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Relationship between Creativity and Academic Achievement of Business Administration Students in South Western Polytechnics, Nigeria (Pp. 134-149)

Olatoye, R. A. - College of Education, Osun State University, Ipetu-Ijesa Campus, Osogbo, Osun State, Nigeria
E-mail: kingdemola@yahoo.com

Akintunde, S. O. - Department of Business Administration and Management, Moshood Abiola Polytechnic, Abeokuta, Ogun State, Nigeria.

Ogunsanya, E.A. - Faculty of Education, Olabisi Onabanjo University, Ago-Iwoye, Ogun State, Nigeria.

Abstract

This study investigated relationship between students' creativity and academic achievement as measured by the CGPA scores. Two instruments; Nicolas Holt Creativity Test (NHCT) and Student CGPA Information Format (SCIF) were respectively used to collect data on creativity and students' CGPA scores of a sample of randomly selected 235 HNDII business administration students of Polytechnics in the South Western States of Nigeria. There was a very low negative insignificant relationship between creativity and CGPA scores ($r=-0.004$, $p>0.05$). Thus, the higher the students' creativity, the lower the CGPA score. A creative person may not necessarily be a high achiever in school. In searching for people to carry out

tasks that involve high creativity, level of academic achievement should not be the only requirement for selection.

Keywords: Creativity, Academic Achievement, Business Administration Students, Polytechnics, CGPA scores.

Introduction

Creativity is the ability to make or bring to existence something new, whether a new solution to a problem, a new method or device or a new artistic object or form. Penick (1992) described creativity as a process of becoming sensitive to problems, deficiencies, gaps in knowledge, missing elements and disharmonies as well as identifying, searching for solutions, making guesses or formulation of hypotheses, and possibly modifying and restating them, and experimenting to find results and finally communicating the results. Nwazuoke, Olatoye and Oyundoyin (2002) argued that environment where a child finds himself/herself could foster or inhibit creativity. Though a child may have the innate or genetic ability for creativity, yet parents and teachers have roles to play to enhance and foster the creative traits. Dingledine (2003) asserted that family support, availability of learning materials and social pressures are some of the factors that influence the development of creativity. From these findings, it is clear that if teaching, assessment and social environment do not support creative thinking, the innate tendency in learners to be creative may be subdued.

Creativity is fundamental to self-reliance, the more self-reliant a person becomes, the better the quality of his/her life, family, community and society at large. Creativity enables human beings to get the most out of life experiences and resources. Creativity produces actionable ideas, new concepts, new designs and new opportunities while innovation adds values to the new products. According to Akinboye (2003), without creativity, a person is not able to access the fullness of information and resources available but is locked up in old habits, structures, patterns, concepts and perceptions. This is why creativity, generative perception, constructive and design thinking plus innovation should form the basis of any education for sustainable development. Creativity is the confluence of intellectual activity, knowledge, motivation, thinking styles, personality and environment. Creativity should be related to intellectual activity and knowledge. The problem with our educational system is that students are not taught in a way that enhances creative thinking and the assessment procedures do not reward

creativity. This is a serious challenge to our educational system especially the polytechnic education that should encourage exposure to technical skills which can be enhanced through creative thinking.

Creativity is a basic tool for progress in any society or community. It is so important that any area of development must not lose sight of it. The conditions of modern day living characterised by complexity and interdependence, technological and communication advances, as well as rising expectations call for increased creativity (Olatoye & Oyundoyin, 2007). As the society becomes more complex, there is a gradual increase in the awareness that yesterday's methods do not effectively solve contemporary problems of the society (Akinboye, 1985). This is why innovation and creativity are needed in nearly all the facets of the society.

For the same level of education, it seems student creativity varies from country to country. For example, Palaniappan (2009) compared creativity levels of Malaysian and American students. He reported that American students are significantly superior to their Malaysian counterparts in general creativity as well as in its components, namely fluency, flexibility, originality and elaboration. However, there was no significant relationship between creativity and academic achievement. There was also no significant difference in academic achievement of Malaysian and American students. The important point here is that a group of more creative students may not necessarily be academically better than a group of less creative students. In other words, creativity is not necessarily a significant predictor of academic achievement.

