

**JUNIOR HIGH SCHOOL PUPILS' PERCEPTION ABOUT INTEGRATED SCIENCE:
A CASE OF SELECTED SCHOOLS IN MAMPONGASHANTI MUNICIPALITY**

WILSON NKETIA SIAW

St. Monica's College of Education, P. O. Box 250 Mampong Ashanti, Ghana
wilson2103@yahoo.com

ADJEI YEBOAH

Atebubu College of Education, P. O, Box 29 Atebubu B/A, Ghana
mcadyeb@yahoo.com

Abstract

The purpose of the study was to investigate the attitude of pupils in the Mampong Ashanti Municipality towards the learning of Integrated Science. Descriptive research design was used to explore the study. Convenient sampling technique was adopted for the study and a self-designed questionnaire was used for the data collection. The data was collected from 435 pupils in the Municipality from 10 schools. The data was analysed using frequency and percentage with the aid of SPSS version 25 for Windows. The result has revealed that the pupils did not perceive the learning of Integrated Science to be difficult and the subject is not meant for the bright pupils to study at school. The study also has shown that the pupils in the Mampong Ashanti Municipality have positive attitude towards the learning of Integrated Science.

Keywords: Junior High, Pupils, Perception, integrated science, school & Ashanti

1. Introduction

The study of science in general forms the basis of improvement *-in the life of individuals which cuts across technology, clothing, food and health. However, the learning of science points to the fact that there was a decline in people who pursue science related programmes like technology, engineering and mathematics (Roberts, 2002; Stagg, Laird & Taylor, 2003). This pre-supposed that those who study science from the lower level is reducing and only few people finally get to the higher level to pursue science related programmes. Integrated science is a combination of all the sciences with the fusion of technology and this subject is taught and learnt as a single subject to ensure that the individual acquired the basic scientific skills needed in solving the problem (Leliveld, 2002). The perception of pupils to the study of Integrated Science is worth knowing to educators and other stakeholders in the progress of the subject.

Research Objectives

The main objectives of the study were to:

1. investigate pupils' perception on difficultness of Integrated Science
2. investigate pupils' perception that Integrated Science is for bright pupils to learn
3. examine the attitude of pupils towards the learning of Integrated Science.

2. LITERATURE REVIEW

Pupils' perception on difficultness of integrated Science

Pupils do see science to be difficult in view of its complexity in varied forms. The complexity was seen to be in the form of ideas and concepts existing at three different levels and this include macro and tangible, micro, and representational or symbolic. (Johnston, 1991). The symbolic level is at the abstract level so when the fundamentals were not well grounded in the tangible, any little abstraction may pose learning difficulty for the pupils. According to Behar and Polat (2007), learners' misconception about science makes them see the subject to be difficult. Misconception about the subject was attributed to the teacher's inability to explain certain science topics to the learners (Behar & Polat, 2007).

In a study done in the Techiman north district in the Junior High school had indicated that the Biology and the Chemistry aspect of the Integrated Science is the most difficult part as compared to the other aspect of the subject (Buah & Akuffo, 2017). The perception about two main aspects of Integrated Science being difficult could make the pupils academic performance on the entire subject to be poor. The reason being that the Physics and the Agriculture component were not much or less and it cannot be guaranteed that the other aspect the pupils regard to be less difficult could not let them pass the subject with distinction.

The difficultness of Integrated Science was found to have revolved around the quality of the learning context, the content and relevance of the science curriculum, assessment strategies could have been factor making pupils to see the subject to be difficult (National Foundation for Educational Research, 2011). Biology could not necessarily have been difficult but the terminologies used instead of learning genetics and concepts were some of the contributing factors (Çapa, 2000).

A study done has found that the pupils have positive perception towards the teaching and learning of integrated science. However, the pupils have perceived integrated science as a difficult subject (Baidoo-Anu & Mensah, 2018). This result has therefore indicated that pupils' positive perception towards the subject has no direct influence on their academic performance. The pupils might have just developed likeness towards the subject but studying it to excel was not the case.

Integrated Science is Perceived to be for Bright Pupils

Students have different academic ability groupings and this should inform how the teacher ought to teach in the class (Ministry of Education, 2012). The Ghanaian Integrated Science classroom could be a mixture of different ability groups. Hence, the teacher has to factor this during teaching and learning process.

