

ORIGINAL PAPER

THE EFFECTS OF INTRODUCTION PHYSICS/ASTRONOMY CLUB IN SECONDARY SCHOOLS IN STIMULATING TEACHING AND LEARNING OF PHYSICS IN ONITSHA SOUTH LOCAL GOVERNMENT AREA

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Abstract. *This study was carried out in Onitsha South local Government Area of Anambra State. Five public /government secondary school Onitsha South was used, 200 Senior Secondary II (SS2) school physics students and 50 science teachers randomly selected from each of the five schools. The study examined the effects of introducing Physic/Astronomy Club in secondary school in stimulating teaching and learning of physic. The instrument used for data collection was the questionnaire. Statistical mean score and standard deviation were used to analyze the answer to the research question. The result showed that the introduction or existence of Physic/Astronomy Club in secondary school will have positive effects in stimulating the teaching and learning of physics.*

Keywords: *astronomy, physics, teaching, learning.*

1. INTRODUCTION

Physic is one of the fundamentals of science, the foundation of all engineering and technology and it is an experimental science. It is a branch of science that deals with the behavior of matter and energy and how it they relate. In [2001] physic is described as the science that treat matter and energy and of the laws governing their reciprocal interplay under condition susceptible to observation, experimental control, and exact measurement.

Astronomy fundamentally started as an ancient science which has played an important role in the general development of modern of science and technology [2-5]. Generally, it is the branch of physics that studies celestial bodies and the universes as a whole. Astronomy is derived from Greek word for star law, and it is the scientific study of objects in our World.

In some studies [6-8] teaching is defined as attempt to help people acquire some skills, attitude, knowledge, ideas and appreciation. In order word, the teacher's task is to create or influence discernable change in behavior of his or her pupils. Other papers [9-11] describe teaching as the business of all those involve in the act of changing human behavior and transforming the society for the better, particularly when their action render them perceptibly significant, respectable and recognizable to others because of the consequences they accomplish and the unique manner they do them. The essence of teaching is bring about learning.

Learning is seen as the acquisition of new knowledge, ideas, skill values and experience that enable the individual to modify or alter his activities. It brings about change in

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a learner. According to [12, 13], learning refers to change in a subject behavior to a given situation brought about by his repeated experience in that situation, provided that the behavior change cannot be explained on the basis of native response tendencies, maturation or temporary state of the subject.

According to Oxford Advance learner dictionary, club is a group of people who meet together regularly, for a particular activity. In general, a club is an association of two or more people united by a common interest or goals. A service club, for example, exists for voluntary or charitable activities; there are clubs devoted to hobbies and sort, social activities club, political and religious club and many more such groups.

Physics has being a vital subject in science education, help in the development of nation. However teaching and learning physics has being a problematic activity to many secondary schools in Nigeria. It is therefore necessary to look into the various aspects to find out ways of improving teaching and learning of physics in our schools. On this note, therefore, the study is designed to examine the effects the introduction of Physics/ Astronomy clubs in secondary schools will have in stimulating teaching and learning of physics.

1.1. STATEMENT OF PROBLEM

There are variations in students' performance in physics. Based on this some factors are responsible for these performances. Among them is nonexistence of Physics/ Astronomy Clubs in secondary schools. This hinders the growth of science education at secondary school level especially physics thereby hindering the goals of Nigeria. In order to achieve a first and equalitarian society as spelt out in Nigeria policy on education 1981 in physics has to be considered, since physics is one of the fundamentals. Science subjects and science is Astronomy Clubs will have if it were to be introduced in secondary schools.

1.2. PURPOSE OF STUDY

Since physics is seen as an organized active thinking that concerned with pattern formation and representation of symbols. Therefore the purposes of study were:

- a. To find out how effective the commencement of Physics/ Astronomy clubs can help teachers to deliver the concept of physics effectively to the understanding of the student.
- b. To find out how effective the introduction of Physics/ Astronomy clubs in schools will be in stimulating the interest in physics.
- c. To find out effects of introducing Physics/Astronomy club in secondary schools.

1.3. RESEARCH QUESTIONS

- i. To what extent will the introduction of physics/ Astronomy Clubs help teachers to deliver the concept of physics effectively?
- ii. How far will the presence of physics/ Astronomy Clubs in secondary schools help stimulate students' interest in physics?

iii. What are effects of introducing physics/ Astronomy Clubs in secondary schools?

1.4. POPULATION OF THE STUDY

The population of this study comprises of all the 85 science teachers and 390 SS2 physic students under the five public secondary schools of Onitsha South Local Government Area of Anambra State, Nigeria, as shown in Table 1.

Table 1. The population of teachers and students in Onitsha South Local government.

