

***Inculcating Creativity:
A Study on the Creative Abilities of Educators in the Field of Design***

Chiranjeevi Reddy Gudimetla, National Institute of Fashion Technology, India

The Paris Conference on Education 2023
Official Conference Proceedings

Abstract

The study aims to evaluate the range of creative abilities of design educators in Indian colleges and universities. A total of 149 participants, including 49 males and 100 females, were surveyed using a questionnaire from the Leadership Assessment Tools. The study finds that only 2% of educators are classified as 'very creative,' and none are 'exceptionally creative,' with around 60% of educators being 'above average' in their creative ability scores. The study also suggests that educators with more experience or higher designation have higher creative ability scores. The findings of this study can be used to improve the curriculum, pedagogy, assignments, and evaluation criteria in educational institutions to promote creativity among educators and students.

Keywords: Creative Ability, Creative Thinking, Design Education, Higher Education, Inculcation of Creativity

iafor

The International Academic Forum
www.iafor.org

1. INTRODUCTION

Creativity is not limited to artistic skills but can be developed to generate innovative solutions for challenging and unforeseen tasks. Based on existing research, it is widely acknowledged that creative thinking has been overlooked at all educational levels, while critical thinking has been excessively emphasized.

Guilford (1950), one of the founders of the creativity theory, states that the six parameters of creativity are: 1) the ability to identify and state problems, 2) generating a large number of ideas, 3) quickly producing a variety of ideas, 4) creating remote associations and non-standard solutions, 5) the ability to improve by adding details, and 6) new ways of its application. Torrance (1979), known as the father of creativity, comprehended four characteristics of creativity: 1) fluency: a great number of ideas in a short time, 2) flexibility: simultaneously proposing a variety of ideas, 3) originality: the ability to produce new, original and unique ideas, and 4) elaboration; ability to systematize and organize the details of an idea. Creativeness is a facet of self-actualization, the highest level, as described by Maslow (1968). In order of importance, the five levels are as follows: physiological, safety, love and belonging, esteem, and self-actualization.

According to a study by Matraeva, et al. (2020) in the context of higher education, creativity is considered an integrative property, the key characteristics of which are the ability to produce original ideas, result-orientation, solution of practical problems, originality and speed of thinking, openness to new experience and, tolerance for uncertainty. Especially in economic contexts, brain-based skills such as emotional intelligence, creativity, cognitive flexibility, self-control or system thinking matter more than manual skills. (Smith. et al. 2021). Various researchers (Lima and Alencar, 2014; Hosseini, 2011; Alencar and Fleith, 2010; Csikszentmihalyi et al., 2007; Jackson, 2006, Fryer, 2007; Wisdom, 2007; Martizen, 2002) recognized that many educators do not know how to foster creativity in the educational setups. Actions speak louder than words; educators' creative abilities and performance are crucial for fostering students' creativity.

Given the aforementioned context and the research gap in this field, this study aims to evaluate the creative abilities of educators who work in Indian colleges and institutions. Consequently, the study sets forth the following objectives.

- 1) To assess the creative ability scores of design educators in India.
- 2) To compare the creative ability levels by gender, total years of experience, designation, and specialization categories.
- 3) To compare design educators' traits with creative persons' traits.
- 4) Identifying the creative ability aspects that have more scope for improvement for design educators.

Based on the objectives of the study, the research methodology adopted is described in the following sections.

2. RESEARCH METHODOLOGY

It is a descriptive quantitative study, based on the survey administered through an online questionnaire.

2.1. Survey Tool Used

To evaluate the creative ability of educators, this study utilized a questionnaire from the Leadership Assessment Tools. The questionnaire was developed by Btain Uzzi, who conducted extensive research on the characteristics of creative individuals across various fields and professions. According to Uzzi, the questionnaire assesses an individual's traits, attitudes, values, motivations, and interests that are indicative of creativity. The questionnaire consists of 39 items that use a three-point Likert scale (agree, undecided or don't know, and disagree) and an additional section where participants choose the ten best terms to describe their personality out of 54 given terms. Each question is assigned a score ranging from -2 to 4, depending on the response. The total scores range from -10 to 116, and different ranges correspond to various levels of creative ability. Specifically, total scores between 95-116 are considered exceptionally creative, between 65-94 are very creative, between 40-64 are above average, between 20-39 are average, between 10-19 are below average, and below 10 are non-creative.