In Nigeria, Oyundoyin and Olatoye (2007) reported that there was no difference between male and female students on general creativity tests. There was also no significant difference between male and female students on each component of creativity namely fluency, originality, flexibility and creativity motivation. They recommended that neither men nor women should be discriminated against in tasks that require demonstration of creativity. It is clear from literature that studies which investigated gender differences in creativity, seem to be characterized by contradictory results. Some of the findings showed male superiority over females (Torrance, 1981); some female superiority over males (Orieux & Yewchuk, 1990); yet others did not indicate any difference between male and female respondents (Tegano & Moran, 1989). Some psychologists opined that creativity is

commonly found more among males than females due to sex role differences emphasized in the society (Howard, 1995).

In addition, Naderi *et al* (2008) found there was no gender difference on creativity as the whole. However, the findings revealed gender differences in subscales scores. According to this result, females scored higher than males in the initiative factor, while males scored higher than females in the environmental sensitivity factor. There is also no significant difference between male and female student academic achievement. Naderi, Abdullah, Tengku-Aizan, Sharir and Kumar (2009) reported that neither intelligence nor creativity is a significant predictor of academic achievement among undergraduate students in Iran using CGPA scores as measures of student achievement. Gender difference in academics achievement seems to vary depending on the school subject or course being considered. For example, Deary *et al* (2007) found that there was gender difference in educational attainment. Girls performed better than boys on overall academics subjects (courses). There was also significant gender difference in all academic subjects (courses) scores, except physics; girls performed better in every topic except physics. Olatoye (2008) reported there is no significant difference between male and female achievement in science. Tamir (1990) reported there is no significance difference between male and female achievement in biology and chemistry but reported a significant difference in physics (boys scoring higher).

Gender has remained a burning issue and has also remained relevant in education because it has been linked to achievement and participation in certain professions (Sotonade, 2004). Certain cultures restrict particular gender to certain professions like farming, engineering and trading (Erinosho, 1997; Olatoye & Afuwape, 2004). Therefore, considering gender as in any educational study can yield useful practical information.

Creativity is the act or ability to create something new through imaginative skills. It is a mental process involving the generation of new ideas. Creativity is finding concepts or association between existing and new concepts or re-arranging what is known in order to find out what is not known. The creative process takes place in the thought. Creative thinking has two aspects: Divergent Thinking (intellectual ability to think of many original, diverse and elaborate thought) and Convergent Thinking (intellectual ability to logically evaluate critique and choose the best ideas from a selection of ideas). It was initially felt that only gifted or special people could be creative. Research has

proved that only certain attributes are required to be creative (Oyundoyin & Olatoye, 2007). A creative person requires passion and commitment; fresh way of looking at things; an understanding of people and an entrepreneurial willingness to take risk and work hard, ability to convince people that the new idea is good or better. Creativity is fostered or inhibited by certain environmental pressures.

In this era when higher education across the world is striving to produce graduates that will be self-reliant, studying business administration offers students opportunity to develop skills, abilities and understanding to enter, perform and progress in particular business occupations. Business administration prepares students for job competence, occupational intelligence and work adjustment. Unlinfun (1986), Aina (1991) and Adeola (2006) opined that skills acquired through business education can lead to individual's economic survival and self-employment. Student exposure to business skills according to Malbary (1999) is to create a pool of men and women of character and competence, people who are balanced in their physical, emotional and spiritual well-being and who will be effective in the design and implementation of national development strategies. A good business administrator therefore should be emotionally intelligent, creative and innovative.

