceived more as visually creative compared to

the others namely, number or word. For Number creativity and Word creativity, the means are relatively the same.

Visual Creativity

To delve further into the three-factor creativity, we could ascertain that Visual creativity seems to be the consensus regardless of gender with 69%. Female respondents exemplify 78%, while 60% of male respondents are skewed more to the Visual creativity. Using the p-value as an analysis, it is highly significant with $p < 0.01$ and provide the lowest p-value compared to the other two factors.

Analysis point out that Visual creativity is significant in terms of student’s perception on business. This means that perhaps transformative learning is indeed taking place with prevailing technologies. Powerpoint to video presentation has become the key ingredient in learning for students. They now utilized diagrams, illustrations, conceptual frameworks, mindmap, and other visual representation in defining creative knowledge of business learning.

Number Creativity

The second factor relates more to parsimonious data results that need further testing with 24%. Thirty eight percent of male respondents

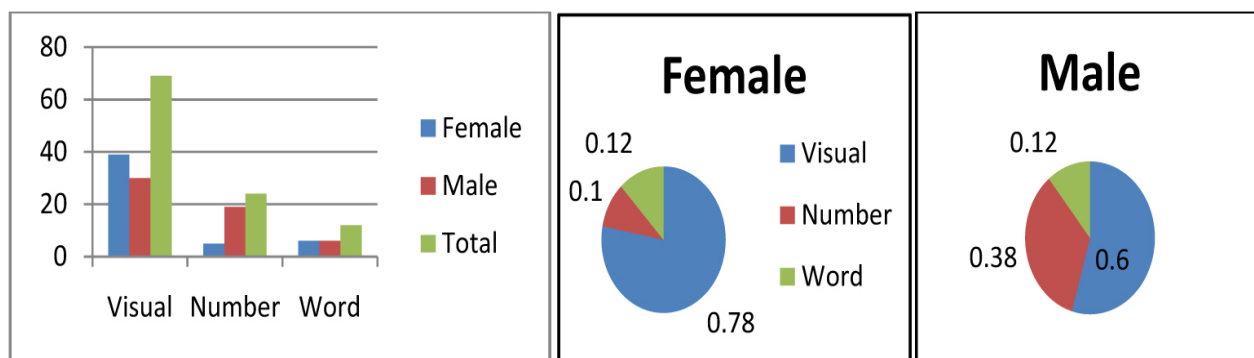


Figure 6.
Relative frequency summary.

showcased a high degree of Number creativity. The variance for the data may be high with 41.87 that provided a diverse dispersion from the standard normal data. This could be attributed to a low 10% for the female respondents. Perhaps further testing can prove that males are more “number” creative than females.

Analysis point out that based on the p-value, Number creativity is highly significant with a p-value less than 0.01. Male students are more attuned to problem solving especially that involves mathematical or computational logic. Perhaps, further study could identify on why there are more male students in Engineering compared to Liberal Arts to prove the theory. Outliers may occur for females with 10% in becoming Number creative. Future testing may be needed to ascertain Number creativity especially for accounting or finance students for veracity.

Word Creativity

The third factor provides an equal assumption on both genders. Twelve percent of the survey respondents are Word creative. The variance is relatively at 22.94 and shows little difference compared to the dispersion of the other two

factors. However, the p-value is relatively far from the normative p-value. This could attribute to the low reliance of students for word as an expression of their creative outputs like essay or thesis.

The 21st century has shown that a paradigm shift has occurred for students who used to be word creative has become more visually creative due to technology. The weakness for Word creativity has been perceived differently when compared to Visual based on the results.

The findings for 100 students provide an initial analysis that DLSU business students are more visually creative. The coefficient of determination provides a statistical inference with R square and adjusted R square the closest to one among the other factors as well as having the smallest p-value. Further testing is needed to determine which students among the RVR College of Business are more attuned to Visual creativity in order to ascertain further the proponents which program is more suitable for Creativity Management.