The questionnaire was administered before the closing ceremony of the national-level online faculty development program (FDP).

2.2. Data Analysis

The information from educators was collected through Google Forms. MS Excel was used to conduct descriptive statistical analysis, and a free online application called "Free Wordcloud Generator" was employed to perform the word cloud analysis.

3. FINDINGS AND INTERPRETATION

The study's results are presented in various sections, including total scores, mean scores of selected categories, a word cloud image, and creative ability aspects that have a greater potential for improvement.

3.1. Demography and Objective Indicators of the Participants

A total of 149 participants responded completely out of the 200 registered for the national-level, five-day online Faculty Development Program (FDP) titled "Inculcating Creativity: Tools for Effective Thinking." conducted in July 2021 by the National Institute of Fashion Technology. The FDP was granted and funded by AICTE Training and Learning (ATAL) Academy, Department of Higher Education, Ministry of Education, India. 49 male and 100 female members having designations of Assistant Professors, Lecturers, Faculty, PGT Teachers, Ph.D. Scholars, Associate Professors, Senior Lecturers, Professors, and Librarians were part of this study. Their experience ranged from 0 to 30 years, with an average experience of 10 years. All participants are associated with the design activities and are interested in fostering creativity.

The participants are from the following design specializations: Accessory Design, Architecture, Communication Design, Education, Engineering, Fashion Design, Textile Design, Fine Arts, Design Management, Media, Product Design, Human resources, Journalism, Languages, and Sciences. They are from around 30 different institutions covering almost all the states of India. The list of educational institutions includes NIFTs, NIDs, Amity

University, Chandigarh University, Public Colleges, Manipal University, University of Madras, Engineering Colleges, IITs, etc.

3.2. Creative Ability Scores Among Educators

The individual total score of an educator is computed by summing up the scores for each answer they selected. By examining the frequency of each descriptive rating based on the individual total scores, it was determined that there are six levels of descriptive ratings. The highest possible score an individual could obtain is '+166,' while the lowest is '-17.' The research group's average total score is '+42.89.'

The frequency of total scores obtained by the participants is tabulated below in Table 1.

Table 1: Frequency of total scores obtained as descriptive ratings

Descriptive ratings	Range of total score	Frequency
1. Exceptionally creative	95-116	0
2. Very creative	65-94	3 (2.01%)
3. Above average	40-64	91 (61.07%)
4. Average	20-39	54 (36.24%)
5. Below average	10-19	1 (0.67%)
6. Non-creative	Below 10	0
Total		149

The frequency of individual total scores is presented above, with 91 (61.07%) falling in the above-average category and 54 (36.24%) in the average category. Only 3 (2.01%) were categorized as very creative, and 1 (0.67%) as below average. These results indicate that there is potential for improvement, as the majority of scores fall within the above-average rating.

3.3. Mean Scores of Creative Ability Based on the 'Gender'

The mean scores and the frequencies of the ratings are presented in the following table 2.

Table 2: Mean scores based on gender categories

Gender	No of participants (%)	Average Score	Frequency of descriptive ratings (%)
1. Male	49 (32.8%)	43.59	Average (37%), Above-average (63%)
2. Female	100 (67.2%)	59.60	Below-average (1%), Average (36%), Above-average (61%), Very- creative (2%)
Total	149		

From the descriptive ratings, there is no significant difference between male and female members. About 1/3 and 2/3 under the average and above average ratings respectively. There are a few very-creative ratings only in the female category. Then, there is a significant difference between the average scores of male and female members (16.01). It shows that female members have higher scores in various ratings, but the frequency of total descriptive ratings is similar to that of male members.

