West African Journal of Open & Flexible Learning
Volume 6, Number 2, January 2018

Effectiveness of Ideation Creative Thinking Technique (ICTT) Training on Creative Problem-Solving Skills (CPSS) of Teaching Personnel in Ogun State, Nigeria

Efficacite De La Formation Technique De Pensee Creative D'idee (ICTT) Sur Les Competences Creatrices En Resolution De Probleme (CPSS) Du Personnel Enseignant Dans L'etat D'ogun, Nigeria

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Abstract

This study examined the effectiveness of Ideation Creative Thinking Technique (ICTT) Training on Creative Problem-Solving Skills (CPSS) of Teaching Personnel in Ogun State, Nigeria. The researcher adopted the pre-test, post-test, control, experimental design for the study which consisted of 80 participants made up of 40 male and 40 female public teachers randomly selected among public secondary schools teaching personnel from the two local government area headquarters (Sagamu and Ijebu-Igbo) within Ogun East Senatorial District. Treatment group received 45minutes instructions and training per week for 8weeks;

control group were also engaged for same period. Data was collected from participants with the use of instrument tagged 'Problem Solving Inventory' (PSI) developed by the researchers prior to the training to form a pre-test and immediately after eight weeks of training to form a post-test. One hypothesis was tested; the data obtained was analyzed using t-test statistical tool, tested at significance level of 0.05. The result of the data analysis shows that there was a significant effect of the training package on the participants (SD= 2.17; Std error = .13; p < 0.05). Based on the findings, it is therefore recommended that the report of this study should be used to enhance the creativity and development of teaching personnel in Ogun State, Nigeria through teachers' retraining and capacity building based on ideation creative thinking technique.

Résumé

Cette étude a examiné l'efficacité de la formation technique de pensée créative (ICTT) sur les compétences créatives en résolution de problèmes (CPSS) du personnel enseignant dans l'État d'Ogun, au Nigéria. Le chercheur a adopté la conception expérimentale pré-test, post-test, de contrôle et expérimentale pour l'étude, composée de 80 participants dont 40 enseignants et 40 enseignantes choisis au hasard parmi le personnel enseignant des écoles secondaires publiques des deux administrations du gouvernement (Sagamu et Ijebu-Igbo) dans le district sénatorial d'Ogun-Est. Le groupe de traitement a reçu 45 minutes d'instructions et de formation par semaine pendant 8 semaines. Les groupes de contrôle ont également été engagés pour la même période. Les données ont été recueillies auprès des participants à l'aide d'un instrument étiqueté « Inventaire de résolution de problèmes » (PSI) mis au point par les chercheurs avant la formation pour former un pré-test et immédiatement après huit semaines de formation pour former un post-test. Une hypothèse a été testée; les données obtenues ont été analysées à l'aide d'un outil statistique de test T, testé à un niveau significatif de 0,05. Le résultat de l'analyse des données montre qu'il y a eu un effet significatif du programme de formation sur les participants (SDMD 2,17; Erreur d'étudiants '.13; p 0,05). Sur la base des résultats, il est donc recommandé que le rapport de cette étude soit utilisé pour améliorer la créativité et le développement du personnel enseignant dans l'État d'Ogun, au

Nigéria, grâce à la reconversion des enseignants et au renforcement des capacités fondées sur la création d'idées, la technique de pensée

Keywords: *Ideation, Creativity, Creative thinking strategy, Problem-solving skills, Teaching Personnel.*

Mots-clés : *La Formation, Creative, Creatrices, Resolution De Probleme, Personnel Enseignant*

Introduction

Most critical problems are not in the world of things, but in the world of people. Problem is synonymous with human existence; humans and problem are inseparable because man perceived it as an enduring legacy (Adenuga, 2011). Human problem predates antiquity and emanated as far back as the Garden of Eden when Adam and Eve ate the forbidden fruit (Gen. 2v6). Since then, human life had never been problem-free but characterised by marital, gender, religious, political, and socio-economic problems. Little wonder, human beings have been constrained to battle or contend with one problem or the other. Also, Cottrell (2011) defines problem as any task or assignment or project that needs to be completed, and usually involves several different steps or stages. In addition, Farah (2011) describes problem as the gap between a given current state of affairs and a future desired state. Human beings have designed and employed different strategies to surmount problems or remove the causes of the problems; this design is known as problem solving.

