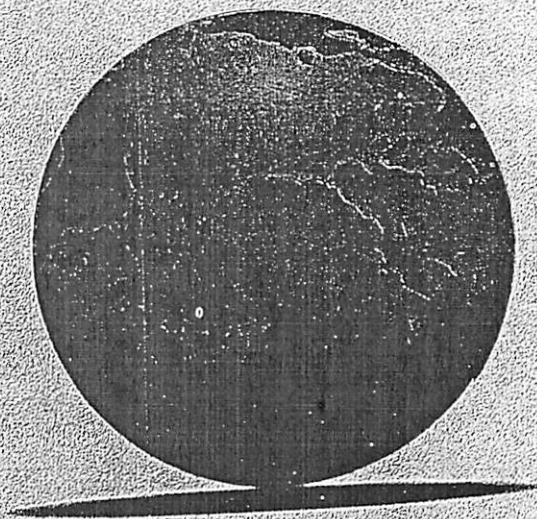




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EDITORIAL

For almost two years, volume 2 of this journal has been undergoing planning, structuring, strategising and wide consultations. Its final outcome is therefore a statement cast in concrete that education will always be relevant in society.

Articles in this volume span diverse human endeavours, disciplines and interests. They range from education to the arts, from humanities to the social sciences, from the developmental to the historical. The authors are as varied as the concerns represented. It is therefore hoped that whatever one's educational affiliation, inclination or proclivity, he would find readability in this volume.

Our deep and profound gratitude goes to the team of erudite scholars who are the associate editors and editorial consultants of this journal. We also appreciate our contributors for the depth of their research, theoretical findings and discussions.
God bless IJRMS.

Prof. N.B. Longbap

for Editorial Crew

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SKILLS IN DISSECTION PERCEIVED AS DIFFICULT BY SECONDARY SCHOOL STUDENTS IN PLATEAU STATE, NIGERIA

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Abstract

This study investigated the skills in dissection that are perceived as difficult by secondary school student in Plateau State, Nigeria. One thousand three hundred and ninety four (1394) biology students in secondary schools in Plateau State were involved in the study using researcher-designed questionnaires tagged "Biology Students' Questionnaire (BSQ)" to collect relevant data. Three research questions were answered while two research hypotheses were tested. The findings of the study showed that the various skills in dissection perceived difficult by the students irrespective of their gender and scoring levels include killing of animal for dissection, pinning the animal on the dissecting board, using the dissecting kit effectively, displaying the internal organs and preserving the dissected animals. The study also revealed that there is a significant difference among the male and female students, in their perception of difficult skills in

dissection. The difference is in favour of the male students. There was also a significant difference among the high, medium and low scorers in the perceived difficult skills in dissection in secondary schools in Plateau State. The difference is in the favour of the high scorers followed by the medium scorers. The recommendations deriving from the study are that biology teachers should assign equal tasks to male and female students in dissection classes. Biology teachers should also endeavor to carry all students along in dissection irrespective of their scoring levels.

Introduction

Dissection is an aspect of biology practicals that involves cutting up animals or plants in order to study them (Hornby, 2001). Historically, according to Cox and Hug (2004) dissections have been used in the classroom environment to teach students about comparative anatomy and morphology. Dissection helps to reinforce content knowledge that students might already have from previous experiences. This assertion was earlier buttressed by Akpan (2002) who discovered that over 50% of freshmen biology students believe that they benefit from doing hands on dissection.

Cox and Hug (2004) stated further that apart from the content knowledge of anatomy and morphology learned through dissection, other skills are also acquired. These skills are cutting open an animal without disturbing its organs, pinning the different organs and identifying all the internal parts. These skills acquired during dissection cannot be replaced by other means of dissection such as simulations and the use of models (Akpan, 2002). To buttress the importance of dissection, Morrison (1992) stated that in dissection, nothing intervenes between the students and their observations which is rare in science. He added that students are able to observe exactly what is happening. This was supported by Sampson (2004) who advocated that hands-on-dissections also grasp students' attention for a longer period of time as well as

increase their motivation.

The combinations of simulations and dissection have been advocated by some researchers. According to Kinzie (1993), low achieving students benefit from participating in simulations before they do a dissection because it piques their interest to the point where they are interested and focused enough to stay on task through the dissection procedures. On this, Akpan (2002) believed that multiple representations of information facilitate students learning, not only for low achieving students but for all levels of students. Akpan (2002) and Kinzie (1993) in their separate researches have claimed that students benefit from having a simulation activity prior to tackling a real life dissection, regardless of the type of software simulations or the specimen being dissected. They both discovered that students who were exposed to simulation activities first before dissection activities score high in their test scores and end of unit examination.