3.4. Mean Scores of Creative Ability Based on the ‘Experience’

The total years of experience have been divided into four groups. The average scores and frequencies of each group are presented in the following table 3.

Table 3: Mean scores based on experience categories

Total years of experience	No of participants (%)	Average score	Frequency of ratings (%)
1. 5 & below	40 (26.84%)	42.35	Below-average (2.5%), Average (35%), Above-average (60%), Very-creative (2.5%)
2. 6-10	47 (31.54%)	42.34	Below-average (0%), Average (38.5%), Above-average (59.5%), Very-creative (2%)
3. 11-15	28 (18.79%)	42.10	Below-average (0%), Average (46.5%), Above-average (53.5%), Very-creative (0%)
4. 16 & above	34 (22.81%)	44.88	Below-average (0%), Average (26.5%), Above-average (70.5%), Very-creative (3%)
Total	149		

The table above indicates that there is no clear correlation between mean scores and total years of experience across different categories. Among the categories, teachers with 16 years of experience or more have the highest mean score of 44.88. The same trend is observed in relation to age, as age and experience are positively correlated.

3.5. Mean Scores of Creative Ability Based on the ‘Designation’

Designations are classified into six types. The mean scores for each designation have been presented in the following table 4.

Table 4: Mean scores based on designation categories

Designation	Total no of participants (%)	Average score	Frequency of ratings
1. Assistant Professors	74 (49.66%)	42.72	Below-average (0%), Average (41%), Above-average (59.5%), Very-creative (1.5%)
2. Associate Professors	12 (08.05%)	47.58	Below-average (0%), Average (17.5%), Above-average (75%), Very-creative (8.5%)
3. Professors	08 (05.36%)	43.87	Below-average (0%), Average (37.5%), Above-average (62.5%), Very-creative (0%)
4. PGT Teachers	46 (30.87%)	40.98	Below-average (2%), Average (37%), Above-average (61%), Very-creative (0%)
5. Ph. D. Scholars	07 (04.69%)	48.14	Below-average (0%), Average (28.5%), Above-average (57%), Very-creative (14.5%)
6. Librarians	02 (01.34%)	42.00	Below-average (0%), Average (50%), Above-average (50%), Very-creative (0%)
Total	149		

From the above table, it is found that within the categories of designation, no clear variation was observed to correlate with average scores. Ph.D. scholars and associate professors had higher scores, 48.14 and 47.58, respectively, compared to the remaining designations. It is derived from the above table that educators who have middle positions in the education setup have more creative abilities compared to lower and higher positions.

3.6. Mean Scores of Creative Ability Based on the ‘Specialization’

Within the categories of ‘specialization,’ no specific variation was observed to correlate with mean scores. There was a total of 17 specializations which include; Accessory Design, Architecture, Communication Design, Education, Engineering, Fashion Design, Fine Arts, Human resources, Journalism, Languages, Library Sciences, Design Management, Media, Product Design, Sciences, and Textile Design. The educators from specializations of Human Resources, Journalism, and Management have relatively higher scores, 50.75, 49.75, and 49, respectively, whereas the total average score is 42.89.

3.7. Word Cloud Image of the Educators Collective Personality

The word cloud image, which displays the combined ten terms selected by each educator in the survey out of 52 terms given, is presented below. The word cloud image highlights the twelve common traits of creative individuals that are identified in the literature, and these traits are numbered from 1 to 12 in order of importance. Figure 1 below shows the word cloud that represents the personality of educators in India and the twelve common traits of creative individuals.



Fig 1: Word cloud portraying the personality of Indian educators and 12 common traits of creative individuals

The word cloud above reveals that the educators most commonly chose twelve personality traits in descending order: energetic, self-confident, observant, sensible, helpful, curious, organized, dedicated, independent, good-natured, open-minded, and risk-taking. However, when compared to the twelve common traits of creative individuals, there are some differences. The twelve common traits of creative individuals, ordered by importance, are:

curiosity, playful, open-minded, flexibility, sensitivity, independent, risk-taking, intuitive, thorough (attention to detail), ambitious, objective, and energetic. These common traits were identified in previous studies, including Indeed Educational team (2022), Karpova, Marcketti & Kamm (2013), Rudowicz & Yue (2002), Davis (1999), and Guastello & Shissler (1994).

