



Creativity Assessment of Students Pursuing Higher Education

Ekta Sharma, Amrut Mody School of Management, Ahmedabad

Today, Innovation and creativity are the buzz words in the galore of not only business but also of higher education. The need to foster creativity and innovation has long been a priority in the educational and corporate spheres. The current research focuses on assessing the creativity potential of the students pursuing Higher Education. The sample consists of management students. The data is collected through the instrument developed by Prof. Uday Pareek. The variables of creativity assessment are: Challenging, liveliness, openness, freedom, conflict and risk taking. We hypothesise firstly, that there is no difference in the creativity potential of the female and male students. Secondly, the management students have high creative potential. The current research shows that the management students are just an average on the creativity scale and hence, the pedagogy and curriculum of the B-schools need refurbishing and review, in order to institutionalize the creativity quotient.

Key words: Creativity, management students, challenges, liveliness, openness, freedom, conflict and risk taking.



Introduction

The buzzword of the 'knowledge economy' is "Creativity and Innovation". Creative professionals are sought after. Namrata Singh, (2014) in the article "FIN DNA not a must for CEO's Job" published in The Times of India (November 25, 2014), discusses about the skill weightages assigned for the selection of CEO's. This report mentions that thirty percent weightage is given to "Creativity and Innovation", in the selection of the CEO's, which has changed the trend of appointing CEO's with Financial astute only. Most chief executive officers are selected for their creative vision of their company's future. As a result, every nation, in order to cement international competitiveness, is investing education resources into development of professionals and creativity. Students' creativity as a key competency is shown in many countries' education strategies. (Sternberg and Lubert)

Although the corporate challenges require creativity among professionals but the current B-School curriculum and Pedagogy does not necessarily encourage students to think creatively, as there has been no significant change in the B-School curriculum since 1950's. (Mintzberg, 2004). Business schools have done little to advance the abilities of students to think critically and creatively (Baker et.al. 2012).

The business students have a motive to attain a high paying job and not the learning. The educational institutions have motive to make more money rather than the quality curriculum. (Glenn, 2011; Arum and Roksa ,2011). Arum and Roksa (2011) claims that the B-School Students "studied less and made fewer gains in their ability to think critically in their first 2 years of college than students in the sciences and humanities."

New strategies are needed in business education that will assure our students become better critical and creative thinkers. The current research paper focuses on assessment of creativity amongst B-School graduates.

Literature Review

Meaning of Creativity

The term "creativity" refers to a phenomenon whereby a person creates something new that has some kind of value for other people. Many researchers insisted that creativity is a complex phenomenon that does not have clear and unique definition (Gardner, 1983; Nichol, 2007; Sternberg, 2001; Kleiman, 2008; Lubart, et.al., 2010 ;Amabile, 1996;Matud et.al., 2007). Torrance, the father of creativity, indicated that creativity is regarded as "a process of becoming sensitive to a problem, deficiencies, gaps in knowledge, missing elements, disharmonies, and so on; identifying the difficulty; searching for solutions, making guesses, or formulating hypothesis about these deficiencies; testing and retesting these hypotheses and possibly modifying and retesting them; and finally communicating the results" (Baker et.al., 2001; Guilford,1959; Parnes, 1961).

Creativity is a process that leads to products or ideas that are novel, appropriate and valuable to society (Halpern, 2010; Ruscio, & Amabile, 1999; Sawyer, 2006; Sternberg, 2006; Teo & Waugh, 2010). Sternberg (2006), argued that creativity requires the intellectual ability to "



see problems in a new way. It escapes the bounds of conventional thinking and recognize which of one's ideas are worth pursuing."

Creativity is not so much an innate ability as it is the result of hard work: gaining expertise in an area, searching in all sorts of places for solutions to problems or finding new problems to solve, remaining committed to the task through its completion, and convincing others that an idea or solution has merit (Baker and Baker 2012).