A person's creativity is fostered when appropriate environment is present. Creative activities lead to innovation. While creativity is the art of producing new ideas, approach or action, innovation is the process of both generating and applying such creative ideas and converting them into novel, useful and viable products, services and business practices. It has also been reported that highly creative persons are not necessarily high academic achievers (Palaniappan, 2009). However, most of the research findings on creativity continue to come from advanced countries. Against this backdrop, this study investigated the relationship between students' creativity and Cumulative Grade Point Average (CGPA) scores of students in selected polytechnics in Ogun, Oyo and Lagos States, Southwest of Nigeria.

Research Questions

The following questions were generated to guide the study:

1. What is the relationship between students' level of creativity academic achievement?

2. What is the contribution of creativity of business administration students of polytechnics to their academic achievement?
3. Is there any significant difference between male and female student
(i) creativity and (ii) academic achievement?

Methodology

Research Design

In the study, the independent variable (creativity of Polytechnic students) and the dependent variable (academic achievement) have already occurred. We only attempt to identify and compare the variables (without manipulating them) for the purpose of making inferences about their relationship. Therefore Ex-post-facto research design was adopted to find out and describe the extent to which the level of creativity influenced the level of academic achievement of HNDII business administration students of Polytechnics in the South West of Nigeria. Many scholars agreed that Ex-post-facto design is the best design for collecting data on variables that have already occurred.

Target Population, Sample and Sampling Procedures

The target population for this study consists of all the current final year, Higher National Diploma (HND) students of Business Administration of Polytechnics in Ogun, Lagos and Oyo states, South West of Nigeria. The sample for the study was two hundred and thirty five (235) final year students on a Business Administration (HND) programme in four Polytechnics in the Southwest of Nigeria. The four Polytechnics were selected, using purposive technique; two are Federal while two are state Polytechnics, respectively. The four polytechnics selected are as shown in table 1.

However, simple random sampling technique was used to select 60 final year HND business administration students in each of the selected Polytechnics. The mean age is 23, the range is 18-33, and standard deviation is 6.2. All the selected polytechnics are in urban centres. One hundred and twenty students are from state-owned polytechnics while the same number are from the federal polytechnics, 113 are males while 122 are females.

Instrumentation

The under listed two instruments were used for collecting data for this study:

- [1] Student Cumulative Grade Point (CGPA) Information Format (SCIF)– attached as appendix I
- [2] Nicolas Holt Creativity Test (NHCT) – attached as appendix II

- [1] The SCIF was designed by the researcher to collect data about the CGPA, matriculation number, school and gender of students. The CGPA was used as a measure for academic success of the students.

NHCT is a twenty-nine (29)-item instrument, developed by Nicolas Holt to test the level of creativity of persons in the areas of fluency, originality, flexibility and elaboration of traits, among others.

The validity of the instruments was sought by distributing the draft copies of the questionnaires (NHCT) to experts in item construction for their criticism and suggestions through appendix II. The experts' comments/suggestions were incorporated into the final draft of the instruments.

The reliability of the instruments was sought through a test re-test method of two weeks interval. The researcher administered 30 copies each of the questionnaires to students of Moshood Abiola Polytechnic, Abeokuta. Reliability coefficient of 0.88 was obtained for NHCT. This Polytechnic was not included in the study.

Data Collection Procedure

The permission of the Heads of department of the departments of Business Administration and Management of the selected Polytechnics to use the students were sought and obtained. The assistance of the class coordinators and, in some cases, the H.O.D, were obtained in addressing the students to elicit their cooperation and in administering the instruments Meeting of the sixty (60) randomly selected students in each of the of the institutions was arranged for the administration of the NHCT questionnaire. This took place just before their scheduled regular classes with the consent of the affected lecturers. The questionnaires were designed such that it should not last for more than twenty minutes each for students at that level of education to complete. The researchers ensured that either the Head of department or the Class Coordinator was physically present with them at the time of administration of the questionnaires. The respondents were assured of the confidentiality of their responses and the importance of their role. They were given opportunity to clarify necessary issues. These were done with a view to enhance response rate and reduce anxiety and subjectivity, which may interfere with the results of the study.

