

PERCEPTION OF BUILDING TECHNOLOGY TEACHERS ON CRITERIA FOR SELECTING STUDENTS FOR CREATIVITY DEVELOPMENT IN NIGERIA TECHNICAL COLLEGES

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Creativity is an indispensable skill and a major tool for enhancing innovative and technological development. Therefore, integration of creative thinking skill into the technical college curriculum will equip the students (especially the building technology students) with innovative or employability skills, provided appropriate measures are applied to select the students for creativity development. This study therefore focused on the criteria to put into consideration before selecting students for creative thinking skill development in Nigeria technical colleges as perceived by building technology teachers. The criteria considered are limited to the students' personal factors and social environmental factors. The design of the study was quantitative research which made use of questionnaire for data collection. A total of 215 building technology teachers' comprising 166 male teachers and 49 female teachers from South-West Region of Nigeria were purposively used for the study. In the study, two research questions were answered while two hypotheses were tested at 0.05 level of significant. The results of the study showed that the personal factors to be considered among others include: students' perception about creativity; their thinking style; personal interest; personality traits and their level of technical skill. Also, the social environmental factors to be considered include: availability of material resources for creativity as well as availability of creative teachers among others. The null hypotheses tested using T-test Statistic showed no significant difference in the responses of male and female teachers on all the items. The findings were therefore recommended for implementation in Nigeria Technical colleges.

INTRODUCTION

The term 'Creativity' has been viewed in different ways by different authors. For example, Fautley and Savage (2007) saw creativity as outcomes which involve doing something worthwhile, in a new way and by people in different fields. Similarly, Harris *et al.*, (2011) viewed creativity as ability to imagine and produce something new. Thus, a creative individual is possessed with the Potential power to think abstractly and produce a new object. The imaginative power that leads to creativity according to Harris *et al* (2011), is called 'creative thinking'.

Furthermore, Harris *et al.* (2011) submitted that creativity has the characteristics of empowering individuals with willingness to play with ideas. It therefore means that creative persons are equipped with certain components that propel them to

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look for every possibility of producing and improving on new ideas. Hence, Sharp (2004) listed such components of creativity to include: imagination, productivity, originality, process of solving problems and production of a desirable and valuable outcome.

Creativity plays a major role towards enhancing a sustainable technical education programme. Therefore, Nwakwo, Onyali and Obikese (2011) emphasized the need to integrate creativity into the curriculum of technical colleges. The authors further noted that the integration will engrave creativity and innovation in the mind of the students who will apply them later in life, especially after graduation.

In an attempt to explain what curriculum actually entails, Loyd (2011) described curriculum as a planned event which takes place in educational institutions in order to achieve certain goals, and objectives. In addition, Williamson and Futurelab (2009) expressed that curriculum is meant to provide learners with knowledge and skills required to lead successful lives. Therefore, teachers have the responsibilities to collaborate across the discipline and help students attain the skills necessary for productivity (Fautley, 2007). Apart from agreeing to this statement, Grier (2005) further suggested the need for curriculum development process that will not only provide satisfaction to the students, but to the entire society at large.

Fortunately, A TVE curriculum which would consist of industrial, broad career opportunities and rich cluster of academic and technical courses had been recommended by Brand (2003). The basis for the recommendation was to enable courses to be offered in building technology for example, to include integration of models, designs and innovations. Thus, inclusion of knowledge in the fields of urban planning, construction engineering, interior design and environmental protection were suggested. This will serve as improvement over the traditional vocational education programmes which were limited to carpentry, masonry, plumbing and electricity.

In Nigeria technical colleges, The National Board for Technical Education (NBTE) (2012, 2014) categorized Block laying and concreting as a course under building and wood work trades. The objective of the programme as spelt out by NBTE (2007; 2012; 2013) is to produce the technical college graduates who should be able to among others read and interpret building drawings and demonstrate basic principles of construction site practices.

Notwithstanding, a study conducted by Usoro and Ogbuanya (2009) showed that creative thinking skill was lacking in Nigeria technical college's curriculum. Also, in another study conducted by Usoro and Essien (2012), it was found that building technology teachers in Nigeria technical colleges agreed that there was need to foster creative thinking skill in the colleges. The teachers further indicated that they wanted to be creative and at the same time cultivate the habit of creativity in students and help them to improve creatively.

Based on the needs arising from the problem stated above, Usoro and Ogbuaya (2009; 2012) saw the need to reconfigure the present technical college curriculum. The authors further suggested a curriculum that will help produce the graduates of technical college who are equipped with creative thinking skill as enshrined in the National Policy on Education.