Creative people have considerable cognitive flexibility, communicate easily, are intellectually curious, and tend to let their impulses flow freely (MacKinnon, 2005).

Kinds of Creativity

The Institute of Personality Assessment and Research (IPAR), Berkeley mentions about three different kinds of creativity. "The first is artistic creativity which reflects the creator's inner needs, perceptions and motivations. The second type is scientific and technological creativity, which deals with some problem of the environment and results in novel solutions but exhibits little of the inventor's personality. The third type is hybrid creativity, found in such fields as architecture that exhibits both a novel problem solution and the personality of the creator." (Donald N. MacKinnon, 2005)

Different ways of thinking

Gomez (2007) quoted that there are at least two different ways of thinking: (a) convergent thinking, which emphasizes reproduction of existing data and adaptation of old responses to new situations in a more or less logical manner; and (b) divergent thinking, characterized by flexibility and originality in the production of new ideas. Convergent thinking is characterized by the reproduction of known concepts and the adoption of known responses to new situations. Divergent thinking, on the other hand, involves fluency, flexibility, and originality, and is essentially concerned with production of large numbers of new ideas (Copley, 1998).

Creativity assessment of students

The different researchers have different take on the importance given by B-Schools on the concept of "Creativity". Creativity is given due importance by the thinkers and is considered an important learning outcome for B-School education. It enhances critical thinking skills and facilitates innovation. (Sternberg, 2006; Allen and Coleman, 2011), but it is more of a desirable vision than an empirical outcome (Diane F. Halpern, 2010). There is a group of thinkers who believes that although innovation is critical to business success, but, current management practices which are bureaucratic discourages innovation (Murray, 2010; Baker and Baker, 2012).

The creative potential of students in higher education has been studied by various researchers. Silvia, P. J. et al. (2009) studied the relationship between creative cognition and Big five personality traits. He noted that the Openness to experience is important to creativity.



Safajouee and Bardai (2012) studied the creative potentiality among both undergraduate and postgraduate students in higher educational institutions.

Amabile, (1996) developed environmental stimulants and categorized them into 8 factors: “(1) Freedom: freedom in deciding what to do or how to accomplish the task; a sense of control over one’s own work and ideas, (2) Good project management: having a good communication skills, protect the team from outside distractions and interference, set a clear directions, (3) Sufficient resources: access to necessary resources, (4) Encouragement: creating an atmosphere free of threatening evaluation, (5) Sufficient time: time to think creatively, explore different perspectives, (6) Challenge: a sense of challenge, (7) Pressure: a sense of urgency that is internally generated from competition, and (8) Various Organizational Characteristics: considering new ideas, an atmosphere where creativity is prized.”

Karakas, Fahri (2010) introduced a model for positive management education based on these six dimensions: a) fostering integrative and holistic thinking, b) building sense of community through high quality relationships, c) developing creative brainstorming and skill building through innovative projects, d) integrating spirituality into the classroom, e) fostering flexibility and empowerment through individual attention and customization, f) designing positive enabling, nurturing learning platforms.

Research Methodology

The objective of the research is to assess the creativity potential of the students pursuing management education.

The research has been conducted through the Instrument – “Creativity Assessment Inventory” (CAI), developed by Rachita Sinha.(Pareek and Purohit, 2010). The sample has been drawn from the students pursuing their Masters in Management. The sample consists of 155 students, out of which 105 are males and 50 are females. The One Sample t-test and Independent Sample t-test has been applied to analyze the results. For the overall creativity the test value considered is 52 and for the variables of creativity the test value is 12. For the analysis of Independent Sample t-test, Gender has been considered and represented as female as 1 and Males as 0.

The instrument CAI, assesses creativity on six dimensions- Challenge, Freedom, Liveliness, Openness, Conflict and Risk Taking, on the scale of four. As per the norms declared for the instrument, the score of 59 and above shows very high on Creativity, between 52 and 59 are high on creativity and between 44 and 51 shows average creativity. The six dimensions of Creativity are defined as follows:

- **Challenge:** A creative person approaches challenges and difficulties energetically and enjoys them.
- **Freedom:** Choose to be independent and happy to take initiatives and expresses his/her ideas.