S/N	Name of Secondary School	Number of Science Teachers	Number of SS2 students
1	Christ the king college Onitsha.	21	179
2	Metu Memorial sec. school Onitsha.	17	42
3	Our Lady's High school Onitsha	19	59
4	Urban Girls 'secondary Onitsha	18	70
5	Urban Boys' secondary school Onitsha	10	40
	Total	85	390

1.5. SAMPLE AND SAMPLING TECHNIQUES

The sample for the study consists of fifty 50 science teachers and 200 SS2 physics students, which comprises of 10 teachers from each of the five schools, and 40 students from each of the five schools drawn through a proportionate stratified random sampling technique.

2 ANALYSIS OF STUDENTS' QUESTIONNAIRE

2.1. RESEARCH QUESTION 1

To what extent will the introduction of Physics/Astronomy clubs help teachers to deliver the concept of physics effectively?

From the Table 2 above, the overall mean is:

$$\bar{x} = \frac{2.73 + 3.73 + 3.26 + 3.04}{4} = 3.4$$

This indicated that the mean response of students on all the items is above 2.50, therefore, this implies that the introduction of Physics/Astronomy Clubs will contribute positively in helping teachers deliver the concept of physics effectively.

Table 2. Mean and standard deviation scores of students's responses on the extent to which the introduction of physics/Astronomy Clubs help teachers deliver the concept of physics effectively.

S/N	Items Statement	SA	A	D	SD	TOTAL	\bar{X}	S.D
1	Physics/Astronomy Clubs is a very good innovation that will help in stimulating teaching and learning.	148	52	-	-	200	3.74	0.44
2	Introduction of Physics/Astronomy Clubs will aid you in understanding the concept of physics effectively.	150	45	5	-	200	3.73	0.49
3	Introduction of Physics/Astronomy Clubs will facilitate and enhance your understanding of physics.	126	60	14	-	200	3.26	0.69
4	Physics/Astronomy Clubs will help you to see physics as a subject that deals with our everyday life.	97	58	30	15	200	3.04	0.96

2.2. RESEARCH QUESTION 2

How will the presences of Physics/Astronomy Clubs in Secondary Schools help in stimulating students' interest in physics?

Table 3. Mean and standard deviation scores of students' response on the extent to which the presence of Physics/Astronomy Clubs help stimulate students' interest in physics.

S/N	Items Statement	SA	A	D	SD	TOTAL	\bar{X}	S.D
1	Physics/Astronomy Clubs in school will help to make physics classes lively during lesson.	80	90	10	20	200	3.15	0.91
2	Introduction of Physics/Astronomy Clubs will help reduce student's attention to science class.	20	30	60	90	200	1.60	1.04
3	Introduction of Physics/Astronomy Clubs will help you as a physics student to have more interest in learning physics.	80	100	12	8	200	3.26	0.74
4	Introduction of Physics/Astronomy Clubs will help both on the part of teachers and students to understand the abstract nature of the subject.	80	90	20	10	200	3.20	0.81
5	Physics/Astronomy Clubs in school will help in your social life.	102	60	27	11	200	3.27	0.89

From above, the overall mean is; $\bar{x} = \frac{3.15+1.60+3.26+3.20+3.27}{5} = 2.90$

Therefore, the data gotten shows that the existence of Physics/Astronomy Clubs in secondary schools will help promote students interest in leaning physics.

2.3. RESEARCH QUESTION 3

What are the effects of introducing Physics/Astronomy Clubs in secondary schools?

Table 4. The mean response of students on the effects of having Physics/Astronomy Clubs in secondary schools.

S/N	Items Statement	SA	A	D	SD	TOTAL	\bar{X}	S.D
1	The exercise of such clubs will create an avenue through which school will get equipment from the government for enhancing teaching and learning of physics.	64	53	70	13	200	2.84	0.95
2	The presence of Physics/Astronomy Clubs will help instill in you the true concept of science and thus enable you to acquire scientific attitudes and habits.	100	60	32	8	200	3.36	0.87
3	The activities of these clubs will help you to live and view your problem in a scientific way and so to become better to the world constantly changing ideas and techniques.	50	104	28	18	200	2.93	0.86
4	The introduction of Physics/Astronomy Clubs will help promote the science of Physics/Astronomy and craftsmanship in its various fields both on your parts and that of teachers clubs.	99	50	29	22	200	3.13	1.03
5	Through the existence of such clubs, you will able to exhibit your talents.	111	70	19	-	200	3.46	0.66
6	I will like Physics/Astronomy Clubs to be introduced in my school	130	46	18	6	200	3.50	0.78

From the Table 4, the overall mean is:

$$\bar{x} = \frac{2.84 + 3.36 + 2.93 + 3.13 + 3.46 + 3.5}{6} = 3.19$$

The overall mean was above 2.50, this implies that the presence of such clubs in secondary schools will yield much effect in stimulating teaching and learning of physics.