Data on the students CGPA were collected from the business administration departments of the Institutions, using the SCIF format, described above. The rate of return of questionnaires was 100%. In other words, all the

questionnaires were completed and returned. However, the CGPA of 5 out of 240 respondents could not be found. Data analysis was therefore based on 235 students.

NHCT questionnaire was designed and scored on a 5-point Likert format type continuum scale ranging from “1” to “5”:

- “1” represents “not so true of me” as we assume that everyone is emotionally intelligent and creative in one-way or the other.
- “3” represents “averagely true of me” and a standard (average) for determining scores that are a below or above average. (i.e. low or high in the variable being measured).
- “5” represents fully represents me; in that order.

CGPA data collected through SCIF was classified to show different levels of academic achievement; ranging from 4.00, representing Distinction, to less than 1, representing very poor. This is the grading system approved by the National Board for Technical Education (NBTE) that regulates academic standards in all the three institutions used.

The scores of the students on the three variables were combined and compared to show the overall pattern as well as pattern by schools and by sex of respondents.

Method of Data Analysis

Data were analysed using Statistical Package for Social Sciences (SPSS). Student t-test was used to answer research questions 1 to 3 while Pearson Product-Moment Correlation was used to answer research question 4. All the research questions generated for this study were answered at 0.05 alpha level using a two-tailed test.

Presentation of Results

Research Question 1: *What is the relationship between students' level of creativity academic achievement?*

There is negative insignificant relationship between creativity and students' CGPA scores ($r=-0.004$, $p>0.05$). Though in a very insignificant magnitude, the higher the level of creativity, the lower the CGPA scores. The negative relationship suggests that some very creative students may not be high academic achievers (See table 2).

Research Question 2: *What is the contribution of creativity of business administration students of polytechnics to their academic achievement?*

Table 3 shows that creativity does not significantly predict the academic achievement of students. In fact, creativity accounts for no variance (0%) in academic achievement (R Square=0.000, $p>0.05$). Thus, creativity has nothing to do with polytechnic student achievement, as measured by the CGPA scores.

Research Question 3: *Is there any significant difference between male and female student (i) creativity and (ii) academic achievement?*

Table 4 shows that there is no significant difference between male and female student creativity and academic achievement. Thus males and female students have the same level of creativity and academic achievement. Creativity and academic achievement among polytechnic students are not sensitive to gender.

Discussion of Findings

Creativity simply does not significantly predict academic achievement of students in the Polytechnic system. The inverse or negative relationship between creativity and academic achievement is surprising. This study agrees with Xiaoxia (1999) who reports that creativity is rarely related to academic achievement. Given the parental and teaching practices in many homes and schools in Nigeria, one is not surprised by the result of this study. Hassan (2001) also alluded to the fact that the inherited pattern of assessment in Nigeria is usually restricted to one (cognitive) of the aspects of learning outcomes at the end of teaching-learning process and does not encourage innovativeness and creativity in the teacher and the learner.

It is therefore not surprising that many known creative celebrities like Darwin, the Nigeria's Mathematical genius, Professor Chike Obi, Professor Wole Soyinka (a Nobel Laureate) and Late Chief Gani Fawehimi (an internationally acclaimed human right activist and lawyer), among others, were not known to be high academic achievers in their school days. Creative persons are not likely to be high academic achievers. Creativity has been identified as a key requirement of entrepreneurship which has been adopted nationally, as a major curriculum objective. This therefore calls for a review of the curriculum, teaching and evaluation strategies in line with the need for promoting creativity as a tool for enhancing entrepreneurship in Nigeria.

According to Nwosu (2004), creativity cannot be created but it can be nurtured or cultivated and it can also be destroyed. When a study reports that there is no significant influence or relationship between creativity and achievement, there is likely to be a problem in such a system. Gardiner (1980) Songer, Lee and Kam (2002) are of the opinion that all the classrooms should be a modeled garden. The teacher is the gardener who needs to cultivate students' potential so that they will grow into creative adults. Cronin (1989) asserted that though the importance of creativity is universally recognized, its cultivation in our classrooms is paradoxically neglected. Bartel (2001) asserted that creativity has been stifled in many children. The need for lecturers in polytechnic to teach creatively cannot therefore be overemphasised.