- **Liveliness:** Is happy and excited.
- **Openness:** Trusting and tend to learn from the mistakes.
- **Conflicts:** Looks for Helpful win-win compromises, which needs willingness to communicate with understanding and empathy.
- **Risk Taking:** Takes responsibilities readily and is willing to act on new ideas.

Hypothesis

1. The creativity level of the management students is high.
2. The creativity level of females is higher than males.

Hypothesis testing

1. The creativity level of the management students is high.

The mean score of the management students on the creativity scale is 48.9 which is an average score. Besides that the T-test also proves that the creativity level of students is not high.(Table 1 &2). Hence, the hypothesis is rejected.

2. The creativity level of females is higher than males

The table 4 shows the mean score of overall creativity of the females (49.80) is slightly higher than the males (48.48) but the results of independent sample t-test shows that the significance level is more than .05, hence, the creativity levels are not significantly different. Hence, the hypothesis is rejected. (Table 5)

Results and Discussions

The creativity level of the management students is average. (Mean=48.90).(Refer Table 1 & 2). The students are not good at conflict handling (Mean= 7.61) and risk taking (Mean=7.65). In fact Table 3, shows the t-test of all the sub variables of the creativity taken into account for this research paper and it is evident from there that the management students are rated average on challenge, freedom, openness and liveliness also. The Mean score of liveliness (Mean=8.87) is highest followed by Freedom (Mean=8.39), which implies that the students are happy and excited about the task and tends to be independent and express their ideas, to certain extent but not to the optimal level.

The Independent sample t-test shows that the creativity level of students is not gender sensitive but it also draws our attention towards certain variables which are significantly different when compared on basis of gender. Table 5, shows that liveliness, risk taking, conflict and openness are significantly different on basis of gender. Out of these variables, liveliness is higher in males (9.05) than in females and rest of the other variables are higher in females than in males. (Table 4)

The results show that the creativity of the students needs to be groomed and honed as they are low on all the six dimensions.

Conclusion



Creativity is very important aspect of any business process. The management students are the future business administrators or managers, who would be successful in their careers, if they have significant levels of creativity. The current research shows that the management students are just an average on the creativity scale and hence, the pedagogy and curriculum of the B-schools need refurbishing and review, in order to institutionalize the creativity quotient.

Future research

The gaps analysed in the creativity potential of the management students can be studied and the revised model of Management curriculum can be developed.

References

Allen, B. & Coleman, K. (2011). The creative graduate: Cultivating and assessing creativity with eportfolios. In G. Williams, P. Statham, N. Brown & B. Cleland (Eds.), *Changing Demands, Changing Directions*. Proceedings ascilite Hobart 2011. (pp.59-69)

Amabile, T. M. (1996). *Managing for creativity*. Harvard Business School, 21, 1-13.

Arum, R. and Roksa, J. (2011). *Academically Adrift: Limited Learning on College Campuses*. Chicago: The University of Chicago Press

Baker and Baker (2012). To "Catch the Sparkling A Canvas for Creativity in the Management Classroom. *Academy of Management Learning & Education*, Vol. 11. No. 4, 704-721. <http://dx.doi.org/10.5466/amle.2010.0003>

Cropley, A. J. (1998). *Creativity*. London: Longmans, Green & Company.

Gardner, Howard (1983), *Frames of Mind: The Theory of Multiple Intelligences*, Basic Books, [ISBN](https://www.isbn-international.org/product/0133306143) 0133306143

Glenn, D. (2011). The b-school blahs, *New York Times*, (April 17), ED 16

Gomez (2007) What Do We Know About Creativity? *The Journal of Effective Teaching*, Vol. 7, No. 1, 2007 31-43

Guilford, J.P. (1959). Traits of creativity in *Creativity and its Cultivation*. pp. 142-161. Harper and Row.