Farah (2011) refers to problem-solving as the process of analyzing the situation and developing a solution to bridge the gap. Skillings (2017) states that problem solving skills relate to ability to identify issues, obstacles, and opportunities and then develop and implement effective solutions. Fundamental part of every teacher's role is finding a way (skill) of solving problem. Creative problem-solving skills involve the mental process of creating a solution to a problem. It is a special form of problem-solving in that the solution is independently created or

learnt with assistance. The creative problem-solving process differs from routine problem-solving in that with routine problem-solving; pre-established method for solving the problem is used but this does not operate in creative problem-solving (Adenuga, 2011). The works of Isaken and Treffinger (1985) and Adenuga (2011) carefully laid out the steps in Creative Problem-Solving (CPS) as consisting of the following five steps: Problem finding – sensitivity to challenges; Fact finding – descriptive categories; Idea finding – asking idea – prompting questions; Solution finding – evaluation, and Acceptance finding – implementation. In this paradigm, steps one and three (problem finding and idea finding) clearly require novel, creative thinking, while other steps require traditional skills and analytic thinking.

To qualify as creative problem solver the solution must have value, either clearly solved the stated problem or appreciated by someone for whom the situation improves. However, this creative problem-solving skill was discovered to be very low among Nigerian public teachers. There is evidence that the creative problem-solving skills of teachers are very low (Adenuga, 2011). Public secondary school teachers are career men and women saddled with responsibilities of effective teaching and supervising instructions in schools to bring about good performance in their students. In the course of the teachers' job, they are besieged daily with barrage of problems. These problems include poor career prospect, poor public image, unsatisfactory working conditions, examination malpractices, cultism and other forms of delinquency, as well as poor performance of students in internal and national examinations.

The poor performance of students in national examinations is manifestation of low problem-solving skill among teachers; for instance, a breakdown of the figure released by West African Senior Secondary Examination (WAEC) for May\June for a period of seven (7) years of candidates who obtained credits in five subjects and above, including English Language and Mathematics between 2010 and 2016, shows that in 2010 only 29.17% obtained credits in five subjects and above, including English Language and Mathematics; also, in 2012, only 30.91% obtained credits in five subjects and above; in addition, in 2013, 20.73% obtained credits in five subjects and above, including

English Language and Mathematics; also, in 2014, 31.28% obtained credits in five subjects and above, including English Language and Mathematics; furthermore, in 2015, 38.63% obtained credits in five subjects and above, including English Language and Mathematics; and finally, in 2016, 52.97% obtained credits in five subjects and above, including English Language and Mathematics (West African Examination Council Examiners' Report (2010-2016). This portends very great danger for the attainment of the Millennium Development Goals and the vision 20-2020. It therefore implies that the country's education sector is in very grave danger. The way out is to teach public secondary school teachers creativity that is, the need for creative thinking to open up new possibilities; this would improve on their present ideas and generate new ones. This is in line with Obama (2009) who asserts that for a nation to move forward, "old habits must be broken". The Yorubas (one of the major ethnic groups in Nigeria) support these assertions in their adage that says "Aja iwoyi la fi nle ehoro iwoyi" interprets in English language to mean, "It is the modern dogs that hunters will use to chase modern hare".

Ideation technique has been widely used for training divergent thinking and has potency for improving problem-solving skills in an individual. The purpose of ideation is to generate as many ideas as possible concerning an issue in a condensed time-frame (short period of time). This stems from the fact that, in the process of idea generation, creativity is awakened in an individual (Zhou, and George, 2003). Sawyer (2007) found that true creativity and innovation only come through open sharing of information between groups of individuals.

Drew (2008) reported that he has used Strategic Ideation creative thinking technique successfully on various types of projects with many different kinds of organizations, as well as on his personal projects. He used this system to launch several successful businesses and has won more than 100 awards with projects using Ideation creative thinking technique; he reported further that he designed and built a highly successful 62-acre theme park with this system, and shared this system with Mayors and Governors in United States of America to boost economic development. According to Drew (2008), *ideation creative thinking technique* is a process for generating breakthrough ideas on

demand. It is ideal for creative problem solving, new product development, advertising and marketing concepts, cost efficiencies systems, new solutions to old problems, and any activity where a fresh approach is required. The process is an amazingly bold, yet astonishingly simple series of techniques that can quickly be mastered by anyone.

