



CORRELATION BETWEEN STUDENTS' ACADEMIC PERFORMANCE AND ENTREPRENEURIAL ABILITY WHEN TAUGHT SAPONIFICATION REACTION USING KITCHEN RESOURCES

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ABSTRACT

This paper examined the correlation between chemistry student's academic performance and entrepreneurial ability when told saponification reaction using kitchen resources. Saponification reaction was taught using kitchen resources such as, ashes from unripe plantain, ashes from cocoa pods peels, ashes from oil palm husks, vegetable oil, coconut oil and kernel oil.

The sample comprised of 50 students from Community Secondary School, Akparabong in Ikom Local Government Area of Cross River State, Nigeria. Two instruments were used for data collection: Chemistry Achievement Test (CAT) and Entrepreneurial Ability Questionnaire Test (EAQT). The Cat was made up of 25 objectives item questions which had 3 distractors and one correct option. The EAQT had 10 items with a 4 point Likert Level. Cronbach was used to determine the reliability of the EAQT and Kuder Richardson formula 20 was used to establish reliability of Cat. EAQT had a reliability of 0.87, while Cat had a reliability of 0.79. The researcher used quasi experimental and survey design for the study. Pearson Product Correlation Coefficient was used for data analysis. The result of analysis gave a positive correlation of $r = 0.81$. The null hypothesis starting that there is no significant relationship between academic performance and entrepreneurial ability was rejected. Based on this finding, the researchers advocated the use of materials (kitchen resources) that students are familiar with.

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1. INTRODUCTION

A county or society needs three things to advance: The first is security to defend itself against both internal and external threats to its citizens and to the entire society, so that the people are free to pursue their goals. The second is the economy must produce goods for consumption, provide services, and improve the overall quality of life for its citizens. Thirdly, education is to prepare its

citizens so that they can benefit from what is already known and even add to the worlds' body of knowledge [1]. Science and engineering contribute in major ways to all the above three things. There is no doubt that science and technology is vital in making Nigeria prosperous. In the past, people wished to be educated so that they could acquire a position in the government. But this has changed as the numbers of graduates released by colleges and universities cannot be accommodated in top government offices and moreover people have become more conscious of science and technology, and how its power, when used well, can strengthen a country and realize the dreams of a people [2].

On April 29, 2013, President Barack Obama reiterated his strong support for science and technology in his speech to members of the National Academy of Sciences at its 150th Annual Meeting. Science, technology, engineering and medicine were critical to the nations' prosperity. Obama said, that investments made today are bound to pay off for many years to come. He further said that America got to seize every opportunity they have to stay ahead, and that they cannot allow other countries win the race for ideas and technology of the future [3]. Africa in general and Nigeria in particular is labeled a developing nation. This is so because it lacks behind in Science and Technology. Africa is bothered about this issue and therefore held a meeting in 2013 which brought over twenty African ministers. That meeting was a unique opportunity to define the key role that science, technology and innovation can play in achieving the development goals of the African continent [4]. In every nation, students who study science are the ones to help the country grow technologically. For students to be able to apply science taught in schools, the teaching and learning of science should be that, which realizes how science is taught. In planning instruction, the teacher must typically consider the special characteristics of the materials to be learned and conditions under which the teaching and learning are to take place.

According to constructivist theory, people have to construct their own meaning regardless of how clearly teachers or books tell them things. [5]. Mostly, this is done by connecting new information and concept to what he/she already believes. Concepts are learned best when they are encountered in a variety of contexts and expressed in a variety of ways, for that ensures that there are more opportunities for them imbedded in a student's knowledge system.

Young people can learn most readily about things that are tangible and directly accessible to their senses – visual, auditory, tactile, and kinesthetic [6]. If students are expected to apply ideas in novel situations, then they must practice applying them in novel situations.

In Nigeria and Cross River State in particular, the respond to the clarion call for science and technical education is particularly evident in students' poor performance in science subjects at secondary school level. The percentage of candidates who passed at credit level and above consistently had been low from 2009 to 2013 (24.0%, 21.20%, 19.8%, 18.17%, 25.71% and 17.40% respectively). Researchers have given reasons for these poor performances. There is a problem of dearth in science resources and this contributes to students' poor academic performance [7-9]. Although, efforts appear to be made in building science laboratories and supplying science equipment, these have not matched demands of schools in any satisfactory manner [10].

This problem of dearth in science resources is enormous and urgent steps must be taken in the right direction. This paper therefore attempted to look inward at the kitchen and how resources in

the kitchen can be used to teach chemistry. Kitchen chemistry started in the United Kingdom by Johnson [11]. It was born out of a desire to create innovative science resources that are easier for teachers to use and fun for children. It can give support to the able student and support to the weakest students. Unemployment rate in Nigeria is high. This is so as every graduate from colleges and universities seek for jobs either in the private or public sectors. Graduates do not start their businesses neither do they invents anything. This Paper sought to find out how students' academic achievement relates to their entrepreneurial ability when taught using kitchen resources. It was the candid desire of the researcher to give an insight on how entrepreneurial ability is fostered in secondary schools.