Halpern, D. F. (2010). Creativity in college classroom. In R. A. Beghetto & J. C. Kaufman (Eds.), *Nurturing creativity in the classroom* (pp. 380-393). New York, NY: Cambridge University Press.

Karakas, Fahri, *Spirituality and Performance in Organizations: A Literature Review* (2010). *Journal of Business Ethics*, Vol. 94, No. 1, pp. 89-106, 2010.



Kleiman, P. (2008). Towards transformation: conceptions of creativity in higher education. *Innovations in Education and Teaching International*, 45(3), 209-217.

Lubart, T., Pacteau, C., Jacquet, A. Y., & Caroff, X. (2010). Children's creative potential: An empirical study of measurement issues. *Learning and Individual Differences*, 20(4), 388-392.

MacKinnon, D. W. (2005). IPAR's Contributions to the Conceptualization and Study of Creativity. *Perspectives in Creativity*. Taylor, I. A. & Getzels, J. W. (Eds.). Chicago, IL: Aldine Publishing Company.

Matud, M. P., Rodríguez, C., & Grande, J. (2007). Gender differences in creative thinking. *Personality and individual differences*, 43(5), 1137-1147.

Mintzberg, H. 2004. **Managers Not MBAs: A Hard Look at the Soft Practice of Managing and Management Development**. San Francisco: Berrett-Hoehler Publishers.

Nichol, S. (2007). Exploring creativity support systems for the NE" X" T generation

Pareek and Purohit (2010). *Creativity: Creativity Assessment Inventory*. Training Instruments in HRD and OD. Third Edition. Tata Mc Graw Hill. Pp. 175-178.

Perms, S. J. (1961), Effects of extended effort in creative problem solving. *Journal of Educational Psychology*, 52, 17-12.

Ruscio, A., & Amabile, T. M. (1999). Effects of instructional style on problem-solving creativity. *Creativity Research Journal*, 12(4), 251-266.

Singh, Namrata (2014) .“FIN DNA not a must for CEO’s Job” The Times of India (November 25, 2014).

Silvia, P. J., Nusbaum, E. C., Berg, C., Martin, C., & O'Conner, A. (2009). Openness to experience, plasticity, and creativity: Exploring lower-order, higher-order, and interactive effects. *Journal of Research in Personality*. doi:10.1016/j.jrp.2009.04.015

Sternberg, R. J. & Lubart, T. I. (1995). *Defying the crowd: Cultivating creativity in a culture of conformity*. New York: Free Press.

Safajouee and Bardai (2012) , Students' Creative Potential in Higher Educational Institutions: A Case Study in Malaysian Public Universities. *International Journal of fundamental Psychology and Social Sciences*. Vol 2, No.3, pp. 45-48 .

Sawyer, R.K. (2006c), “Educating for Innovation”, *The International Journal of Thinking Skills and Creativity*, Vol. 1, No.1, pp. 41-48

Sternberg, R. J. (2006). Creativity is a habit. *Education Week*, 25(24), 47–64.

Teo , L. K. C. , & Waugh , R. F. (2010). A Rasch measure of fostering creativity . *Creativity Research Journal* , 22 , 206 – 218 . doi: 10.1080/10400419.2010.481534

Torance, P. E. Torance Test of Creative Thinking Norms-technical manual(research editon). Princeton, New Jersey: Personnel Press, 196.