Statement of the Problem

Various skills and concepts abound in dissection. These skills have to be acquired for successful dissection activities to take place. John (2012) has reported that students perceived some dissection skills and concepts as difficult. This present study therefore examines the skills and concepts in dissection that are perceived as difficult by secondary school students in Plateau State, Nigeria.

Research questions

The following research questions were generated to guide the study:

1. What are the dissection skills perceived as difficult by secondary school students in Plateau State?
2. Does any difference exist among the male and female students in the skills of dissection perceived as difficult?
3. Does any difference exist among the high, medium and low scorers in the skills of dissection perceived as difficult?

Research Hypothesis

HO₁: There is no statistically significant difference among the male and female students in the skills of dissection perceived as difficult in secondary schools in Plateau State.

HO₂: There is no statistically significant difference among the high, medium and low scorers in the skills of dissection perceived as difficult in secondary schools in Plateau State.

Methodology

Research Design

This study was a descriptive survey using questionnaire techniques.

Sampling and Sampling Technique

The population for the study was all senior secondary school two (SSII) biology students in the secondary schools in Plateau State. A simple random sampling technique was used to select sixty-three (63) secondary schools from eight hundred and thirty five (835) schools from the seventeen (17) local government areas of Plateau State. However, the sample consisted of one thousand three hundred and ninety four (1394) biology students from the selected schools. These were selected using stratified sampling technique.

Research Instrument

A researcher-designed questionnaire was used as the instrument in this study known as Biology Students Questionnaires (BSQ). The BSQ was entitled "Concepts and Skills in Biology Practicals Perceived Difficult by Senior Secondary School Students in Plateau State Questionnaire".

Procedure for Data Collection

The researcher sought for the permission of the principal and the biology teachers in each of the selected schools. The questionnaire was administered to the students and collected the

same day.

Data Analysis Techniques

The data collected was analyzed using descriptive and inferential statistics. The research question was answered using the percentage (%). The research hypotheses were tested using chi-square (χ^2) statistics. In presenting the analysis, data and results, the research questions were first addressed using percentages, followed by the result of the hypotheses tested using chi-square (χ^2).

Results

In this study, three research questions and two research hypotheses were generated. Research question 1 was analyzed using frequency count and percentage, while research questions 2-3 though analyzed, have been transformed into hypotheses 1 and 2 and hence analyzed using chi-square statistical techniques.

Research question 1

1. What are the dissection skills perceived as difficult by secondary school students in Plateau State?

Table 1:
Differences in Dissection Skills Perceived as Difficult by Male and Female Students, High, Medium and Low Scorers

Variables	Killing of animals				Pining the animals				Using the dissecting kit				displaying the internal organs			
	D		ND		N		ND		N		ND		N		ND	
	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%
Male 744	17	22.8	57	77.1	67	90.0	74	9.95	64	86.02	104	13.9	67	90.99	67	9.01
	0	5	4	5	0	5			0		8	7				
Female 650	61	94.0	39	6.00	60	92.4	49	7.45	62	95.54	29	4.46	64	98.66	09	1.34
	1	0			1	6			1			1				
Variables	Preserving dissected animals				Identifying internal organs				Stating functions of organs				Describing the organs			
	D		ND		N		ND		N		ND		N		ND	
	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%
Male 744	50	68.15	23	31.8	66	92.4	76	7.53	67	90.0	73	9.93	627	84.2	117	15.7
	7		7	5	8	7			1	5			7		3	
Female 650	64	99.54	03	0.46	60	92.6	48	7.38	62	95.4	29	4.46	646	99.3	04	0.62
	7				2	2			1	5			8			
Variables	Killing of animals				Pining the animals				Using the dissecting kit				displaying the internal organs			
	D		ND		N		ND		N		ND		N		ND	
	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%
High Sc. 308	11	38.3	19	61.6	18	59.7	12	40.2	20	65.26	170	34.7	12	41.88	179	58.1
	8	1	0	9	4	4	4	6	1		4	9		2		
Med. Sc.220	18	81.8	40	18.1	19	89.0	24	10.9	21	97.27	06	2.73	16	72.73	60	27.2
	0	2	8	6	9		1	4				0		7		
Low Sc. 866	80	92.6	64	7.39	81	94.3	49	5.66	84	97.90	18	2.08	83	96.07	34	3.93
	2	1			7	4			8			2				
Variables	Preserving dissected animals				Identifying internal organs				Stating functions of organs				displaying the organs			
	D		ND		N		ND		N		ND		N		ND	
	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%
High Sc. 308	13	43.51	17	56.4	11	36.0	197	65.9	10	34.7	201	65.2	122	39.6	186	60.3
	4		4	9	1	4		6	7	4		6	1	9		
Med. Sc.220	18	83.18	37	16.8	10	49.0	112	50.9	11	65.4	76	34.5	164	74.5	56	25.4
	3		2	8	9		1	4	5		4		5	5		
Low Sc. 866	18	94.46	48	5.54	71	82.4	152	17.5	85	98.8	10	1.15	838	96.7	28	23.3
	8				4	5		5	6	5			7	7		