Notwithstanding, sequel to the development of creative thinking skill in schools, the need to understand the creative potentials of the technical students becomes imperative. Hence, the first thing to be considered in selection of students for creative thinking skill is their background information (Hsiao, Liang and Lin, 2004). Some of the background information necessary for consideration before admitting the students according to Hsiao *et al.* (2004) include: the students' perception about creativity; their thinking style and their willingness to explore and think creatively. As regards the stage at which creative thinking skill training can be mostly effective, Kim (2011) suggested the early state of vocational training of students. The reason given by Kim (2011) is that children have the ability to produce Fluency up to the Third Grade. This stage is equivalent to the Junior Secondary School (JSS) level in Nigeria educational system. This continues up to between 4th and 6th Grade, which is equivalent to the Senior Secondary School (SSS) level or Levels 1 to 3 in Nigeria technical college. This shows that the students at the JSS Level in Nigeria situation, can become alert to generation of new ideas and also be easily motivated towards creativity development.

Apart from considering the background of the students, another major factor found to influence creative performance of students is the social environment. (Stephes, *et al.* 2001; Runco, 2004; Chamorro-Premuzic, 2006; & Wang, 2011). Under the school system, Amabile (1983; 2012) identified the classroom environments as the major factors which can influence creativity. The classroom environmental factors identified include the teachers' characteristics and behaviors, the influence of the peers, and the physical classroom environment itself. The peer can influence each other if they are well grouped in such a way that they can mutually work together. The teachers who possess the intrinsic motivation trait will be able to encourage students too by granting them autonomy and self-directed work. Also, a conducive classroom or workshop environment will help the students to exhibit their creativity (Bedell and Muford, 2007).

STATEMENT OF THE PROBLEM

Various factors which influenced the selection of students into creative thinking skill have been identified and categorized by different authors. Bowkett (2007) provided a checklist of the factors which can be summarized as external and internal factors. In addition, Rowe (2003) and Amabile (2012) identified the major factors which can influence creativity to include social or organizational context (environment in which one works); tradition; personality (inner drive); managers

or teachers attitude and intrinsic motivation. Amabile (2012) emphasized that a conducive environment will enable a child to explore his or her potentials to think very well. Environment in the school setting according to Rowe (2003) include the classrooms, learning materials, social facilities, and the method of teaching. Rowe (2003) further stated that a non-receptive environment will cause a great impediment to creativity. The reason is that the managers, administrators and teachers in the non- receptive environment are usually passive to change. They often stick to protocols and old methods of doing things without giving consideration for change.

In addition, teachers are charged with the responsibility of implementing the school curriculum, hence, they can suggest the types of students that can benefit maximally from the programme. This idea however, supports the implicit theory of creativity, which centres on individuals' perception about creativity. The teachers are adjudged important because they bring out their own views on the phenomena as noted by Runco, and Bahleda (2011). Also, perception of the teachers on gender bases is important because past studies have shown no significant difference in the perception of male and female students on issues bothering with creativity (Naderi, Abdullah, Tengku Aizan, Sharir, and Mallan, 2009).

Therefore this study will find out the perception of teachers on gender bases with regards to personal and environmental factors that should be considered before selecting students for creative thinking skill in Nigeria Technical Colleges.

PURPOSE OF THE STUDY

The aim of the study was to determine the perception of building technology teachers on the criteria necessary for consideration before selecting students for creative thinking skill in Nigeria technical colleges. Specifically, the study sought to determine:

1. Building technology teachers' perception on background information required to select students for creative thinking skill.
2. Building technology teachers' perception on social environmental factors required to select students for creative thinking skill.

RESEARCH QUESTIONS

The study sought to answer the following research question.

1. What is the perception of building technology teachers on background information necessary for consideration before selecting students for creative thinking skill?
2. What is the perception of building technology teachers on environmental factors required for selecting students for creative thinking skill?

METHODOLOGY

Research Design

The research design for this study was a quantitative method. It utilized questionnaire in collecting data from its participants.

Sample and Sampling Techniques

The study purposively sampled 215 participants who are mainly technical college teachers and specialize in building technology. The sample was made up 166 male teachers and 49 female teachers.

Instrument for Data Collection

The instrument for data collection was a structured questionnaire with five point-Likert scale. The questionnaire consisted of two sections and a total of 23 items. The first section which measured personal factors consisted of 14 items with options such as: Not Strongly required (NSR), Not Required (NR), Undecided (U) Required (R) and Strongly Required (SR). The second section which measured environmental factors consisted of 9 items ranging from Not very necessary (NVN) to Very necessary.(VN). The scoring for each item ranges from 1-5.