Annexure

Table 1 Descriptive statistics of creativity and its variables

	N	Minimum	Maximum	Mean	Std. Deviation
challenge	155	5	12	8.26	1.591
Freedom	155	4	15	8.39	2.202
Liveliness	155	6	12	8.87	1.646
Openness	155	5	13	8.13	1.885
Conflict	155	4	11	7.61	1.703
Risk-taking	155	5	11	7.65	1.662
Creativity	155	36	66	48.90	6.915
Valid N (listwise)	155				

Table 2 One sample t-test for creativity

	N	Mean	Std. Deviation	Std. Error Mean
Creativity	155	48.90	6.915	.555

	Test Value = 52					
	t	df	Sig. (2-tailed)	Mean Difference	95% Confidence Interval of the Difference	
					Lower	Upper
Creativity	-5.576	154	.000	-3.097	-4.19	-2.00

Since, $p < 0.05$, the sample is statistically different from the mean value

Table 3 One sample t-test for creativity variables

	N	Mean	Std. Deviation	Std. Error Mean
challenge	155	8.26	1.591	.128
Freedom	155	8.39	2.202	.177
Liveliness	155	8.87	1.646	.132
Openness	155	8.13	1.885	.151
Conflict	155	7.61	1.703	.137
Risk-taking	155	7.65	1.662	.134

One-Sample Test

	Test Value = 12					
	t	df	Sig. (2-tailed)	Mean Difference	95% Confidence Interval of the Difference	
					Lower	Upper
challenge	-29.287	154	.000	-3.742	-3.99	-3.49
Freedom	-20.426	154	.000	-3.613	-3.96	-3.26
Liveliness	-23.662	154	.000	-3.129	-3.39	-2.87
Openness	-25.561	154	.000	-3.871	-4.17	-3.57
Conflict	-32.067	154	.000	-4.387	-4.66	-4.12
Risk-taking	-32.618	154	.000	-4.355	-4.62	-4.09

Table 4 Descriptive statistics on basis of gender, where 1 indicates female and 0 indicates male

Group Statistics

	Sec B - Names	N	Mean	Std. Deviation	Std. Error Mean
challenge	0	105	8.33	1.291	.126
	1	50	8.10	2.092	.296
Freedom	0	105	8.43	1.657	.162
	1	50	8.30	3.066	.434
Liveliness	0	105	9.05	1.767	.172
	1	50	8.50	1.298	.184
Openness	0	105	7.81	1.688	.165
	1	50	8.80	2.109	.298
Conflict	0	105	7.38	1.502	.147
	1	50	8.10	1.992	.282
Risk-taking	0	105	7.48	1.507	.147
	1	50	8.00	1.917	.271
Creativity	0	105	48.48	5.350	.522
	1	50	49.80	9.398	1.329

Table 5 Independent Sample t-test

		Levene's Test for Equality of Variances		t-test for Equality of Means						
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
									Lower	Upper
challenge	Equal variances assumed	20.303	.000	.853	153	.395	.233	.274	-.307	.774
	Equal variances not assumed			.726	67.335	.471	.233	.322	-.409	.875
Freedom	Equal variances assumed	16.612	.000	.339	153	.735	.129	.379	-.621	.878
	Equal variances not assumed			.278	63.016	.782	.129	.463	-.796	1.053
Liveliness	Equal variances assumed	9.569	.002	1.953	153	.053	.548	.280	-.006	1.101
	Equal variances not assumed			2.175	127.073	.032	.548	.252	.049	1.046
Openness	Equal variances assumed	1.549	.215	-3.144	153	.002	-.990	.315	-1.613	-.368
	Equal variances not assumed			-2.907	79.927	.005	-.990	.341	-1.669	-.312
Conflict	Equal variances assumed	10.823	.001	-2.498	153	.014	-.719	.288	-1.288	-.150
	Equal variances not assumed			-2.264	76.489	.026	-.719	.318	-1.352	-.087
Risk-taking	Equal variances assumed	17.874	.000	-1.848	153	.066	-.524	.283	-1.084	.036
	Equal variances not assumed			-1.699	78.877	.093	-.524	.308	-1.138	.090
Creativity	Equal variances assumed	12.390	.001	-1.115	153	.267	-1.324	1.187	-3.669	1.022
	Equal variances not assumed			-.927	64.562	.357	-1.324	1.428	-4.176	1.528