2. METHODS/MATERIALS

The researcher used a quasi -experimental and survey design for the study. The study used 50 students from Community Secondary School, Akparabong in Ikom Local Government Area of Cross River State. Students were taught saponification reaction using kitchen resources. These resources included: ashes from burned unripe plantain peels, ashes from burned husk of palm oil fruits bunch, the ashes of cocoa pod peels. These served as base and palm oil, vegetable oil, coconut oil, kernel oil as acid. A pot, stove, lighter, stirrer, dye and others essential materials in the kitchen were used in the experiments. Two instruments were used for the study. Chemistry Achievement Test (CAT) and Entrepreneurial Ability Questionnaire Test (EAQT). CAT had 25 objective questions. Each question had one correction answer and (3) three distractors. EAQT had 10 questions with four levels Likert scale. CAT was administered after teaching with EAQT. The result was used for data analysis.

3. RESULTS

Pearson Product Moment Coefficient was used for data analysis. One null hypothesis: There is no significant relationship between students' academic achievement and entrepreneurial ability when taught using kitchen resources was used for data analysis.

Pearson product moment correlation coefficient (r) analysis of the relationship between academic achievement and students' entrepreneurial ability when taught using kitchen resources.

Variable	$\sum x$	$\sum x^2$	$\sum xy$	r	$P-Cal^2$
	$\sum y$	$\sum y^2$			
Academic achievement	1876	11040.48	5227.44		
Entrepreneurial ability	1253	3772.82		0.81	0.66

$P < .05$, $df = 49$, Critical = 0.29.

The Table above showed that the calculated r-value of 0.81 was greater than the critical r-value of 0.29, given 49 degrees of freedom at .05 alpha levels. This indicated that there was a significant relationship between academic achievement and entrepreneurial ability of chemistry students. By this result, the null hypothesis of no significant relationship was rejected.

4. DISCUSSION

From the analysis of data obtained, it was revealed that student's entrepreneurial ability was dependent on their academic performance ($r = 0.81$). This implied therefore that students who do well in a chemistry class will have high entrepreneurial ability. Low academic performance of chemistry students can therefore be said to be a contributing factor why Nigeria science graduated remain unemployed waiting for white collar jobs that are scarce. Taking students individual result, it was obvious that a student who scored high in chemistry achievement test also scored high in entrepreneurial skill questionnaire.

The positive correlation between chemistry achievement test and entrepreneurial ability is in line with the fact that before the hand can work very well the ideas must come from the brain. Inventions are product of the brain. It is rightly said that a novel material is a brain child of an individual. Entrepreneurial ability can only be achieved when the brain is informed and therefore the thinking process is illuminated to bring out products that will move our country forward.

Teaching with kitchen materials/resources got students active in the teaching and learning of saponification reaction. Students sourced for the materials and came to class with many questions as what the materials will be used for.

This work collaborated the paper by Capener [12] teaching for entrepreneurial ability involve the use of activities that engages students leading to students immersion in the materials and making of progress.

5. CONCLUSION

If we have to take a clue from chemical reaction, atoms that give out electrons get oxidized while those that receive get reduced. Reduction in terms of Nigeria economic occurs when entrepreneurial level is low and therefore Nigeria depends on other countries even for toothpick.

Chemistry is an activity base subject and should be taught same: When the laboratories are ill-equipped let us use materials in the kitchen to teach chemistry. The excitement that students exhibited when they made their own soap was something to remember.

Nigeria dream of becoming a big entrepreneurial country can only be numbered when our students have high academic achievement in science (chemistry). Chemistry is all around us and should not remain in the laboratory only. Kitchen resources gave rise to high academic achievement which in turn brought high entrepreneurial skills and there their use should be used.

REFERENCES

- [1] R. N. Zare, "The important of science and technology for China," 2002.
- [2] Premium Test And Agency, "Unemployment in Nigeria worsen under Jonathan government. Report," 2013.
- [3] The National Academies, "President Obama stresses importance of science and technology to the nations' future," 2013.
- [4] WIPO, "African ministers emphasize importance of science, technology and innovation for development." Availabe www.wipo.int/pressroom/en/articles, 2013.

- [5] Science for all Americans, "American association for the advancement of science." Available www.project2006.org/publication/staa/online. 1990.
- [6] D. Egder, *Audio-visual method in teaching*, 3rd ed., 1969.
- [7] M. F. Opera, "Utilization of laboratory facilities and students' academic performance," Unpublished M.Ed. Thesis, Anambra State University, Uli, Anambra State, 2008.
- [8] A. I. Ihuarulum, "Chemistry teachers' perception of availability and utilization of resources for curriculum development in Kano State," Unpublished M. Ed. Thesis, University of Kano, 2006.
- [9] O. Ogwu, "Improvisation of instructional materials for the teaching of agricultural science in secondary schools," *Journal of Cudimac. Faculty of Education, University of Nigeria, Nsukka*, vol. 1, pp. 1 – 2, 2005.
- [10] T. I. Oriade, "An empirical study of the utilization of instructional materials and laboratory resources in biology," *Curriculum Implementation*, vol. 8, pp. 196-203, 2008.
- [11] P. Johnson, *Kitchen Chemistry@tiscali.co.uk*, 2005.
- [12] D. Capener, "Teaching to the test," 2012.