Pupils' attitude towards the learning of Integrated Science

White (1993, cited in Bahar & Polat, 2007) had identified attitude, skill and knowledge, physical state and needs to be factors that might have been contributing to the difficultness of learning science. The factors as noted could be attributed to the science teachers and the pupils as well. The teacher has to have the needed skill so that the pupils could be guided to create their own

knowledge. The attitude as identified by White (1993) may be attributed to the teacher and the pupils. Positive attitude has to be developed in both the teacher and the pupils so that effective teaching and learning could take place.

The difficult nature of the Biology and the Chemistry aspect of the Integrated Science as perceived by pupils made them to have a negative attitude to the subject (Buah & Akuffo, 2017). The result as found could even prevent the pupils from going to class regularly because their interest is not there. It may even lead the pupils to be truant to school. According to Buah and Akuffo (2017), no practical teaching on the subject has grounded the perception in the pupils to have poor attitude towards the subject. The poor attitude towards the subject has even affected their final examination results over the years in the Techiman district (Buah & Akuffo, 2017).

A study conducted in Ketu-North District of Volta Region has indicated that the JHS 3 students' perceived 8 out of the 43 integrated science topics to be relatively difficult to learn (Sakpak, 2016). This result has indicated how a few of the topics in the syllabus posed problem to pupils and it can be presumed that their academic performance would be above average provided the exam questions were spread to cover the entire syllabus and the pupils too have studied.

3. RESEARCH METHODS

This section discusses the research design, population, sample and sampling techniques, research instrument, data collection procedure and how the data was analysed.

Research Design

Descriptive research design was adopted to guide the study. According to Labaree (2013), descriptive research design presents a number of advantages as it can provide a varied multifaceted approach. This design also has the advantage of producing a good amount of responses from a wide range of people. It involves extracting information from a large number of individuals using the same set of questions through personal contact. This design was chosen because it helps to describe the situation that exists by asking the respondents to complete questionnaires in order to obtain data to draw meaningful conclusions.

Sample and Sampling Procedure

A sample size of 435 pupils was sampled from a target population of 6784 from the Mampong Ashanti Municipality of Ghana. A cluster sampling technique was used to select the respondents for the study. This technique was adopted because the target population is large and the Junior High Schools spread out in the Municipality

There were 54 JHS in the Mampong Ashanti Municipality and 10 JHS were used in the study. Using Krejcie and Morgan's (1970) Table of sample determination, the sample size was arrived at for the study. The sample of 435 was distributed among the schools in the Municipality. The respondents were conveniently sampled from the JHS 2 class to respond to the questionnaires.

Instrument for Data Collection

The instrument used to collect data for the study was a questionnaire. The questionnaire was designed by the researchers and it had a total of 40 close-ended items. The items have been put into four sections and each section was to collect data for each aspect of the research objectives. The pilot-test of the research instrument yielded 0.78 Cronbach Alpha of reliability.

Data Collection Procedure

The data collection was done by the researcher after the necessary permissions were sought from the school authorities in the Mampong Municipality. The sampled schools were visited and the questionnaires were administered to the pupils to be responded to. In all 10 schools were visited out of a total 54 schools in the municipality. The pupils were given two days to respond to the questionnaires and they were collected on the third day. In view of the vast nature of the area, the entire schools were not covered on the first day of the data collection. The rest of the questionnaires were collected on the next day. The respondents were assisted to respond to the items and clarifications were given to the respondents with respect to the items. The questionnaires were closely observed to ensure that they were well completed before they were collected from the respondents for further processing.

Data Analysis

The data was analysed with the help of IBM SPSS for Windows version 25. Frequency and percentages were used to analyse the three research objectives.

4. RESULTS AND DISCUSSION

The results from the respondents on how pupils in the Junior High Schools at Mampong Municipality perceive Integrated Science have been presented in tables. In doing the interpretation of the results, the responses to the various items has been measured on the scale of ‘Strongly Agree’, ‘Agree’, ‘Not Sure’, ‘Disagree’ and ‘Strongly Disagree’. For the purpose of easy interpretation of the results, ‘Strongly Agree’ and ‘Agree’ have been put together as ‘Agree’ and in similar way, the scale of ‘Strongly Disagree’ and ‘Disagree’ is also put together as ‘Disagree’.

Perceived Difficultness of Integrated Science

The result from the field has been presented in Table 1 on the perceived difficultness of Integrated Science to JHS pupils in the Mampong Ashanti.