The study found a difference between the perceived collective personality of educators and the personality of creative individuals. This difference may be attributed to the major drawbacks of modern vocational pedagogical education, which has a weak influence on developing creative potential and creativity in future teachers, as noted by Movchan and Yakovleva (2019) and Martinez and Tadeu (2018). Studies of teacher professional development have identified the significance of creative thinking in enabling efficient transformations within the framework of pedagogical activity (Borodina, Sibgatullina & Gizatullina, 2019).

The National Education Policy of India (2020) emphasizes the need for institutions and faculty to have the freedom to be innovative in their curriculum, teaching methods, and assessments while adhering to a standardized framework for higher education qualifications. In practice, creativity requires exploring tools and approaches such as iterative learning, diverse perspectives, and risk management. Cultural trait diversity has perhaps the largest potential to empower creativity because it increases the recombinatorial possibilities (UNDP report 2021/2022). However, the word cloud indicates that educators in India primarily associate themselves with traits such as organized, good-natured, practical, efficient, and determined, which are important for their profession but not necessarily indicative of creative ability. On the other hand, creative qualities such as playfulness, intuition, ambition, attention to detail, objectivity, and risk-taking must be nurtured and developed.

3.8. Less-Scored Items

Upon examining the scores for each item individually, it became clear that certain items are particularly important based on their lower scores. After analyzing the responses in detail, it was discovered that the following fifteen items were areas in which educators needed improvement.

The table lists these low-scored items in descending order based on their average scores, with a negative score indicating that most educators provided an incorrect response.

Table 5: Less average scored 15 Items of creative ability test by the educators

S. No	Item	Average scores	Right expression
1	I feel that a logical step-by-step method is best for solving problems.	-40%	Disagree
2	I like people who are sure of their conclusions.	-22%	Disagree
3	When problem-solving, I work faster when analyzing the problem and slower when synthesizing the information, I have gathered.	-10%	Disagree
4	In evaluating information, the source is more important to me than the content.	-0.9%	Disagree

5	When I am in an argument, my greatest pleasure would be for the person who disagrees with me to become a friend, even at the price of sacrificing my point of view.	0.67%	Disagree
6	I always work with a great deal of certainty that I am following the correct procedure for solving a particular problem.	14.8%	Disagree
7	I like people who are objective and rational and try to win the approval of others.	15.1%	Disagree
8	It is important for me to have a place for everything and everything in its place.	19.8%	Disagree
9	I prefer to work with others in a team effort rather than solo.	21.5%	Disagree
10	I would enjoy spending an entire day alone, just "chewing the mental cud."	26.2%	Agree
11	I like hobbies that involve collecting things.	28.5%	Disagree
12	Writers who use strange and unusual words merely want to show off.	29.5%	Disagree
13	I am driven to achieve high status and power in life.	32.6%	Disagree
14	I know how to keep my inner impulses in check.	33.6%	Disagree
15	In groups, I occasionally voice opinions that seem to turn people off.	37.2%	Agree

The items that received negative scores offer the greatest opportunity for improvement because many educators have incorrect perceptions or understandings of these items. This means that there is significant potential for growth and development in these areas.

4. DISCUSSION AND CONCLUSIONS

Creativity is placed at the highest level of learning in Bloom's taxonomy, creativity is more than any other aspect of learning; remember, understand, apply, analyze and evaluate (Bloom, 1956). Creativity is one of the four motivating principles highlighted in the UNDP 2021/2022, along with flexibility, solidarity, and inclusion. According to this report cultivating these principles can reinforce one another and will go a long way in making policies and institutions more fit for purpose.

The attitude of students and their involvement in the educational process is correlated with the personal and professional qualities of the teacher (Matraeva, et al., 2020). According to Lima and Alencar (2014), the factors that hinder the promotion of creative expression in graduate courses relating to professors are lack of time and excessive workload, lack of knowledge on creativity, how to nurture it in the students, fear of innovation, lack of incentive by the university system and bureaucracy.