In this study, there is no significant difference between male and female levels of creativity and academic achievement. Naderi *et al* (2008) also found there was no gender difference on creativity as the whole. However, the findings revealed gender differences in subscales scores. According to this result, females scored higher than males in the initiative factor, while males scored higher than females in the environmental sensitivity factor. Naderi, Abdullah, Tengku-Aizan, Sharir and Kumar (2009) reported that creativity is not a significant predictor of academic achievement among undergraduate students in Iran, also using CGPA scores as measures of student achievement. Gender difference in academics achievement as discussed earlier in the introduction seems to vary depending on the school subject or course being considered. For example, Deary *et al* (2007) found that there was gender difference in educational attainment. Girls performed better than boys on overall academics subjects (courses). There was also significant gender difference in all academic subjects (courses) scores, except physics; girls performed better in every topic except physics.

Conclusion and Recommendations

The negative relationship between creativity and academic achievement is surprising. This points to an anomaly in our school curriculum and or the method of course delivery. Such a situation negates the objectives of the Polytechnic system which is expected to produce technological and entrepreneurial education. Creativity is required for academic achievement which the present polytechnic system probably does not measure or emphasise.

Based on the findings, it is recommended that creativity should be taught, facilitated and assessed in the educational system. Teachers have to be trained to know and adopt methods which foster complementary values by fostering creativity-friendly school environment. It is therefore, important that school authorities manage the students and teachers in a way that encourages the culture of creativity values. These values should be recognized and rewarded. Learning environment should be rich in team spirit, tolerance of the genuine mistake caused by creative predisposition.

Table 1: List of Polytechnics and number of respondents

SECTOR	NO	SECTOR	NO
Federal Polytechnics		State Polytechnics	
Yaba College of Technology (YCT)	60	Lagos State Polytechnic,(L.S.P)	60
Federal Polytechnic, Ilaro (FPI)	60	The Polytechnic, Ibadan (PI)	60
Total	120	Total	120

Table 2: Relationship between students' level of creativity academic achievement

Variable	N	Mean	Std. Dev.	Std Error	df	r	p	Rmks
Creativity	235	112.428	3.695	0.6239	233	-0.004	0.354	NS
CGPA scores	235	111.159	8.267	0.5496				

NS = Not Significant, $p > 0.05$

Table 3: Relative contribution of creativity of students' to academic achievement

R	=	0.04				
R ²	=	.000				
Adjusted R ²	=	-.004				
Stdd Error	=	.3520				
	Sum of square	df	Mean square	F	Sign	Remark
Regression	4.9150	1	4915.04	.004	.950	NS
Residual	28.876	233	.124			
Total	28.877	234				

NS = Not Significant, $p > 0.05$

Table 4: Comparison of creativity and academic achievement of male and female students

Variable	Gender	N	Mean	Std. Dev.	Std Error	df	t	p	Rmks
Creativity	Male	113	99.018	12.561	1.182	233	0.503	0.616	NS
	Female	122	98.208	12.007	1.0096				
Academic Achievement	Male	113	2.68.0	0.358	3.365	233	-0.175	0.861	NS
	Female	122	2.688	0.348	3.174				

NS = Not Significant (P> 0.05)

