



Attitude of Biology Teachers towards Teaching of Socio- Scientific Issues in Senior Secondary Schools of Bauchi State

Mahmoud Jamila Bako, Mohammed Ibrahim, Adamu Gagdi Jibrin
Department of Science Education,
Faculty of Technology Education,
Abubakar Tafawa Balewa University, Bauchi

ABSTRACT

This study investigated the attitude of biology teachers on teaching of Socio- Scientific Issues (SSI) in senior secondary schools of Bauchi state. The design of the study was a descriptive design of survey type. The area of the study was three (3) educational zones of Bauchi state. The population of the study comprises of all the 614 biology teachers from 210 government senior secondary schools in Bauchi state from three senatorial zones of the state, Yamane's formula was used to draw the sample size of 147 used for the study. The instrument for data collection was a questionnaire called Biology Teachers' Attitude for Teaching SSI Questionnaire (BTATSSIQ). The instrument were validated by two (2) senior lectures from department of science education, faculty of technology education, Abubakar Tafawa Balewa University Bauchi and 2 senior secondary school biology teachers with minimum of B.Sc.Ed that have taught for more than 10years to ensure the face and content validity of all the instrument, Cronbach alpha was used to calculate the reliability at $r = 0.81$ Data was collected by the researchers and with the help of research assistants.. Mean and standard deviation were used to answer the research question. The finding revealed that biology teachers' attitudes toward teaching SSI is very low and not encouraging. The study recommends that workshop should be organized to enhance biology teachers attitude for teaching socio- scientific issues.

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INTRODUCTION

Attitude of teachers toward teaching can be defined as psychological tendency to evaluate an object in terms of favorable or unfavorable attribute dimension such as good/bad or positive/negative (Herlen and Hoiroyd 1997). Palmer (2004) indicated that low level of literacy (knowledge) on Socio-Scientific Issues (SSI) exist among biology teachers. This makes to developed negative attitude

toward the teaching of SSI. The negative attitude often originated from negative experiences that the teachers had during their own primary and secondary education and these attitude may persist in their classroom teaching of science subjects including biology. In the light of this, Tosun, (2000) observed that teacher with negative attitude spend less time in teaching those topics and indicated that they are less able



to promote their attitude towards teaching of Socio-scientific issues.

Biology teachers had fundamental problem in dealing with Socio-Scientific issues because of their own value position and because of inherent tension in teaching socio-scientific issues (Sadler, 2004). Some teachers perceived that they are not ready and do not have the sufficient content knowledge and expertise to handle the SSI, they indicated that these issues can cause conceptual difficulties to teachers and students (Kara 2012). Literature indicated that there are some teachers who commented that they are unfamiliar and unprepared to manage argument and debates over SSI during Biology classes beside they also believe that conducting, Argument or debates during biology lesson is time consuming (Simonneaux, 2007). Day and Bryce, (2010), Many Teachers do not treat SSI in a proper manner because questions on SSI raised by students are not responded with informal discussions of poor quality. However, Amirshokoohi, Sadler, Kazempour and Allspaw, (2006,) have earlier found that some teachers reject the idea that ethics play a role science and opposes to teach any ethical or social issues in Biology classes, this is because science is about learning of fact not about social or ethics. On the other hand, Reiss, (1999), reported that some teachers don't have confidence to teach ethical and moral issues related to socio-scientific. Also Kara (2012) noted that teachers do not feel that they are expert on those topics and said that teaching SSI is time consuming and posed obstacles to teach. These imply that teachers may lack knowledge in SSI, as such, it is difficult for them to argue over SSIs in reality. Based on the literature available for the study, the present study in Nigeria is very scanty and rare, or there is little or no work done in this field or topic, particularly in Biology and specifically in Bauchi state. It is against this background that the present study focused

on the attitude of biology teachers for teaching of socio-scientific issues in senior secondary schools in Bauchi state.

Research Questions. One research question guided the study;

- i. What is the attitude of biology teachers on teaching of socio-scientific issues?

METHODOLOGY

The design used for the study was descriptive of survey design type. The population of the study comprises of all the 614 biology teachers from 210 government senior secondary schools in from three Senatorial Zones of Bauchi state. Yamane (1967) formula was used to draw the sample size of 147 used for the study across the three senatorial zone. The instruments for data collection was a questionnaire called Biology Teachers Attitude for Teaching Socio-Scientific Issue Questionnaire (BTASSIQ) adapted from Michelle Maier, Daryl Greenfield, Rebecca & Bulotsky-Shearer (2013). The BTASSIQ was developed on a four Likert scale ranging from Strongly Agree (SA) =4, Agree (A) =3, Disagree (D) =2, Strongly Disagree (SD) =1

The instrument was validated by two (2) senior lecturers from the department of science education, Faculty of Technology Education, Abubakar Tafawa Balewa University Bauchi and 2 senior secondary school biology teachers with a minimum qualification of B.Sc.Ed have more than 10 years of experience in teaching biology, to ensure the face and content validity all the instrument. All suggestions and corrections made by the validators were effected and final draft of the instrument was used for this study.

For the reliability, the instrument was pilot tested on 38 senior secondary school biology teachers from Gombe state which were not part of the study. A split half method was the employed and Cronbach



alpha was used in computing the items using Statistical Package for Social Science (SPSS). The Cronbach Alpha is suitable for determining the reliability of an instrument especially the one measured on rating scale as in this case. The reliability coefficient of (BTASSIQ) was found to be 0.81 and hence suitable for study of this type.