Table 1- Response of pupils on the Perceived difficultness of Integrated Science

S/N	ITEM	Response				
		<i>Strongly Agree</i> (%)	<i>Agree</i> (%)	<i>Not Sure</i> (%)	<i>Disagree</i> (%)	<i>Strongly Disagree</i> (%)
1	I always see Integrated Science as difficult subject	63 (14.5)	85 (19.5)	94 (21.6)	109 (25.1)	84 (19.3)
2	I do not like the calculation aspect of the subject	78 (17.9)	100 (23)	73 (16.8)	119 (27.4)	65 (14.9)
3	The topics are too many hence, difficult to study	89 (20.5)	133 (30.6)	71 (16.3)	79 (18.2)	63 (14.5)
4	I was told science is difficult so I believe it	52 (12)	76 (17.5)	95 (21.8)	104 (23.9)	108 (24.8)
5	I always want to avoid science due to its difficulty	42 (9.7)	55 (12.6)	64 (14.7)	144 (33.1)	130 (29.9)
6	My science teacher makes me hate science because of how he teaches it.	43 (9.9)	37 (8.5)	77 (17.7)	94 (21.6)	184 (42.3)

7	I hate Integrated Science because I hate the teacher who teaches it.	22 (5.1)	27 (6.2)	71 (16.3)	106 (24.4)	209 (48)
8	Integrated Science facts are not constant so it makes it difficult for me	47 (10.8)	84 (19.3)	115 (26.4)	120 (27.6)	68 (15.6)
9	I can't image the difficultness of Integrated Science	62 (14.3)	120 (27.6)	112 (25.7)	76 (17.5)	65 (14.9)
10	Integrated Science is difficult for those who don't learn it	225 (51.7)	115 (26.4)	37 (8.5)	19 (4.4)	39 (9)
11	Integrated Science is really difficult for every pupils	26 (6)	40 (9.2)	136 (31.3)	90 (20.7)	143 (32.9)
12	Other subjects are not difficult to learn like Integrated Science.	73 (16.8)	119 (27.4)	95 (21.8)	78 (16.1)	70 (16.1)

The result in Table 1 has 12 items that presents the various views of the respondents on how they perceive the difficultness of Integrated Science. A cursory look at the item has indicated that four of the items (3, 9, 10 & 12) have been agreed to by the respondents. These items are in the positive sense. The other eight items (1, 2,4, 5,6, 7, 8& 11) have been disagreed with by the respondents. These items are in the negatives hence the disagreement to the items implies that the respondents have the perception that Integrated Science is not difficult.

The result clearly shows that out of the 12 items that sought the views of the respondents on the difficultness of Integrated Science, two of them the items' responses perceived the subject to be difficult while the other 10 items' responses had shown that pupils perceived the subject as not difficult. It can therefore be concluded that the pupils in the Mampong Ashanti Municipality JHS do not see Integrated Science as a difficult subject. The result in this study contradicts the fact that pupils find Integrated Science to be difficult (Baidoo-Anu & Mensah, 2018). The pupils probably did not perceive Integrated Science as difficult due to the fact that the subject has been clarified by their teachers and the relevant concepts and terminology have also been explained to

them. Çapa (2000) found in an earlier study that Biology was perceived as difficult because of the terminology.

Integrated Science was perceived to be for Bright Pupils

In finding out the perception that Integrated Science is for bright pupils, the result has been presented in Table 2 for discussion.

Table 2-Result on how Integrated Science was perceived to be for Bright Pupils

S/N	ITEM	<i>Strongly</i>		<i>Not</i>		<i>Strongly</i>
		<i>Agree</i> (%)	<i>Agree</i> (%)	<i>Sure</i> (%)	<i>Disagree</i> (%)	<i>Disagree</i> (%)
1	I always thought Integrated Science to be for bright pupils	58 (13.3)	83 (19.1)	95 (21.8)	91 (20.9)	108 (24.8)
2	Integrated Science is for only the intelligent pupils	38 (8.7)	48 (11)	92 (21.1)	112 (25.7)	145 (33.3)
3	The topics in Integrated Science are too many so, only intelligent pupils can learn it.	38 (8.7)	67 (15.4)	87 (20)	123 (28.3)	120 (27.5)
4	I was told science is for bright pupil so I believe it	33 (7.6)	62 (14.3)	88 (20.2)	130 (29.9)	122 (28)
5	Integrated Science is not difficult for me.	127 (29.2)	159 (36.6)	58 (13.3)	45 (10.3)	46 (10.6)
6	I have the perception that Integrate science is not only for bright pupils.	150 (34.5)	132 (30.3)	59 (13.6)	45 (10.3)	49 (11.2)
7	Integrated Science is good for brilliant pupils in my class.	53 (12.2)	64 (14.7)	100 (23)	101 (23.2)	117 (26.9)
8	It is only the bright pupils that can study science	35 (8)	49 (11.3)	109 (25.1)	97 (22.3)	145 (33.3)
9	Brilliant pupils are perceived to be for Integrated Science	45 (10.3)	86 (19.8)	107 (24.6)	110 (25.3)	87 (20)

