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INVESTIGATION ON THE APPLICATION OF RESEARCH FINDNGS IN CHEMISTRY CLASSROOM

by

Dr. Igboegwu Ekene N.
Department of Chemistry
Nwafor Orizu College of Education, Nsugbe
Anambra State-Nigeria

&

Dr. Lawrence Achimugu
Department of Science Education
Kogi State University, Ayingba-Kogi State

Abstract

This paper investigated the application of research findings in chemistry classroom. The population involved all the chemistry teachers in Ogidi education zone of Anambra State. The sample consists of forty-seven chemistry teachers in all the forty public-owned secondary schools in the zone. The study was guided by two research questions. The instrument used to collect data was a self structured questionnaire which contains items on researched teaching methods for promoting teaching and learning in chemistry education. The instrument was validated and its reliability tested using Cronbach alpha. The reliability gave a coefficient of 0.79. The data were analyzed using mean and standard deviation. The findings revealed that seventeen listed teaching methods, only eight teaching methods were applied in chemistry classroom by the teachers. Reasons for not applying some research teaching methods were listed by the teachers. It was recommended among others that there is need for reduction of science curricular contents for effective use of these researched methods.

Key words: Application, Research findings, Chemistry Classroom

Introduction

The quest for knowledge and solution to human problems has generated the need for research in all aspects of human life, science education inclusive. Science education has been recognized as the bedrock of national development. Science stakeholders therefore, have been increasingly concerned with avenues of improving the quality of teaching and learning of science in schools. This concern had resulted in the increase in number of science education research especially on teaching methods in diverse fields of science education.

Mbanugo and Onyebuchi (2018), opined that one way of improving the quality of teaching in schools is by application of science education research findings. Quite a good number of researches have been carried out on different instructional methods and strategies. Notably among them are problem-solving by Udofia (2011); inquiry-based by Butin (2012); target approach by Ezeano (2013); mastery learning by Adepogu (2012); brainstorming by Dikki (2013); mentoring by Okonkwo (2015); field-trip by Igboegwu (2016) and a lot more. Methods of teaching adopted by teachers influence students learning styles and acquisition of science process skills which are greatly needed for science and entrepreneurial accomplishments.

Nowadays learner-friendly methods of teaching which involve the learners in teaching and learning process are highly demanded. More innovative teaching methods such as concept-mapping, demonstration, discovery, co-operative, laboratory investigations among others have also been found to be effective in science classrooms through research findings. Achimugu (2016) opined that these innovative methods of teaching science not only encourage learners' active participation but also help them to acquire the much need skills in science. It is expected that if these results of research findings on instructional methods among others are applied effectively and made available by teachers in the classrooms, the problem of poor performance, student's lack of interest and poor enrolment in chemistry will highly be improved. Teaching methods according to Rarnsden(2003) in Igboegwu (2017), is a way of propagating knowledge, assessment of students and evaluation of the effectiveness of instruction.

Abubakar (2016), noted that these research findings methods in science education in Nigeria often end in the libraries of universities, research institutions and individual libraries as well as government files given impression that either such findings were worthless or unimportant. Ibrahim (2014) also noted that the results of research findings lie buried in journals where they are published. Fahmeena (2016), referred that the consistent poor performance of students in science particularly chemistry has indicated that these research findings have not produced any desired effect.

Therefore, it becomes pertinent to find out if these research findings particularly in methods of teaching are effectively applied in classroom teaching especially in chemistry classrooms, if not, to also find out the reasons for not applying them, hence a focal interest of this study.

Research Questions

The following research questions were formulated to guide this study:

1. Which of these researched teaching methods do teachers apply in chemistry classroom?
2. What are the possible reasons for not applying these methods in the classroom?

Research Methods

The design of the study was descriptive survey. The study was carried out in Ogidi Education Zone of Anambra State which is made up of three local government areas namely: Idemili North, Idemili South and Oyi. The population of the study consists of all the chemistry teachers in the forty public owned secondary schools in Ogidi education zone. Hence, all the chemistry teachers in the education zone were used as the sample and this comprises of forty-seven chemistry teachers. The instrument used to collect data was a self structured questionnaire which consists of three sections with twenty-eight items. Section A sought information on bio data. Section B sought information on researched teaching methods applied by teachers in the classroom and section C sought information on the reasons, these researched teaching methods are not applied in the classroom. 4-pointscale of always = 4, often = 3, seldomly = 2 and not at all 1 was used. The instrument was validated and the reliability tested using Cronbach alpha, this gave a reliability index of 0.79. Mean and standard deviation were employed in answering the research questions. Items with mean of 2.50 and above indicate positive response while those below 2.50 indicate negative response by the teachers.