The researchers with the help of research assistants administered the instrument, BTASSIQ to the respondents and were retrieved back and subjected for

statistical analysis using a software called Statistical Package for Social Science (SPSS).

In analyzing the research question, Mean and standard deviation were used to answer research question where the criterion mean for accepting result was 2.50 and mean of less than 2.50 was not accepted for decision, Therefore any item with mean of 2.50 and above as positive and from 0 – 2.49 is negative. According to Uzoagulu (2011), this can be used to interpret the level of agreement, behavior or opinion of a group of respondents of this type.

RESULTS AND DISCUSSION

Research Question: What is the attitudes of biology teachers teaching for socio-scientific issues?

Table 1: Mean and Standard Deviation Response of Biology Teachers Attitude for Teaching Socio-Scientific Issue

S/N	Items	N	Mean	SD	Decision
1.	I feel comfortable in planning and demonstrating activities related to SSI teaching.	147	2.11	1.00	Rejected
2.	Teaching of SSI makes biology teachers looks rude and scared of being accused of immorality	147	2.24	0.91	Rejected
3.	SSI makes biology teachers skips some important segments in that topics in biology.	147	2.00	0.87	Rejected
4.	I discuss ideas and issues related to SSI with other teachers.	147	2.36	1.08	Rejected
5.	Preparation for SS teaching takes more time than other areas.	147	2.76	0.89	Accepted
6.	I used resources books to get ideas about SSI for student.	147	2.02	0.85	Rejected
7.	I feel comfortable in teaching SSI even from my early teaching.	147	2.40	1.09	Rejected
8.	SS concepts help to improve teachers' content knowledge.	147	2.61	0.89	Accepted
9.	It is appropriate to introduce topics related to SSI to children at young age.	147	2.00	0.82	Rejected
10.	I have fair in teaching SSI content knowledge to students.	147	2.34	0.93	Rejected
11.	I feel uncomfortable talking with young student about SSI.	147	1.99	0.82	Rejected
12.	I used internet to get ideas about SSI.	147	2.59	0.93	Accepted
13.	Students cannot learn SSI from their teachers unless they read on their own.	147	2.38	1.07	Rejected
14.	SS concepts are too difficult for a student.	147	2.79	0.88	Accepted
15.	SSI helps to improve student social skills.	147	2.00	0.84	Rejected



S/N	Items	N	Mean	SD	Decision
16.	I enjoy teaching SSI with my students.	147	2.39	1.08	Rejected
17.	I am afraid that student may ask me a question about SSI that I cannot answer.	147	2.24	0.90	Rejected
18.	I provided opportunities to explore alternative view points and development of coherent argument.	147	2.03	0.86	Rejected
19.	When teaching SSI, I will usually welcome students questions	147	2.45	1.08	Rejected
20.	If students are underachieving in SSI, it is most likely due to ineffective teaching	147	2.69	0.90	Accepted

Results from the table indicated that the attitude of biology teachers for teaching SSI is low. This is obvious as 15 out of 20 items from the analysis have their means less than 2.50 and are considered rejected while only 5 items were accepted with means of 2.50 and above. Item 11 has the lowest mean which indicate that biology teachers are uncomfortable in discussing Socio-Scientific Issue. It also implies that biology teachers are not comfortable in planning and demonstrating activities related to SSI teaching.

DISCUSSION OF FINDING

The finding indicated that the attitudes of biology teachers toward teaching SSI is very low and not encouraging, Although there are different studies conducted on teachers' attitudes of teachers related to teaching process such as that of Herlen and Hoiroyd (1997) who reported that in teacher education, that prospective science teachers carry have certain attitudes about teaching and learning of some concepts in science subjects such as biology. This mean that Teaching activities of teachers are directly related to their attitudes (Bleicher & Lindgren 2005).

However, in line with this finding, Prieto (2007) have earlier stated that the ability of teachers to cope with classroom problems and to develop their attitudes

which is a key element in the learning process need to be given attention in the initial stages of the teaching profession.

Other recent works which have addressed the empirical study of some attitudes states as sources of self-efficacy in secondary school teachers. Like Martínez and Salanova (2005) show in a sample of teachers that low levels of self-efficacy are preceded by high levels of negative attitudes. But in this situation the teachers have high self- efficacy but their attitudes was not encouraging. Ritchie, Tobin, Hudson, Roth and Mergard (2011), in a study of a novice science teacher, find that positive attitudes are related to the achievement of positive expectations and to the failure of the actual fulfilment of negative expectations, while negative attitudes are related to the failure to achieve positive expectations. Other work has also shown that certain negative attitudes can act as mediators between self-efficacy and its facilitators or obstacles, indicating that the fact of experiencing a negative attitudes state affects the levels of self-efficacy

CONCLUSION

In this study, an investigation of biology teachers' attitude of teaching socio-scientific issues, revealed that, the attitudes of biology teachers toward teaching SSI is low and not encouraging. This could be that,



they are not comfortable to teach such topics that are socio-scientific related.

RECOMMENDATIONS

Based on the finding of the study the following recommendations were derived.

- i) Workshops should be organized to enhance the attitudes of biology teachers toward teaching SSI in secondary school by the schools management or state ministry of education
- ii) A students centered methods should be used to teach Socio scientific issue as it will help them to acquire the knowledge

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