Validity and Reliability of Instrument

The instrument was validated by five experts in the field of technical education, educational Psychology and educational evaluation. The instrument was subjected to face, content and construct validity. It was later pilot-tested on 30 participants. Cronbach alpha was used to obtain its reliability. Section A had $r = 0.83$, while Section B had $r = 0.89$.

ANALYSIS OF RESULT

Research Question 1

What is the background information necessary for consideration before selecting students for creative thinking skill?

From table 1, it was found items that 1-8, 11 and 14 were required because their Mean scores range from 3.50 to 4.22. On the other hand, Items 9-13 are not required because their Mean scores range from 2.23 to 2.67.

Research Question 2

What are the Social/ environmental factors necessary for consideration before selecting students for creative thinking skill?

TABLE 1 : BUILDING TECHNOLOGY TEACHERS' PERCEPTION ON BACKGROUND INFORMATION NECESSARY FOR CONSIDERATION BEFORE SELECTING STUDENTS FOR CREATIVE THINKING SKILL

SN	Personal Factors	N = 215		
		Mean	SD	Decision
1	Perception about creativity	3.98	1.13	R
2	Thinking style	3.87	1.06	R
3	Personality traits of the students	3.67	1.23	R
4	Personal interest of the students	4.22	0.99	R
5	Willingness to discover new things	4.05	1.16	R
6	Ability to elaborate on ideas	3.93	1.06	R
7	present level of technical/ construction related skill	3.64	1.19	R
8	Creative thinking potentials	3.85	1.20	R
9	Gender difference	2.93	1.28	NR
10	Social economic background	3.01	1.36	NR
11	Academic achievement of the students	3.5	1.24	R
12	Ethnic groups of the students	2.94	1.39	NR
13	Cultural background of the students	2.76	1.32	NR
14	Career experience of the students	3.61	1.32	R

Note: NR =Not Required; R= Required

TABLE 2: T- TEST TABLE SHOWING LEVEL OF SIGNIFICANCE IN THE RESPONSES OF MALE AND FEMALE TEACHERS ON BACKGROUND INFORMATION TO BE CONSIDERED IN SELECTING STUDENTS FOR CREATIVE THINKING SKILL DEVELOPMENT

Item	Male Teachers (166)		Female Teachers (49)				Sig	
	X1 SD1	X2 SD2	T test	df	P Value			
1	3.96	1.19	4.02	0.95	-0.31	0.1	NS	
2	3.9	1.08	3.8	1.02	0.59	0.1	NS	
3	3.7	1.23	3.57	1.26	0.67	0.72	NS	
4	4.23	0.99	4.2	1.02	0.15	0.89	NS	
5	4.11	1.15	3.85	1.19	1.33	0.75	NS	
6	3.97	1.04	3.81	1.15	0.81	0.15	NS	
7	3.58	1.21	3.36	1.12	0.21	213	0.36	NS
8	3.86	1.17	3.83	1.31	0.10	0.51	NS	
9	3.87	1.37	3.16	1.43	-1.29	0.34	NS	
10	3.01	1.36	3.35	1.36	-1.52	0.92	NS	
11	3.54	1.24	3.35	1.23	1	0.66	NS	
12	2.93	1.39	2.96	1.4	0.11	0.99	NS	
13	2.7	1.35	2.92	1.24	-0.96	0.16	NS	
14	3.61	1.24	3.63	1.22	0.9	0.87	NS	

Note: X1= Mean for male teachers; X2 = Mean for female teachers; NS= Not significant ; S= Significant.

TABLE 3: SOCIAL ENVIRONMENTAL FACTORS NECESSARY FOR CREATIVE THINKING DEVELOPMENT AMONG BUILDING TECHNOLOGY STUDENTS IN NIGERIA TECHNICAL COLLEGES

Item	Statement	N=215		
		Mean	SD	Decision
15	Availability of human resources	4.21	1.07	N
16	Availability of material resources	4.25	1.11	N
17	Good administrative support	4.17	1.2	N
18	Peer interaction	3.85	1.06	N
19	Ade space	4.05	1.08	N
20	Freedom of show of creativity	4.08	1.08	N
21	Adequate time	4.16	0.94	N
22	Non restriction to create new ideas	3.93	1.14	N
23	Home support	4.3	0.86	N

N= Necessary

From 3, it was found that all the items listed were found necessary for consideration. Their Mean values range from 3.85-4.30.