References

- Adeola, K. (2006). Information Technology and Enhancement of Business Education. In: O. A. Oyediji & B. Ogunyemi (Eds). *Perspectives in Nigeria Education: Issues of the New Millenium*. Ago-Iwoye: Faculty of Education Olabisi Onabanjo of University.
- Aina, O. (1991). Technical and vocational training as a strategy for technical development. *The Nigeria Teacher Today*, 2(1), 40-45.
- Akinboye, J. O. (1985). *Simple Research Methods for Dissertations, Projects and Term papers*. Ibadan: Les Syradan Nigerian Ltd.
- Akinboye, J. O. (2003). Creativity and Innovation in Education. In: O. Ayodele-Bamisaiye, I. A. Nwazuoke, A. Okedirin, *Education Thus Millennium: Innovations in Theory and Practice*, Ibadan: Macmillan Nigeria Publishers Limited.
- Bartel, M. (2001). *Ways not to kill classroom creativity*. Available: www.Goshenedu/art/ed/creativitykiller.html Retrieved 2nd December, 2005.
- Cronin, L. L. (1989). Creativity in the Science Classroom: Why it is as essential as a microscope? *The Science Teacher*, 56 (2), 35-36.
- Deary, I. J. Strand, S. Smith, P. & Fernandes, C. (2007). Intelligence and educational achievement. *Intelligence*, 35(1), 13-21.
- Dingledine, R. (2003). *Creativity: Environment and Genetic factors*. Available: <http://web.mit.edu/arma/public.10.txt>. Retrieved 10th December, 2003.
- Erinosh, S. Y. (1997). Female participation in science: An analysis of secondary school science curriculum materials in Nigeria. *Abridged Research Report No 29* Nairobi Academic of science Publisher, Kenya.
- Gardiner, W. L. (1980). *The psychology of teaching*. Monterey: CA Books/Cole.

- Hassan, T. (2001). "Students' Performance and Certification" Paper in Proceedings of the 10th Annual Congress of the Nigerian Academy of Education held in the University of Jos, 12 – 16 Nov, 2001.
- Howard, R. M. (1995). "The gender plagiarist." Paper presented at Annual Penn. State Conference on Rhetoric and composition, U.S.A.
- Malbary, N. H. (1999). *Principles and Problems of Business Education* Ohio: Southwestern Publishing Company.
- Naderi, Abdullah, R. & Tengku–Aizab, H. (2008). Male versus Female intelligence among undergraduate students: Does gender Matter? *Asian Journal of Scientific Research*, In Press, on line first.
- Naderi, H. Abdullah, R., Tengku-Aizan, H., Sharir, J. & Kumar, V. (2009). Intelligence, creativity and gender as predictors of achievement among undergraduate students. *Journal of American Science*, 5 (3), 8-19.
- Nwazuoke, I. A.; Olatoye, R. A. & Oyundoyin, J. O. (2002). Environmental factors as predictors of creativity among Senior, Secondary School students in Oyo State. *Ife Journal of Behavioural Research*, 4(1), 85-93.
- Nwosu, A. A. (2004). Teachers' awareness of creativity-related behaviours in the science classroom: Implication for national development. *Journal of Science Teachers Association of Nigeria*, 39 (1& 2), 22 -30.
- Olatoye, R .A. & Afuwape, M.O. (2004). Emergent issues in enhancing teaching and learning of science in schools. In: O.A Afemikhe and J.G Adewale (Eds). *Issues in Educational measurement and Evaluation in Nigeria*, Published by Institute of Education, University of Ibadan, Nigeria.
- Olatoye, R. A. & Oyundoyin, J. O. (2007). Intelligent Quotient as a predictor of creativity among some Nigerian Secondary School students. *Educational Research and Review*, 2(4), 92-95.
- Olatoye, R.A (2008). Self-concept and science achievement in co-educational and single-sex Junior Secondary School in Ogun State Nigeria. *Review of Higher Education and Self-Learning*, 1 (1), 69-74.
- Orieux, J. & Yewchuk, C. (1990). Correlates of creative performance in High school students. *Canadian Journal of Special Education*, 6(1), 50-60.
- Oyundoyin, J. O. & Olatoye, R. A. (2007). Gender factor, as a correlate of students' performance on creativity and intelligence tests in Oyo State Secondary schools. *African Journal for the Psychological Study of Social Issues*, 10(2), 251-262.