There are four basic rules in ideation (Osborn, 2001). These are intended to reduce the social inhibitions that occur in groups and therefore stimulate the generation of new ideas. The expected result is a dynamic synergy that will dramatically increase the creativity of the group. These rules are:-

1. **Focusing on quantity:** This rule is a means of enhancing divergent production, aiming to facilitate problem solving through the maxim, 'quantity breeds quality'. The assumption is that the greater the number of ideas generated, the greater the chance of producing a radical and effective solution.
2. **Avoiding criticism:** It is often emphasized that in group ideation, criticism should be put 'on hold'. Instead of immediately stating what might be wrong with an idea, the participants focus on extending or adding to it, reserving criticism for a later 'critical stage' of the process. By suspending judgment, one creates a supportive atmosphere where participants feel free to generate unusual ideas.
3. **Welcoming unusual ideas:** To get a good and long list of ideas, unusual ideas are welcomed. They may open new ways of thinking and provide better solutions than regular ideas. They can be generated by looking from another perspective or setting aside assumptions.
4. **Combining and improving:** Good ideas can be combined to form a single very good idea, as suggested by the slogan "1+1=3". This approach is assumed to lead to better and more complete ideas than merely generating new ideas alone. It is believed to stimulate the building of ideas by a process of association.

It is true that some studies have been devoted to enhance problem-solving skills of teachers. However, the persistent poor performance of

students in both internal and national examinations still persists; and has often been linked with teachers' poor performance (Oba-Adenuga, 2016). Ideation creative thinking technique has been used variously in other parts of the world to enhance problem-solving skills in many fields. However, no study in Nigeria has used the strategy before despite its well-known effectiveness. Therefore, this study is interested the effectiveness of Ideation Creative Thinking Technique (ICTT) Training on Creative Problem-Solving Skills (CPSS) of Teaching Personnel in Ogun State, Nigeria

Hypothesis

One hypothesis was generated for the study and tested for significance at 0.05 level

Ho1: There is no significant difference in the effects of ideation creative thinking strategy and control group on participants' creative problem-solving skills.

Research design

The researcher adopted the pretest, posttest, control, experimental design.

Target Population

The population for the study comprised the entire public secondary school teachers in Ogun East Senatorial District of Ogun State, Nigeria.

Sample and Sampling Technique

The study adopted the stratified random sampling technique to select a total number of eighty (80) participants from Ogun East Senatorial District, Ogun State. The District was stratified as follows: out of the nine Local Government Area headquarters located in the District, the District was then divided in to two (2) strata – Sagamu and Ijebu-Igbo Local Government Area headquarters as research based areas. In each of these two strata, the researcher listed public secondary schools that have up to the number of participants for the study. Out of these listed schools in each of the two Local Government Areas Headquarters, the researcher randomly selected one school each from the list. In all, Remo Secondary School, Sagamu and Japara High School, Ijebu-Igbo

were the selected public schools for the study. The two schools were randomly assigned to one experimental group and a control group. In each of the two randomly selected schools, the researcher through stratified random sampling technique selected 40 participants. This brought the total number of participants to 80.

Instrumentation

Researchers' self-designed instrument titled "Problem-Solving Inventory (PSI)" was used for this study. The PSI was a 35-item instrument measuring how individuals believe they react to problems encountered in their daily lives. The inventory contains two sections, A and B. Section A contains bio-data of the participants, while section B contains thirty-five (35) items on problem solving skills. Participants are to tick (√) the correct item on a 4 modified - likert structure ranging from 1 (Not all time) to 4 (Exactly true), the total score that can be obtained is 4×35= 140; and the lowest is 1×35= 35. High scores are associated with a positive view of creative problem-solving skills. Reliability estimates revealed that the Alpha = 0.72 to 0.90 and stable over a two-week period (0.83 to 0.89). In addition, the study made use of test re-test reliability approach to ascertain the reliability of the instrument. The co-efficient of 0.79 was obtained. The instrument was therefore considered reliable for the study.

Method of Data Collection

The study was carried out in three phases at each of the two locations in Sagamu and Ijebu-Igbo.

Phase One was selection process and pretest. The programme commenced with an initial introduction, rapport building, orientation as well as motivation to participate in the training programme. Mondays and Fridays immediately after the school's hours were the days respectively agreed among ideation group and control group for their training exercises. Instrument on creative problem-solving skills was thereafter administered on the participants to collect pre-test scores. This was followed by phase two.

Phase Two was the administration of Treatment: Ideation creative thinking strategy was administered on the participants in the experiment group while the control group was engaged with the history

of Nigeria politics since independence. All these took place for a period of 8weeks.