TABLE 4: T-TEST TABLE SHOWING THE LEVEL OF SIGNIFICANCE IN THE RESPONSES OF MALE AND FEMALE TEACHERS ON SOCIAL ENVIRONMENTAL FACTORS NECESSARY FOR CREATIVE THINKING DEVELOPMENT AMONG BUILDING TECHNOLOGY STUDENTS IN NIGERIA TECHNICAL COLLEGES

Item	Male Teachers (166)		Female Teachers (49)		T test	df	P value	Sig
	X1 (M)	SD1	X2 (F)	SD2				
15	4.25	1.02	4.12	1.22	0.72		0.44	NS
16	4.28	1.07	4.14	1.22	0.78		0.45	NS
17	4.21	1.10	4.04	1.10	0.95		0.83	NS
18	3.87	1.03	3.76	1.16	0.68	213	0.11	NS
19	4.03	1.04	4.12	1.2	0.53		0.36	NS
20	4.10	1.04	4.00	1.22	0.62		0.60	NS
21	4.17	1.04	4.14	0.82	0.17		0.15	NS
22	3.99	1.11	3.76	1.27	1.25		0.07	NS
23	4.30	0.84	4.32	0.94	-0.22		0.31	NS

Note: X1= Mean for male teachers; X2 = Mean for female teachers; NS Not significant; S= Significant.

From Table 4, P values range from 0.07-0.83. Hence, the null hypothesis was upheld for all the item

DISCUSSION OF FINDINGS

The result of the study showed that personal factors which are necessary for consideration in selecting students for creative thinking skill in Nigeria Technical colleges include: students’ perception about creative thinking skill; thinking style; personality traits, students’ interest; willingness to discover new things and students’

career experience. The findings are in supports of earlier research carried out on creative thinking skill by Hsiao, Liang and Lin (2004).

Some of the background information which must be identified for proper consideration according to Hsiao et al (2004) include: the students' perception or knowledge about creativity; their thinking style and their willingness to explore, think creatively and discover new things. Also, Oke and Mustaal 2013 have also suggested in a study the need to consider the creative thinking skill potentials of students before admitting them into technical colleges.

However, the study negated the idea of scholars such as (Stephes, *et al.* 2001; Runco, 2004; Chamorro-Premuzic, 2006; & Wang, 2011) who advocated gender difference, social economic factors, ethnicity and cultural background as major consideration for creative thinking skill. Although, most researches carried out on gender difference in creativity have reported different results, but some studies, found no significant difference in creative performance of boys and girls (Chavez-Eakle, Lara, & Cruz-Fuentes, 2006; Szobiova, 2006), Kaufman, Baer and Gentile, 2009; Genifer, *et al.*, 2011).

As part of the social environmental factors to be considered, the study considered human and material resources, good administrative support, peer interaction, quality time and space as well as home support. Also, the human resources needed include: creative teachers and attendants. The study further supported the findings of Usoro and Essien (2012) that building technology teachers themselves must be assisted to be creative before they can help students to be creative.

Lastly, the hypotheses showed no significant difference in the responses of male and female teachers on the personal and environmental factors necessary for selecting students for creative thinking skill. Hence, it supported the studies of scholars such as Naderi *et al.* (2009); Kaufman, Baer and Gentile (2009); Genifer, *et al.*, 2011) who found no significant relationship on the issues that bother with gender difference and creativity.

CONCLUSION/RECOMMENDATION

This study has revealed the criteria to be considered before selecting students for creative thinking skill in Nigeria technical colleges. The findings of the study are recommended for the government of Nigeria as bases for selecting students for creative thinking skill development in Nigeria technical colleges. Since the study was based on the perception of teachers, it is also recommended that a further study should be carried out to elicit students' perception on the same issue.