- Palaniappan, A. K. (2009). *Influence of Intelligence on the Relationship between creativity and academic achievement*. Department of Educational Psychology and Counselling, University of Malaya, Kuala Lumpur, Wilayah Persekutuan, Malaysia.
- Penick, J. E. (1992). Teaching for Creativity In: Judith Reay and J. George (Eds). *Education in Science and Technology for Development: Perspectives for the 21st Century* Trinidad and Tobago; ASBIT. Pp. 79-88.
- Songer, N. B., Lee, H. Kam, R. (2002). Technology-Tick Inquiry Science in urban classrooms: what are the barriers to Inquiry pedagogy? *Journal of Research in Science Teaching*, 39(2), 128-150.
- Sotonade, O. A. T. (2004). Gender Issues as perceived by Nigeria parents. *Journal of Education Focus*, 5, 68-80.
- Tamir, P. (1990). Ethnic origins and science learning of Israel High school students *Studies in Educational Evaluation*, 16, 373-397.
- Tenago, D. W. & Moran, J. D. (1989). Sex Difference in the original thinking of preschool and elementary school children. *Creativity Research Journal*, 2 (1&2), 102 -110.
- Torrance, E. P. (1981). *Toward the more education of gifted children in creativity: Its education implications* 2nd Edition USA: Kenda/Hunt Publishing Coy.
- Ulinfun, F. (1986). Business Education: A utility Education in a developing economy. *Business Education Journal*, 1(1), 26 – 34.
- Xiaoxia, A. (1999). *Creativity and Academic Achievement: An Investigation of Gender Differences*. Mahwah. <http://www.healthline.com.gatecontent>.

APPENDIX I

STUDENT CGPA INFORMATION FORMAT

School/Polytechnic: _____

Department: _____

S/N	MATRIC NO.	SEX	GCPA

Signed: _____ Date: _____

HOD/Record Officer

APPENDIX II

THE CREATIVE COGNITION INVENTORY

INSTRUCTIONS:

To what extent would say that you experience or engage in the following activities?

(Please respond by marking 'x' in appropriate holes, from '1' indicating '**not much at all**' to '5', indicating '**very, very much**' in front of each of the under listed activities. Note that there is no right or wrong answer; only what you sincerely believe to be true of you. Also, your response is highly confidential; hence, no name is required).

1.	Making discoveries through trial and error	1	2	3	4	5
2.	Trusting hunches or instincts	1	2	3	4	5

3.	Ideas arising whilst dreaming	1	2	3	4	5
4.	Methodical and systematic problem solving	1	2	3	4	5
5.	Sudden moments of inspiration in waking life	1	2	3	4	5
6.	Rational, logical thought	1	2	3	4	5
7.	A sense of communicating with a deeper sense of self	1	2	3	4	5
8.	The careful selection of ideas	1	2	3	4	5
9.	Loose, playful, unconstrained thinking	1	2	3	4	5
10.	Following your intuition	1	2	3	4	5
11.	Ideas arising as falling asleep or waking up	1	2	3	4	5
12.	Meditation	1	2	3	4	5
13.	Paying attention to visual imagery	1	2	3	4	5
14.	Experiences of losing track of time when involved in creative work	1	2	3	4	5
15.	Playing with ideas	1	2	3	4	5
16.	Luck, chance, 'fortunate accidents'	1	2	3	4	5
17.	The use of analogy	1	2	3	4	5
18.	A sense of purpose that seems to come from beyond the self	1	2	3	4	5
19.	Recombining existing elements in new ways	1	2	3	4	5
20.	Working with a set goal or outcome in mind	1	2	3	4	5
21.	A sense of channeling information	1	2	3	4	5
22.	Paying attention to auditory impressions	1	2	3	4	5
23.	Day dreaming	1	2	3	4	5
24.	The release of negative emotions	1	2	3	4	5
25.	Non-verbal modes of thinking	1	2	3	4	5
26.	Positive emotions, e.g. joy, excitement, euphoria	1	2	3	4	5
27.	Paying attention to bodily feelings	1	2	3	4	5
28.	A sense of communicating with something other	1	2	3	4	5
29.	A sense of being in tune with nature or the universe	1	2	3	4	5