From the analysis in table 1 the skills and concepts perceived as difficult in dissection include killing of animals for dissection, pinning the animal on the dissecting board, using the dissecting kit, displaying the internal organs, preserving the dissected animals, identifying the internal organs, stating the functions of the internal organs and describing the internal organs.

Hypothesis 1

HO₁: There is no statistically significant difference among the male and female students in the skills of dissection perceived as difficult in secondary schools in Plateau State.

Table 2:

Chi-square (X^2) analyses of overall respondents of male and female secondary school students on the perceived difficult skills and concepts in dissection

S/No	Variable	Difficult t	Not Difficult	Total	X^2	Df	Table Value	Significance
1	Male	498	246	744	17.4	2	5.30	S
2	Female	570	80	650				
Total		1068	326	1,394				

The results in table 2 show that the calculated chi-square (X^2) value is 17.4. This is greater than the table value of 5.30 at 2 degree of freedom (df) at 0.05 level of significance. This shows that there is a significant difference between the perceived difficult skills and concepts in dissection by the male and female secondary school students. The null hypothesis is therefore rejected.

Hypothesis 2

HO₂: There is no statistically significant difference among the high, medium and low scorers in the skills of dissection perceived as

difficult in secondary schools in Plateau State.

Table 3

Chi-square (X^2) analyses of overall respondents of high, medium and low scorers on the perceived difficult skills and concepts in dissection

S/No	Variable	Difficult t	Not Difficult	Total	X^2	Df	Table Value	Significance
1	High	184	122	308	19.2	2	5.30	S
2	Medium	178	42	220				
3	Low	794	72	866				
Total		1156	238	1,394				

The results in table 3 show that the calculated chi-square (X^2) value is 19.2. This is greater than the table value of 5.30 at 2 degree of freedom (df) at 0.05 level of significance. This shows that there is a significant difference between the perceived difficult skills and concepts in dissection by the high, medium and low scorers in secondary schools in Plateau State. The null hypothesis is therefore rejected.

Summary of Major Findings

1. The skills in dissection that were perceived as difficult by secondary school students in Plateau State irrespective of their gender and scoring level are killing of animals for dissection, pinning the animal on the dissecting board, using the dissecting kit, displaying the internal organs, preserving the dissected animals, identifying the internal organs, stating the functions of the internal organs and describing the internal organs.
2. There is a significant difference among male and female students in the perceived difficult skills in dissection in

secondary schools in Plateau State.

3. There is a significant difference among the high, medium and low scorers in the perceived difficult skills in dissection in the secondary schools in Plateau State.

Discussion

The findings from the first hypothesis agreed with Tekkaya, Ozkan and Sungur (2001) whose findings reveal that there is a significant difference among the perception of gender with regard to biology concepts perceived as difficult by Turkish High school students. It also agreed with the findings of John (2012) who discovered that there is a significant difference among the male and female students in the perceived difficult concepts and skills in biology.

The finding however disagreed with John (2007) who discovered that there was no significant difference among the male and female secondary school students in Kaduna State in the perceived problems of learning biology.

The finding from the second hypothesis agreed with Boujaode and Barakat (2003) who discovered that students with lower ability level (low scorers) use more incorrect strategies and skipped more problems than those in high ability level (high scorers).

Conclusion

The findings of the study showed that the various skills in dissection perceived difficult by students irrespective of their gender and scoring levels includes killing of animal for dissection, pinning the animal on the dissecting board, using the dissecting kit effectively, displaying the internal organs and preserving the dissected animals. The concepts perceived as difficult are identification and naming the internal organs, describing the internal organs and stating the functions of the internal organs. The study also revealed that there is a significant difference

among male and female students in their perception of difficult skills in dissection. The difference is in favour of the male students. There was also a significant difference among the high, medium and low scorers in the perceived difficult skills in dissection in the secondary schools in Plateau State. The difference is in the favour of the high scorers followed by the medium scorers.

Recommendations

1. Biology teachers should assign equal tasks to male and female students in dissection classes.
2. Biology teachers should endeavor to carry all students along in dissection irrespective of their scoring levels.

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