3. ANALYSIS OF TEACHER'S QUESTIONNAIRE

3.1. RESEARCH QUESTION 1

To what extent will the introduction of physics/Astronomy Clubs help teachers to deliver the concept of physics effectively?

Table 5. Mean and standard deviation scores of teachers response on the extent to which the introduction of physics/Astronomy Clubs helps them deliver the concept of physics effectively.

S/N	Items Statement	SA	A	D	SD	TOTAL	X	S.D
1	Physics/Astronomy Clubs is a very good innovation that will in stimulating teaching and learning of physics.	30	20	-	-	50	3.60	0.49
2	Introduction of Physics/Astronomy Clubs will help teachers to deliver the concept of physics effectively.	20	26	4	-	50	3.32	0.61
3	Introduction of Physics/Astronomy Clubs in schools enhances the student's understanding of physics.	20	25	5	-	50	3.30	0.64
4	Physics/Astronomy Clubs will help both teachers and students to see physics as a subject that deals with our everyday life.	30	10	6	4	50	3.32	0.97

The overall mean is:

$$\bar{x} = \frac{3.60 + 3.32 + 3.30 + 3.32}{4} = 3.39$$

The analysis indicated that the mean response of teachers on all the items is more than 2.50. Therefore the introduction of Physics/Astronomy Clubs will contribute positively to teachers delivering the concept of physics effectively.

3.2. RESEARCH QUESTION 2

How far will the presence of Physics/ Astronomy club in secondary schools help in stimulating students' interest in physics?

Table 6. Mean responses of the teachers on the extent to which the presence of Physics/Astronomy Clubs help in stimulating student's interest in physics.

S /N	Items Statement	SA	A	D	SD	N	X	S.D
1	Physics/Astronomy Clubs in school will help to make classes lively during lessons.	21	16	7	6	50	3.04	1.02
2	Introduction of Physics/Astronomy Clubs will help reduce attention of students from science class.	9	1	10	30	50	1.78	1.14
3	Introduction of Physics/Astronomy Clubs will help physics students to put more interest in learning of physics.	17	24	5	4	50	3.08	.087
4	Introduction of Physics/Astronomy Clubs will help understand the abstract nature of the subject on the part of the students.	15	21	12	7	50	2.98	0.84
5	Physics/Astronomy Clubs in schools will help students in their social life.	30	19	1	-	50	3.54	0.53

The overall mean is:

$$\bar{x} = \frac{3.04+1.78+3.08+2.88+3.64}{5} = 2.88$$

From the analysis of the data gotten, this shows that the presence of Physics/Astronomy Clubs in secondary schools will promote student's interest in learning physics.

3.3. RESEARCH QUESTION 3

What are the effects of introducing Physics/Astronomy club in secondary schools?

Table 7. The mean response of teachers on the effects of having Physics/Astronomy Clubs in secondary schools.

S /N	Items Statement	SA	A	D	SD	N	X	S.D
1	The exercise of such clubs will create an avenue through which school will get equipment from the Government for enhancing teaching and learning of physics.	10	21	12	7	50	2.68	0.95
2	The presence of Physics/Astronomy Clubs will help to instill in the students the true concept of science and thus enable them to acquire scientific attitude and habits.	30	13	7	-	50	3.46	0.73
3	Through the activities of these clubs students will be able to live and view their problem in a scientific way and so to become better adaptable to world of constantly changing ideas and techniques	31	10	8	1	50	3.42	0.83
4	The introduction of Physics/Astronomy Clubs will help promote the science of Physics/Astronomy and craftsmanship in its various fields on the part of the teachers and students.	29	17	4	-	50	1.20	0.40
5	Through the existence of these clubs, students will not be to exhibit their talents.	-	-	10	40	50	1.20	0.40
6	I will like Physics/Astronomy Clubs to be introduced in my school.	26	11	6	7	50	3.12	1.09

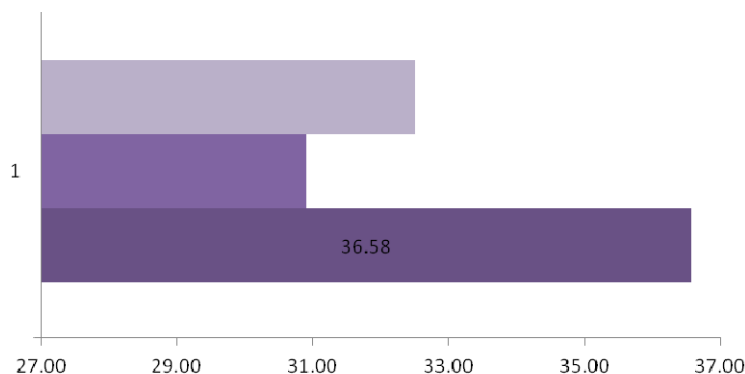
The overall mean from the research question 3;

$$\bar{x} = \frac{2.68+3.46+3.42+3.80+1.20+3.12}{6} = 2.70$$

From the analysis, table above, it was obvious that the mean response of teachers on almost all the items is above 2.50, thus implies that the presence of such clubs in secondary school will yield much effects in stimulating and enhancing teaching and learning of physics.