Bivariate Correlation

Descriptive statistics and inter-correlations for all measures are reported in Table 1. As can be

Table 1.
Descriptive Statistics and Inter-Correlations for All Measures

	M	SD	1	2	3	4	5	6	7
CMI	273.59	6.58	0.8131**	-0.5213**	-0.2504*	0.4169	0.6609	-0.6758	0.1479
1. Visual	34.55	6.69	---	-0.7166	-0.4140	0.4142	0.7337	-0.9783	0.2388
2. Number	27.27	6.47		---	-0.3070	0.3380	-0.9763	0.7390	-0.3401
3. Word	28.23	4.79			---	-0.9592	0.3148	0.4143	0.0986
4. VN	61.82	4.96				---	-0.2841	-0.3558	-0.1216
5. VW	62.78	6.42					---	-0.7109	0.3226
6. NW	55.50	6.77						---	-0.2555
7. Gender									---

Note: n = 100. Gender coded: 1= female, 0=male. VN = Visual/Number, VW = Visual/Word, NW = Number/Word.
*p<0.05 **p<0.01

seen, CMI (Creative Management Index) scores were significantly correlated with three factors namely, Visual, Number, and Word creativity. It is prevalent that Number creativity ($r = -0.5213$) is more negatively correlated compared to Word creativity ($r = -0.2504$). This means that students preferred using numbers as a way in understanding the world around them to give meaning compared to constructs or abstracts. The negative correlation means that males are more attuned to Number creativity compared to females, despite gender showing no significant relationship with the CMI.

Visual creativity represents a significantly high correlation ($r = 0.8131$) and p-value of less than $\alpha = 0.01$. Based on the frequency method, 69% of respondents scored high on the Visual creativity scores as well as generating a high average scores of 34.55 compared to the other factors. It is more prevalent for females to score 78% that attribute a visual creativity perspective. For instance, questions around the preferences for student understanding of topics or lessons is best exemplified using a diagram, flowchart, or workflow. Other questions pertain to student behavior in utilizing illustrations or pictures in enhancing their idea clearly rather than verbal constructs or mathematical assumptions, hence verifying the negative relationship of Visual to either Number ($r = -0.7166$) or Word ($r = -0.4140$).

It is noteworthy, that despite the non-significance of the other combinational factors with the CMI, Visual still represents a high correlation in conjunction with other factors namely Visual and Word combo ($r = 0.6609$) perchance this is attributed to the high scores from the Visual that buffered the Word scores. However, business students provide a better explanation to such behavior especially that visual creativity alone cannot stand without the word creativity to substantiate ideas. Some may not be as articulate in conveying ideas through words, but visual representation is a

way to cater creativity in business. Explanations can provide additional support in epitomizing substance to visual representations. For instance, entrepreneurial students need to showcase their business plan not only with pictures or illustrations, but with actual explanations in order to provide a better understanding of the product they want to bluster in business venture.

The implications of such results are just starting point for future research in providing deeper analysis on the impact of factors relative to the course programs. Since convenience sampling was done and further testing could provide a clear correlation with a cluster sampling of business courses. For instance, would Visual creativity be more prevalent for Marketing or Advertising students compared to Accounting or Finance students or vice versa for Number creativity? The significance of courses was taken into consideration prior to the study as *a priori* consideration, however applying a *ceteris paribus* when all things being equal, the behavior of learning in general for business students were taken as the primary axiom of the study.

Hence, the erudition of the study allows the results with focal points of general axioms for Visual, Number, and Word creativity in conjunction for business students learning pedagogical standards. It is imperative that the results provided empirical evidence wherein the next generation of business students preferred visual learning as a tool for expression.

Table 2.
Summary of Coefficient of Determination and β Coefficient

	R2	Adj R2	St. β
Visual	0.6611	0.6577	0.7991
Number	0.2717	0.2643	-0.5298
Word	0.0627	0.0531	-0.3438

Regression Analysis

A series of linear regression were used in order to accentuate the data for testing the extent of Visual, Number, and Word creativity that could predict differences in the CMI scores. The model simply utilized a simple linear regression with residuals and ANOVA in determining p-value, Beta coefficients, coefficient of determination and the adjusted R square. Further models that included the combinational factors and gender would be included in an expanded version of this study, since the relevance of the study primarily focuses on the three factors.