10	Bright pupils enjoy the learning of Integrated Science	108 (24.8)	148 (34)	73 (16.8)	56 (12.9)	50 (11.5)
----	--	---------------	-------------	--------------	--------------	--------------

How pupils perceived Integrated Science to be for the bright pupils has been presented in Table 2. A careful look at the items in Table 2 has revealed that seven of the items have been disagreed with and these items are all positive. The remaining three items in Table 2 has been agreed and these items are negative. The responses to the positive and the negative items clearly indicated that the respondents did not perceive Integrated Science to be for the bright pupils in class.

It is therefore concluded that pupils in the Mampong Ashanti Municipality JHS did not perceive that Integrated Science is for the bright pupils to learn. Although pupils at the JHS do have different ability level with respect to Integrated Science (Ministry of Education, 2012), but those in the Mampong Ashanti Municipality were of the view that the learning of the subject is not for the bright pupils only. This finding has shown that the pupils would not have low esteem when it comes to the learning of the subject at the JHS. This also suggests that the pupils would take the learning of the subject serious since it is not the preserve for any particular grouping of pupils. A lot of scientists may be produced from the area. The self-motivation about the learning of the Integrated Science would be high.

Attitude of pupils towards the learning of Integrated Science

The result on pupils’ attitude towards the learning of Integrated Science has been presented in Table 3 for discussion.

Table 3-Result on Attitude of Pupils towards the learning of Integrated Science

S/N	ITEM	<i>Strongly Agree</i> (%)		<i>Not Sure</i> (%)	<i>Strongly Disagree</i> (%)	
		<i>Agree</i> (%)	<i>Agree</i> (%)		<i>Disagree</i> (%)	<i>Disagree</i> (%)
1	I don’t do my science exercises always	21 (4.8)	30 (6.9)	57 (13.1)	98 (22.5)	229 (52.6)
2	Doing my science exercises makes me	29 (6.7)	40 (9.2)	74 (17)	114 (26.2)	178 (40.9)

	unhappy					
3	I avoid the calculation aspect of the science	21 (4.8)	19 (4.4)	80 (18.4)	105 (24.1)	210 (48.3)
4	I avoid the reading aspect of the science because I hate reading	21 (4.8)	19 (4.4)	80 (18.4)	105 (24.1)	210 (48.3)
5	I don't like learning diagram in Integrated science	46 (10.6)	69 (15.9)	68 (15.6)	110 (25.3)	142 (32.6)
6	I hate the practical component of the subject	41 (9.4)	59 (13.6)	113 (26)	137 (31.5)	137 (31.5)
7	I prefer my science teacher does not come to class for lesson.	29 (6.7)	37 (8.5)	70 (16.1)	91 (20.9)	208 (47.8)
8	I am always happy when science is being taught.	161 (37)	169 (38.9)	40 (9.2)	30 (6.9)	35 (8)
9	I love the practical sections in Integrate Science.	139 (32)	171 (39.3)	38 (8.7)	44 (10.1)	43 (9.9)
10	I prefer other subjects to Integrated Science	58 (13.3)	112 (25.7)	110 (25.3)	92 (21.1)	63 (14.5)
11	I wish Integrated science is not thought in school	31 (7.1)	42 (9.7)	70 (16.1)	79 (18.2)	213 (49)
12	Another subject should be used to replace Integrated Science on the teaching time table	39 (9)	58 (13.3)	57 (13.1)	108 (24.8)	173 (39.8)
13	Studying Integrated Science is a waste of time	18 (4.1)	27 (6.2)	91 (20.9)	82 (18.9)	217 (49.9)

14	Teaching of Integrated Science is not necessary.	24 (5.5)	36 (8.3)	69 (15.9)	107 (24.6)	199 (45.7)
15	I would prefer to watch Nigeria movies during science lessons	24 (5.5)	19 (4.4)	58 (13.30)	68 (15.6)	266 (61.1)