Table 8. Teachers and Student's average mean (X).

RQ	Teachers Response	Student Response	Average Mean (X)	Percentage	Degree
1.	3.39	3.44	3.42	36.58%	131.7 ⁰
2.	2.88	2.90	2.89	30.91%	111.3 ⁰
3.	2.90	3.19	3.04	32.52%	117.0 ⁰
			9.35		

**Fig. 1. Pie chart of the mean average.****Fig. 2. Bar chart of the mean average.**

4. SUMMARY OF THE MAJOR FINDINGS

Based on the result and data presented above, the following major findings of the study were made:

- Physics/Astronomy Club is a very good innovation that will help in stimulating teaching and learning of physics.
- The existence of such club stimulates and enhanced students understanding of physics and hence uplift in their interest in physics.
- The activities of Physics/Astronomy Clubs will both teachers and students to understand the abstract nature of the subject and thus enable them see physics as a subject that deals with our everyday life.
- The existence of such clubs will instill in students the true concept of science and thus enable them acquire scientific attitudes and habits which will help them in life.
- Through the activities of these clubs, students will be able to live and view their problem in a scientific way and so become better adaptable to the world of constantly changing ideas and techniques.
- These will help to promote on the part of both teachers and students the science of Physics/Astronomy and craftsmanship in its various field and thus enable them exhibit their talents.

4.1. CONCLUSION

The study was carried out to find the effects the introduction of Physics/Astronomy Clubs in secondary schools will have in stimulating teaching and learning of physics. It could be said that the need and importance of these clubs cannot be over emphasized in educational system. The findings of this study have revealed that the presence of Physics/Astronomy Clubs in secondary schools will have tremendous effects in stimulating teaching and learning of physics.

These effects includes, that the existence of such club will help instill in the student the true concept of science and this will in turn enable them to acquire scientific attitudes and habits, while eschewing superstitions. It will help to guide the students to be able to live and view their problem in a scientific way and so become better adaptable to a world of constantly changing idea and techniques. It will help to arouse the interest of students and draw more students to science class, through this club; students will come to understand the abstract nature of the subject. Physics/Astronomy Clubs will help students in their social life, thus enable them exhibit their talent

4.2. RECOMMENDATION

Based on the finding and implications of this study, the researcher made the following recommendation.

- Physics lively /Astronomy clubs should be introduce in secondary school to make physics lively during lesson
- Physics /Astronomy clubs should be established in secondary school to direct and draw attention of student to science class, thus improve their social life.
- Physics/Astronomy clubs should be introduced to stimulate and enhance teaching and learning of physics.
- Physics /Astronomy clubs should be introduced in secondary school to facilitate student's understanding of the subject.
- It should be introduced to help both teachers and students see physics as a subject that deals with our everyday life.
- It should be introduced to enable student explore their talents.
- Physics/ Astronomy Clubs should be introduced in secondary schools to enable students understand the abstract nature of the subject, thus facilitate their understanding of the concept.

4.3. SUGGESTIONS FOR FURTHER RESEARCH

Based on the research carried out, it is suggested that the under listed areas should be looked into for further work.

- Similar studies can be carried out in other schools in other local Government areas within the states and even the nation at large.

- Further studies could be carried out to find out the effect of introducing jet club in secondary schools in stimulating teaching and learning of basic science.
- Further studies could be carried out also on the effect of science club in facilitating the understanding of physics / science subject.
- Further studies could be done on the factors that hinder student's understanding of the concept of physics.
- Studies could be done on the inclusion of practical work in science curriculum in stimulating teaching and learning physics'.

4.4. SUMMARY OF THE STUDY

This study investigates the effects of introducing Physics/ Astronomy clubs in secondary schools in stimulating teaching and learning of physics in Onitsha South Local Government Area of Anambra State Nigeria. It was found out that the activities of these clubs have tremendous effects both on the part of teachers and that of students. It will serve as a good innovation that will help in stimulation and learning of physics. It will draw attention of students to science class and uplift their interest in physics. Activities of such clubs will help both teachers and students understand the abstract nature of the subject. This will enhance their understanding of the concept, thus make physics class lively during lessons. Through such club, students will be able to live and view their problems in a scientific way, thus enable them exhibit their talents. All these will go positively towards promoting the science of Physics/ Astronomy not only in Onitsha South Local Government Area but in the nation at large.

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