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References

- Amabile, T. M. (1983). *The Social Psychology of Creativity*. New York: Springer-Verlage.
- Amabile, T.M. (2012). *Componential Theory of Creativity: Working Paper*: Harvard Business School.
- Bowkett, S. (2007). *100 Ideas For teaching Creativity*. London and Newyork: Continuum Publishing Group.
- Brand, B (2003). Rigor and relevance: A New Vision for Career and Technical Education, A *White Paper*. Washington, DC: American Youth Policy Forum.
- Chavez-Eakle, R.A. (2009). *Creativity personality*. Washington International Centre for Creativity and Personality: Johns Hopkins University.
- Erten, I.S. and Topkaya, E. Z (2012). Understanding Tolerance of Ambiguity of EFL learning in reading classes at tertiary level. *Alovitas Royal* 3(1)29-44.
- Fautley, M. and Savage, J. (2007). *Creativity in Secondary Education Southern Hay East: Learning Matters Ltd*.
- Graier, A. (2005). Integrating Needs Assessment Into Career and Technical Curriculum Development: *Journal of Industrial Teacher Education*. 42 (1).
- Harris, A., & Staley, J. (2011). Schools Without Walls: Creative Endeavor and Disengaged Young People. *Journal of Artistic and CreativityEducation*. 51(1): 60-67.
- Hsiao, H-C. ,Liang Y-H. and Lin, T-Y. (2004). A Creative Teaching Model in Acomputer Network Course for Vocational High School Students. *World Transactions on Engineering and Technolgy Education* 3(20).
- Kaufman, J.C., Plucker, J.A. and Baer, J.(2008). *Essentials of Creativity Assessment*. Hoboken, New Jessy and Canada: Jon Wiley and Sons, Inc.
- Kim, K.H (2011). The Creativity Crisis: The Decrease in Creative Thinking Scores on the Torrance Test for Creative Thinking. *Creativity Research Journal*: Taylor & Francis Group, LT C 23(4) 258-297.
- Lee, K .H. (2005). The Relationship Between Creative Thinking and Ability and creative Personality of Preschoolers. *International Education Journal*. 6 (2) 194-199.
- Naderi, H ; Abdullah, R; Tengku Aizan, H; Sharir, J and V.K. Mallan, V.K. (2009). Gender Differences in Creative Perceptions of Undergraduate Students. *Journal of Applied Sciences*, 9: 167-172.
- NBTE (2007). National Booard for Trchnical Education / National Technical Certificate Curriculum. Kaduna: Bida Road.
- NBTE (2011). Eeports of the national steering committee on national qualifications framework (NVQF) for Nigeria. Kaduna : Bidah road
- NBTE (2013). *Bulletin of Publication of the Office of the Executive Secretary*. Kaduna: Bidah Road.
- NBTE (2014). About National Board for Technical Education. NBTE Bulletin. Kaduna: Bidah Plot B Bidah Road.
- Nwankwo, O. K.; Onyali L. C. Obikeze, N. (2011). Creativty Insights For Entrepreneurship of Youths In Eastern Nigeria: Implications In In Organization of Media Learning. *Journal of Emerging Trends in Educational Research and Policy Studies (JETERAPS)* 2(5):333-325.

- Oke, J.O. and Musta'amal A.H.(2013). Intrinsic Motivation and Thinking Styles as Additional Measures for Admitting Students Into Qualitative Technical Education Degree Programme. *2nd International Seminar on Quality and Affordable Education for all. Faculty of education, Universiti Teknologi Malaysia*
- Rowe, J.A.(2003) *Creative Intelligence: Discovering The Innovative Potential in Ourselves and Others* .New York. An In-print of Pearson Education.
- Runco, M. A. (2004). Creativity. *Annual Review of Psychology*, 55, 657-687.
- Runco, M. A. and Bahleda, M.D. (2011). Implicit Theory of Artistic, Scientific and Everyday Creativity. *The Journal of Creative Behaviour* 20(2) 93-98.
- Sharp, C, (2004). Developing Young Children's Creativity: What Can We Learn From Research? Readership: Primary, Autum. Issues 32.
- Stephens, K. R., Karnes, F.sA., Whorton, J. (2001). Gender Difference In Creativity Among American Indian Third and Fourth Grade Students. *Journal of American Indian Education: 40(1)1-17.*
- Usoro, A.D. and. Essien, E. E. (2012). Mechanism For Contending Over Schooling Among Students of Building/Wood Technology At Technical Colleges In Nigeria: *American-Eurasian Journal of Scientific Research* 7 (1): 41-46.
- Usoro, A.D and Ogbuanya, J.C. (2009). Creativity Technique, A Missing Link For Self Reliance: Implication for Curriculum Development in Vocational Technical Education. *International Journal of Agricultural Education and Related Discipline (URADED)*,3(2): 59- 69.
- Usoro, A.D and Ogbuanya, T.C.(2012). Measures for Improving The Acquisition of Entrepreneurial Skills In Technology Education By The Polytechnic Students In The South-South States In Nigeria. *Journal of Educational and Social Research* 2 (7): 80-100.
- Wang, A.Y (2011). Context of creative Thinking: a Comparison on Creative Performance of Student Teachers in Taiwan and the United States. *A Journal of International and Cross-cultural Studies*.
- Williamson, B. and Futurelab, P. (2009). Curriculum and Teaching Innovation Transferring Classroom Practice and Personalities. *A Futurelab Hand book*.