This study found that the creative abilities of educators in India are at a moderate level. The majority of educators (61.07%) have above-average scores. Female educators, on average, scored higher than male educators, with a difference of 16.01 points. A small percentage (2%) of female educators were classified as "very creative."

The study found no significant variations in creative abilities based on gender, total years of experience, designation, or specialization categories. However, it was observed that educators with 16 or more years of experience had a higher mean score of 44.88 compared to those with fewer years of experience. Among different designations, Ph.D. scholars and Associate Professors had the highest scores of 48.14 and 47.58, respectively, compared to the remaining designations. In terms of specializations, educators in Human Resources, Journalism, and Management had relatively higher scores of 50.75, 49.75, and 49, respectively, compared to the total average score of the research group, which was 42.89.

The study showed that educators perceive themselves as having qualities such as being organized, good-natured, helpful, practical, realistic, efficient, and determined as part of their personality. However, developing creative ability requires qualities such as being playful, intuitive, ambitious, thorough, objective, and risk-taking.

Educators should know when to use creative thinking and when to use critical thinking. The Double Diamond design model has four stages: Discovery, Definition, Development, and Delivery. Creative ability is crucial during the Discovery and Development stages as innovative ideas are explored and developed. The degree of innovation is largely dependent on these stages. Critical thinking takes precedence during the Definition and Delivery stages. NEP India (2020) stresses the importance of promoting creativity and critical thinking in the education system to encourage logical decision-making and innovation.

The study recommends that creativity should be an inherent quality in all teachings. Educators should assess their current creative ability and work on improving it. Institutions and universities should conduct workshops and training programs to enhance the creative ability of educators. Education must prioritize teaching students how to ask insightful questions instead of just giving them answers, as this skill fosters critical and creative thinking, independent learning, and the ability to evaluate and analyze information. To foster a creative environment, curricular, co-curricular, and extracurricular activities should include openness to new experiences, risk-taking, empathy, interdisciplinary and collaborative activities, self and peer assessments, tolerance for uncertainty and failure, cultural trait diversity, and celebrating creativity. Educators should develop, practice, and exhibit these traits to create a culture of creativity in institutions and universities.

Acknowledgments

The author expresses deep gratitude to the National Institute of Fashion Technology for approving the Faculty Development Programme (FDP) on Creativity Tools, particularly the DG and Dean (Academics). He is especially grateful to the Campus Director, Sri Vijay Kumar Mantri IAS, for placing trust and confidence in the author's abilities, even though it was the institution's first time undertaking such an initiative with AICTE. The author would also like to thank the AICTE Training and Learning (ATAL) Academy, Department of Higher Education, Ministry of Education, India, for providing financial support for the FDP. Additionally, the author would like to express appreciation to all the participants who supported this research by actively providing the necessary data. Their extended support was instrumental in the successful completion of this research work.