Phase three entails the evaluation of the treatment programme (posttest): After the completion of the programme at the eight week in different groups, instrument on creative problem-solving skills was again administered on the participants in order to determine the effectiveness of the training packages. The outline of the ideation creative thinking strategy training package of the experimental group was out as follows:

Experimental Group: Ideation training package group

Session 1: Selection process and general instructions for the participants.
Session 2: Administration of pre-test instrument.
Session 3: Introduction of basic terms and concept on ideation.
Session 4: Review of principles/rules guiding the use of ideation training package.
Session 5: Demonstration of ideation technique.
Session 6: Actual application of ideation technique in generating ideas I.
Session 7: Actual application of ideation technique in generating ideas II.
Session 8: Revision and conduction of post-test

Control Group: Curbing examination malpractices (Placebo)

Session 1: Selection process and general instructions for the participants.
Session 2: Administration of pre-test instrument.
Session 3: General introduction on examination malpractices.
Session 4: Causes of examination malpractices.
Session 5: Forms of examination malpractices.
Session 6: Effect of examination malpractices and methods of invigilation during class test and examination.
Session 7: Curbing of examination malpractices.
Session 8: Conducting of post-test.

Method of Data Analysis

The data collected for the study were analyzed using t-test statistical tool, tested at 0.05 level of significance. The computation was done using SPSS 15.0 statistical package.

Results

H_0: There is no significant difference in the effectiveness of Ideation Creative Thinking Technique (ICTT) Training on Creative Problem-Solving Skills (CPSS).

Table 1: Descriptive Statistics of post and pretest of the participants` Creative Problem-Solving Skills

	Mean	N	Std. Deviation	Std. Error Mean
Post	10.57	80	2.63	.16
Pre	9.11	80	2.14	.13

The table 1 revealed that posttest had a mean of 10.57, standard deviation of 2.63 and standard error mean of .16 while the pretest had a mean of 9.11, standard deviation of 2.14 and standard error mean of .13 To determine if these mean scores are significantly different, results are as presented in Table 2.

Table 2: Test of the Effects of Treatment on participants' Creative Problem-Solving Skills

	Paired Differences					T	df	Sig. (2-tailed)
	Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference				
				Lower	Upper			
Post-Pre	1.58	2.17	.13	1.32	1.82	12.48	295	.000

The results in Table 2 above show that there is significant difference in the effectiveness of Ideation Creative Thinking Technique (ICTT) Training on Creative Problem-Solving Skills (CPSS) since the

significant value .000 is less than 0.05. In effect, the null hypothesis was therefore rejected. Therefore, the study upheld the alternate hypothesis which states that there is significant difference in the effectiveness of Ideation Creative Thinking Technique (ICTT) Training on Creative Problem-Solving Skills (CPSS) of Teaching Personnel.

Discussion of Findings

The hypothesis stated that there is no significant difference in the effectiveness of Ideation Creative Thinking Technique (ICTT) Training on Creative Problem-Solving Skills (CPSS) of Teaching Personnel. This hypothesis was rejected. The results indicated that there is significant difference in the effectiveness of Ideation Creative Thinking Technique (ICTT) Training on Creative Problem-Solving Skills (CPSS) since the significant value .000 is less than 0.05. This means that the training package was effective on the participants. This finding is consistent with earlier studies which found that trained participants were superior in creativity than untrained participants (Akindele-Oscar, 2006; Azees, 2012; Iro-idoro, 2014; Owolabi, 2015). This effectiveness may be due to the fact that creativity is a teachable and learnable skill as found out by Basadur, Runco, and Vega (2000); and Akinboye (2003). Truly, the findings corroborated early findings on ideation creative thinking technique; Zhou and George (2003) assert that through the process of generation of ideas, a creative inspiration emerges. Sawyer (2007) found that true creativity and innovation only come through open sharing of information between groups of individuals.

Conclusion and Recommendations

The study found that creativity is a teachable and learnable skills and that ideation creative thinking strategy is an effective tool for fostering problem-solving skills among teachers. Based on the result of this study, the study recommended that the report of this study should be used to enhance teachers' creativity and development of teaching personnel in Nigeria through teachers' retraining and capacity building based on ideation creative thinking technique. In addition, teachers should as a matter of urgency be provided professional development and in-service training based on creative thinking technique as a

necessity to increase their performance in the classroom and subsequently help their students to succeed academically, including improved performance in national examinations.

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