The result on the attitude of pupils with respect to the learning of Integrated Science has 15 items as in Table 3. All the negative items (1, 2, 3, 4, 5, 6, 7, 11, 12, 13, 14 & 15) have been disagreed with and the three positive items (8, 9 & 10) have also been agreed with. All the 15 items have favourable response with respect to the attitude of pupils towards the learning of Integrated Science. The result therefore showed that the respondents have positive attitude towards the learning of Integrated Science. However, the result contradicts the earlier study by Buah and Akuffo (2017) that pupils have poor attitude towards the learning of Integrated Science.

Attitude about the learning of Integrated Science being positive gives an indication that the pupils would pay more attention to the learning of the subject. The positive attitude found in the current study suggests that the pupils would have interest in learning the subject. Having a positive attitude towards the learning of the subject may go a long way to help the pupils to learn. Pupils having positive attitude about the learning of Integrated Science would increase the rate at which pupils can devote their time to the subject while in school.

5. Conclusion

Integrated Science is perceived not to be difficult for JHS pupils in the Mampong Ashanti Municipality. This result has revealed that the teachers have been doing something good which needs to be encouraged. Pupils positive attitude towards the subject could let them develop much like for the subject and this could reflect in their exam results. The minds of the pupils were not made up of the fact that Integrated Science is for bright pupils among them or elsewhere to learn. The pupils would therefore focus on the learning of the subject for them to excel in their studies. The attitude being positive towards the learning of the subject would help the pupils to learn even if some of the topics are relatively difficult for them to grasp during class. The pupils would have the determination to persist till they comprehend such lessons.

REFERENCES

- Baidoo-Anu, D., & Mensah, G. E. (2018). The Perceptions of Junior High School Students and Teachers towards Teaching and Learning of Integrated Science at Komenda-Edina-Eguafo- Abirim District. *Asian Journal of Education and Social Studies*, 2(2), 1- 8.
- Buah, E., & Akuffo, A. F. (2017). The Science Topics Perceived Difficult by Junior High School Students at Techiman North District: Effects on the teaching and learning of Science. *Imperial Journal of Interdisciplinary Research*, 3(1), 503 – 509.
- Bahar, M., & Polat, M. (2007). The science topics perceived difficult by pupils at primary 6-8 classes: Diagnosing the problems and remedy suggestions. *Educational Sciences: Theory & Practice* 7(3) 1113 – 1130.
- Çapa, Y. (2000). An Analysis of 9th Grade Students' Misconceptions Concerning Photosynthesis and Respiration in Plants, MA Dissertation, Middle East Technical University, Ankara, Turkey.
- Johnstone, A. (1991). Why science is difficult to learn? Things are seldom what they seem. *Journal of Computer Assisted Learning*, 7, 75-83.
- Krejcie, R.V., & Morgan, D. W. (1970). Determining sample size for research Activities. *Educational and Psychological Measurement*, 30, 607 - 610.
- Labaree, R. .(2013)*Types of Research Designs-Organizing Your Social Sciences*. Retrieved January 7, 2013 from libguides.usc.edu/content.php?pid.
- Leliveld, M., (2002). Science, Mathematics and ICT (SMICT) education in Senior Secondary Schools in Ghana. Preliminary report, Ghana. Retrieved from <http://www.leliveld.org/ghana/publicaties/CISraport.pdf>.
- National Foundation for Educational Research [NFER] (2011). Exploring young people's views on science education. Report to the Wellcome Trust http://www.tlrp.org/pub/documents/TLRP_Science_Commentary_FINAL.pdf.
- Ministry of Education. [MOE]. (2012). National syllabus for integrated science for junior high school. Accra: Curriculum Research and Development Division.
- Roberts, G., (2002). SET for Success: The supply of people with science, technology, engineering and mathematics skills. Retrieved from http://www.hmtreasury.gov.uk/media/F/8/robertsreview_introch1.pdf.

- Sakpak, D. (2016). Exploring the perception of junior high school teachers and students on topics in the integrated science syllabus. Unpublished masters thesis, University of Cape Coast, Cape Coast.
- Stagg, P., Laird, R., & Taylor, P, (2003). Widening Participation in the Physical Sciences: An investigation into factors influencing the uptake of physics and chemistry. Final report. Coventry: The University of Warwick, Centre for Education and Industry.