References

- Alencar, E. M. L. S. D., & Fleith, D. D. S. (2010). Criatividade na educação superior: fatores inibidores (Creativity in higher education: Inhibiting factors). *Avaliação: Revista da Avaliação da Educação Superior (Campinas)*, 15, 201-206.
- Bloom, B. S. (Ed.). (1956). *Taxonomy of educational objectives, Handbook 1: Cognitive domain* (2nd ed.). Addison-Wesley Longman Ltd.
- Borodina, T., Sibgatullina, A., & Gizatullina, A. (2019). Developing creative thinking in future teachers as a topical issue of higher education. *Journal of Social Studies Education Research*, 10(4), 226-245.
- Csikszentmihalyi, N. Jackson, M. Oliver, M. Shaw, & J. Wisdom (Eds.). (2007), *Developing creativity in higher education* (pp. xviii-xx). London: Routledge.
- Davis, G. A. (1999). Barriers to creativity and creative attitudes. *Encyclopedia of creativity*, 1, 165-174.
- Free Wordcloud Generator. <https://www.freewordcloudgenerator.com/generatewordcloud> extracted on 19.12.2022.
- Fryer, M. (2006). Facilitating creativity in higher education: A brief account of National Teaching Fellows' views. In *Developing creativity in higher education* (pp. 94-108). Routledge.
- Guastello, S. J., & Shissler, J. E. (1994). A Two Factor Taxonomy of Creative Behavior. *The Journal of Creative Behavior*, 28(3), 211-221.
- Guilford, J. (1950). "Creativity", *American Psychologist*, 5(9), pp.444–454.
- Hosseini, A. S. (2011). University student's evaluation of creative education in universities and their impact on their learning. *Procedia-social and behavioral sciences*, 15, 1806-1812.
- Hwang, S. Y. (2017). Rethinking creativity: Present in expression in creative learning communities. *Educational Philosophy and Theory*, 49(3), 220-230.
- Indeed Educational team. (2022). 12 Traits of Creative People. <https://www.indeed.com/career-advice/finding-a-job/traits-of-creative-people> extracted on 15.12.2022.
- Jackson, N. (2006). Creativity in higher education. *SCEPTR Scholarly Paper*, 3, 1-25.
- Karpova, E., Marcketti, S., & Kamm, C. (2013). Fashion industry professionals' viewpoints on creative traits and, strategies for creativity development. *Thinking Skills and Creativity*, 10, 159-167.
- Kettler, T., Lamb, K. N., Willerson, A., & Mullet, D. R. (2018). Teachers' perceptions of creativity in the classroom. *Creativity Research Journal*, 30(2), 164-171.

- Lima, V. B. F., & Alencar, E. M. (2014). Criatividade em programas de pós-graduação em educação: práticas pedagógicas e fatores inibidores [Creativity in graduate programs in education: Pedagogical practices and inhibiting factors]. *Psico-USF*, 19, 61-72.
- Martinez, A. M. (2002). A criatividade na escola: três direções de trabalho. *Linhas críticas*, 8(15), 189-206.
- Martinez, I., & Tadeu, P. (2018). The impact of pedagogical leadership on pedagogical coordination in secondary schools. *Research in Social Sciences and Technology*, 3(3), 1-15. Retrieved from <http://ressat.org/index.php/ressat/article/view/373>
- Maslow, A. H. (1958). *A Dynamic Theory of Human Motivation*.
- Matraeva, A. D., Rybakova, M. V., Vinichenko, M. V., Oseev, A. A., & Ljapunova, N. V. (2020). Development of creativity of students in higher educational institutions: assessment of students and experts. *Universal Journal of Educational Research*, 8(1), 8-16.
- Movchan, I. B., & Yakovleva, A. A. (2019). Wave analogies for generalized description of geodynamic zones. *International Journal of Innovative Technology and Exploring Engineering*, 8(6), 863-868.
- NIP India (2020), National Education Policy India. Online from https://www.education.gov.in/sites/upload_files/mhrd/files/NEP_Final_English_0.pdf Accessed on 31.12.2022.
- Rudowicz, E., & Yue, X. D. (2002). Compatibility of Chinese and creative personalities. *Creativity Research Journal*, 14(3-4), 387-394.
- Smith, E., Ali, D., Wilkerson, B., Dawson, W. D., Sobowale, K., Reynolds, C., ... & Eyre, H. A. (2021). A brain capital grand strategy: toward economic reimagination. *Molecular psychiatry*, 26(1), 3-22.
- Torrance, P. (1979). *The search for satori and creativity*. Buffalo, N.Y.: Creative Education.
- UNDP (2022). Human Development Report 2021-22, Uncertain Times, Unsettled Lives: Shaping our Future in a Transforming World. Online from <https://www.undp.org/egypt/publications/human-development-report-2021-22-uncertain-times-unsettled-lives-shaping-our-future-transforming-world>. Accessed on 31.12.2022 extracted on 30.12.2022
- Wisdom, J. (2006). Developing higher education teachers to teach creatively. In *Developing creativity in higher education* (pp. 203-216). Routledge.