Results

The results from the analyses of data are presented according to the research questions respectively.

Research Question 1:

Which of these researched teaching methods do teachers apply in chemistry classrooms?

Table 1: Teachers Mean Response and Standard Deviation of Researched Teaching Methods Applied In Chemistry Classroom

S/N	Research Finding Methods	Mean	SD
1	Chalk and talk/lecture	2.86	1.08
2	Discussion	2.91	1.04
3	Demonstration	3.13	0.89
4	Project	2.26	0.80
5	Activity-based	2.14	0.92
6	Discovery	2.27	1.10
7	Inquiry	2.17	0.91
8	Experimental/laboratory	3.17	1.90
9	Team-teaching	1.07	0.94
10	Peer-tutoring approach	2.16	0.65
11	Step-by-step approach	3.02	1.10
12	Individualized instruction	2.04	1.04
13	Questioning	2.32	0.65
14	Cooperative/collaborative	3.08	1.54
15	Concept-mapping	2.27	1.35
16	Constructivisit approach	2.36	0.16
17	Problem-solving	2.30	0.75
	Average Mean and Standard Deviation	2.44	0.99

From table 1, teachers indicate that they apply only six methods out of seventeen researched teaching methods listed. These applied methods are items 1, 2, 3, 8, 11 and 14.

Research Question 2:
What are the possible reasons for not applying these methods in the classroom?

Table 2: Reasons for not applying the listed Researched Teaching Methods in Chemistry Classroom.

1. Steps for teaching some of these methods are not found in the scheme of work/chemistry curriculum.
2. Lack of teaching aids/materials and equipment.
3. Lack of fund to buy teaching materials/equipment.
4. Class size is too large for some of these methods such as inquiry, discovery, activity-based, individualized instruction and project method, etc.
5. Lack of knowledge of these methods, for example, concept-mapping, questioning, constructivist based, problem solving, activity-based and team teaching, etc.
6. Cannot apply some of methods in teaching chemistry.
7. Some of these methods take too much time for example, inquiry, discovery, project and individualized instruction.
8. Some of these methods are too costly to use for example; experiment/ laboratory, discovery, inquiry and project.
9. Overloaded science curricular contents
10. Some of these methods are not suitable for teaching chemistry concepts, example, questioning, lecture and discussion.
11. Lack of access to educational research materials.

Apart from reasons given, it was identified that field-trip/excursion even though was not among the listed methods are not frequently applied because of the risks involved in applying them as they are prone to accidents as suggested by the teachers.

Discussion of Findings

The result of these findings clearly indicates that majority of these researched methods are not applied in chemistry classroom. This by implication means that researched methods which will help the students practice the theories learnt and acquire the much needed process skills in science education are not often applied by the teachers. These will therefore affect the quality of science education particularly chemistry education received and therefore, need urgent attention.

The fact that teachers could not apply most of these researched methods in teaching in this study gives further credence to the finding of Ibrahim (2014) that the research findings lie buried in journals where they are published. The result of this study also listed the reasons given by teachers for not applying these research methods. The problem lies on how to effectively apply these methods.

Recommendation

Results of this study revealed that most of the researched methods are not applied in teaching chemistry because of reasons listed by the teachers. The researcher therefore, recommends among others that:

1. More time should be allotted to chemistry classes by way of extending dismissal time in schools to 4.30pm everyday instead of 2.30pm to enable the teachers use these methods effectively.
2. More chemistry teachers should be recruited to schools by the government to help ease the problem of large class size.
3. There is need to organize seminars and workshops often where teachers should be taught on how to apply these methods.

4. There should be reduction of science curricular contents for effective use of these methods.
5. Government should provide fund, teaching materials, equipment etc. that will help to apply these methods in the classroom.
6. Curriculum planners should also provide the guide and steps to use in the scheme of work.

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