Visual creativity measures an adjusted R square of 0.6577, this means that this factor represent 65.77% of the variance in the CMI scores. The adjusted R square provided standardized results of the data in analyzing the extent of Visual creativity with respect to the scores. Number creativity has a moderate adjusted R square of 0.2643, hence highlighting that 26.53% of the variance were represented in the CMI scores. Word creativity only provided a 0.0531 adjusted R square that is minimal to the CMI scores.

The results signify that business students despite scoring high on their Visual creativity, a small degree of Number creativity still exist on a normally distributed data. Not all business students implore the preferences for Visual creativity with some still adhering to traditional approach of learning that is quantifiable with data and numbers. The intransigent results should be taken into consideration when exploring the infusion of combinational creativity to create balance among business students.

The study demonstrated that Visual creativity is a better predictor than Number or Word creativity. The results of the regression analysis provided further support to the hypothesis that Visual creativity is more significant.

The Beta coefficients provided positive results for Visual creativity (0.7991), but negative results for Number (-0.5298) and Word (-0.3438)

creativity. This means that both male and female students are more attuned to Visual creativity. The negative results indicate that male students are more attuned to Number creativity compared to female students by providing an inverse relationship compared to Visual creativity.

The results substantiate further other related literature especially in the context of the ideational behavior study conducted by Batey et al. (2010). Their research study involved a majority of female students from British and American universities with 112 females out of the 158 sample respondents. The result of their study indicated that personality is a better predictor compared to intelligence. It is discussed with regard to theoretical implications of the taxonomic place for ideational behavior relative to a wider realm of individual differences constructs. The two measures of intelligence namely, IQ and fluidity, although exemplifying adequate validity, could have been more robust.

Relating the Batey et al. (2010) theory with this research indicates that in order to generate idea, business students need to learn from their own experiences by being open for the inflow of new and relevant thinking to their general thinking. Education from schools is one facet that could generate creativity despite the allusion of aesthetics, altruism, and competence. Creativity in business points to Visual creativity more than Number or Word creativity, which has been the fulcrum of traditional teachings in the 20th century. Female students are perceived more to be visually creative compared to male students especially in the context of creative cognition.

CONCLUSION

Creativity Management is an asset not only for business students but for the university pedagogical principles. Providing creative capital is an essential way for gaining and sustaining

competitive advantage for students in the workplace.

It would also be a quintessential way for entrepreneurs to generate new ideas or adapt existing ideas that would give them a foothold in the industry. Research done in correlating creativity and entrepreneurship has provided us a thorough understanding that the two could provide new frontier of discovery and improvements (Matthews, 2005).

Finally, the best way to measure creativity management is to provide quantitative measures like frequency, diversity, and novelty in a given idea. This is the same in most creative industries that asked how many are made each year, how diverse is the product, and how different is the product compared to others?

The probability of developing an innovator with a Big C potential from a university is relatively small. Since it is not every day, we can provide a Steve Jobs, Bill Gates, or Mark Zuckerberg to come out of our university. However, it is possible to create an entrepreneur who can provide an innovative product that could change the way an industry can go.

This kind of ability cannot happen overnight. The only way to grow the tree bearing the fruit of innovation is to simply nurture the seed of creativity. Imagine a life where you can create anything. Our mind knows no limits or boundaries that hinder our thoughts. It is like a dream that transcends time and space that goes beyond logic and reality. It is like a state where our inner being is uplifted to provide one thing, creativity.

Creativity plays a key role in business. It is imperative for university to ensure the growth of students in this field that led to transformative learning. A key component to that learning is to create a fusion of both creativity and management in a flexible curriculum with a classroom setting that was set by Sternberg's investment theory of creativity.

The proposed curriculum would be divided into four phase, namely, (1) theoretical underpinnings, (2) business case analysis, (3) innovative collaboration, and (4) creative output.

To further explore each models of creativity, the survey questions were patterned from existing psychology test of creativity but revised to adapt business questions. Three factors that would measure creativity are *visual* (ability to create image, video, picture), *words* (ability to speak or write for expression), and *numbers* (ability to use figures for quantifiable analysis).

In order to create something, we use the Latin expression *ex nihilo* wherein out of nothing we have come out of something new or novel or even grandeur in nature. Creativity Management has allowed our minds to encapsulate what we learn and pave the way for future study in providing other ways of measurements and enhancing creativity in business.

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APPENDIX

Primary Hypothesis:

$$H_0: \mu_1 = \mu_2 = \mu_3$$

H_a : not all population means are equal

Let μ_1 = mean score for Visual Creativity

μ_2 = mean score for Number Creativity

μ_3 = mean score for Word Creativity

Secondary Hypothesis: Testing for Significance

H_{0_1} : Visual Creativity is not significant

H_{a_2} : Visual Creativity is significant

H_{0_1} : Number Creativity is not significant

H_{a_2} : Number Creativity is significant

H_{0_1} : Word Creativity is not significant

H_{a_2} : Word Creativity is significant

Table 3.

Cross Tabulation Frequency for Gender Relative to the Creative Factor

Gender	Relative Frequency			Percent Frequency		
	Visual	Number	Word	Visual	Number	Word
Female	39	5	6	0.78	0.10	0.12
Male	30	19	6	0.60	0.38	0.12
Total	69	24	12	0.69	0.24	0.12

Table 4.
ANOVA Table for the Three-Factor Creativity for DLSU Business Students

<i>Groups</i>	<i>Count</i>	<i>Sum</i>	<i>Average</i>	<i>Variance</i>		
Visual Creativity	100	3455	34.55	44.77525		
Number Creativity	100	2727	27.27	41.87586		
Word Creativity	100	2823	28.23	22.94657		
<i>ANOVA</i>						
<i>Source of Variation</i>	<i>SS</i>	<i>df</i>	<i>MS</i>	<i>F</i>	<i>P-value</i>	<i>F crit</i>
Between Groups	3128.747	2	1564.373	42.82135	4.56572E-17	3.026153
Within Groups	10850.17	297	36.53256			
Total	13978.92	299				

Proposed Curriculum - Learning Objectives

Effective communicators

- To generate new ideas with confidence despite the setback of possible criticisms and harsh feedbacks
- To present new ideas through different forms of media
- To express their thoughts with a flair of creativity

Critical and creative thinkers

- To understand existing theoretical frameworks of creativity and management
- To develop both divergent and convergent thinking
- To adapt on certain situations in the ways of efficiency
- To proceed to the next phase which is innovation

Technically proficient and competent professional and leaders

- Demonstrate the ability in providing creative skills in the context of business
- To recognize creativity skills from other individuals and appreciate the development
- To enhance their understanding of creativity management with historical approach to previous business case studies
- To have adequate creative skill sets as a future professional

Service driven, ethical and socially responsible citizens

- To accept the responsibility of ethics in business creativity
- To respect knowledge of others especially intellectual properties
- To generate teamwork and provide social interaction for group creativity

Rubrics Development

Phase I: Theoretical Framework (25%)

Foci: Word Creativity/Knowledge/Foundation Building

Output: Quizzes/Exam

Phase II: Business Case Analysis (25%)

Foci: Word & Number Creativity/ Out of the box Thinker/Decision Making

Output: Written Paper

Phase III: Product Proposal/Creative Collaboration (25%)

Foci: Team building/chemistry/creative enhancement/Visual & Word Creativity

Output: Oral Presentation

Phase IV: Creative Output (25%)

Foci: Visual Creativity/ex nihilo concept/tangible creative design

Output: Video Presentation