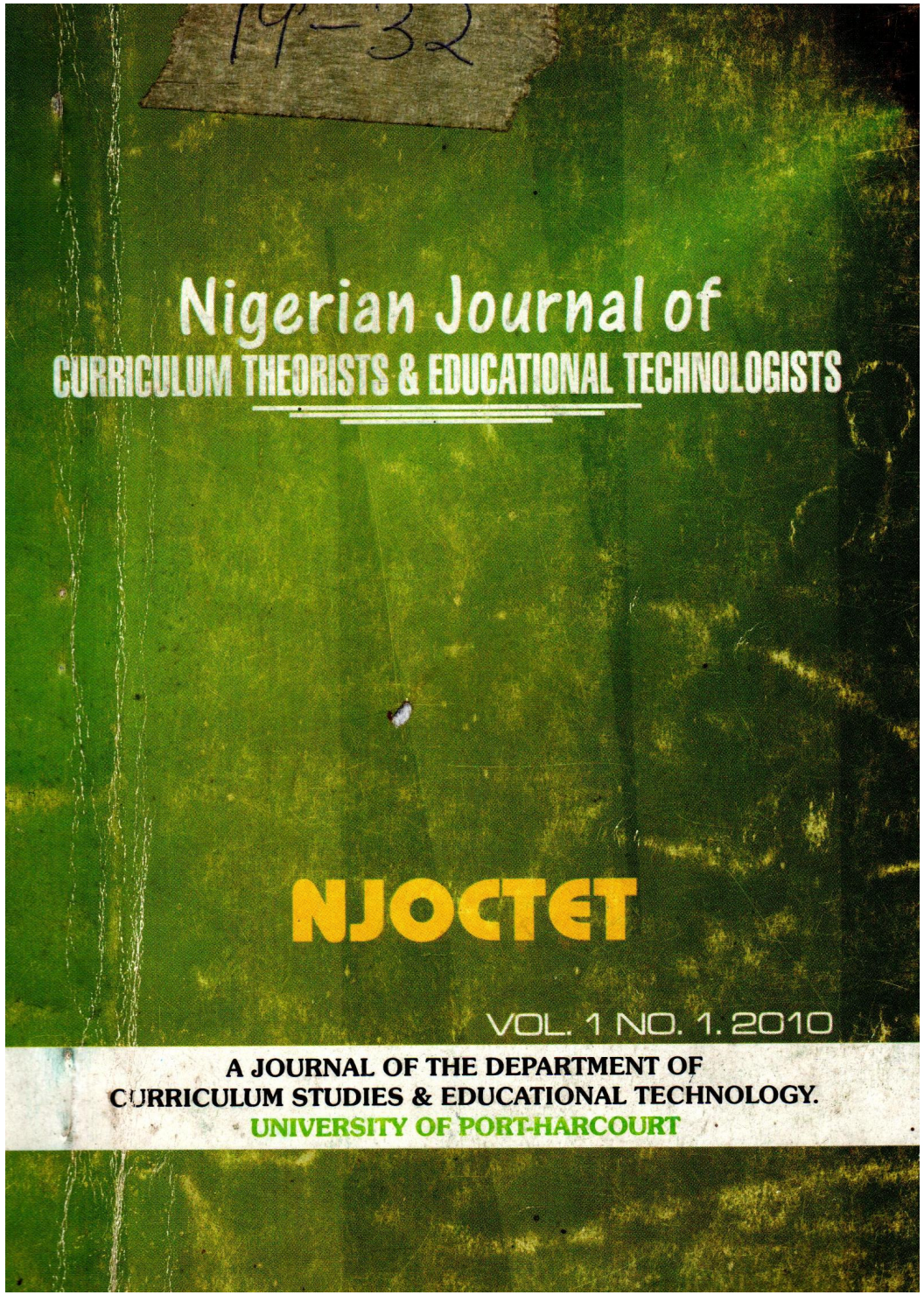

Integrating Socio-cultural Resources In Chemistry Teaching: Implication For Value-orientation

By

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Abstract

The study was on integrating socio-cultural resources in chemistry teaching. Implication for value orientation. Three (3) research questions guided the study. Simple random sampling technique was used to obtain a sample size of 160 chemistry teachers from 15 secondary schools in Uyo municipality. Instrument for data collection was Socio-cultural Resources Integration in Chemistry Questionnaire (SRICQ). Data gathered were analyzed using descriptive statistics of mean (X). Major findings of the study showed that teachers approved 8 out of the ten (10) socio-cultural resources enumerated for integration in chemistry teaching. Findings also revealed that chemistry teachers have low level of knowledge on socio-cultural resources to be infused in chemistry teaching. Also, the chemistry teachers agreed on all preferred strategies for effective integration. Educational implications for societal value-orientation were discussed and conclusion were finally made.

Introduction

Nigeria is a multicultural society with great ethnic diversity where each group is identifiable with unique socio-

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cultural stamps such as language, dressing and behaviours. Socio-cultural practices depicted in ethnic diversities of language, customs, religion and ways of life raises the problem of violent competition among its various classifications (Olaitan, 2005). It is with this in mind that Oriaifo (2005) suggested the need to tailor Nigerian educational system and curricula along the lines of local traditions and utilize local contents that would not hinder but facilitate progress for accelerated socio-economic development. But there are few or no teachers receiving training and orientation with appropriate Nigeria socio-cultural resource. There is need therefore to prepare the Nigerian teacher to be culturally responsive by reading a large body of empirical and conceptual literature (Akubuilo, 2009) designing instructions that carries along all ethnic identities making observations in a culturally and linguistically diverse classroom that will bring about behavioural change and make schools more responsive to students from diverse backgrounds. National policy on Education (2004) recognizes, that no educational system can rise above the qualities of its teachers. Unfortunately it has been established that central among the constraints to effective curriculum implementation in Nigeria is the dearth of able and willing personnel (Akubuilo, 1994; Oriaifo, 2005).

Many qualified teachers are unable to make curricula that are balanced and relevant to the Nigerian socio-cultural background because they find attitudinal change difficult. It is therefore pertinent that teacher education should address this

issue by integrating strategies of cultural diversity into its programmes. There is need for socio-cultural resource to reflect and integrate the multicultural diversity of Nigeria and make it central to teaching and learning.

Socio-cultural resources are culturally responsive instructional materials that help students and teachers acquire knowledge about themselves, ethnic origin, heritage and values that promote their ideals. They provide access to the knowledge construction process and enable a teacher to design instruction that facilitates student learning. Socio-cultural resource help to create value oriented consciousness among its various users by making students better understand the world rather than memorize predigested information. Selecting appropriate socio-cultural resources as learning materials and instructional strategies will build bridge and inculcate value education. It will make learners continually strive to make sense of new ideas through ingenuity and resourcefulness of teachers which will help them understand obstacles to change and develop skills for collaboration and dealing with conflict.

Hudson (1992) and Harris (2000) opined that cultural resources actualizes children's potential in helping them learn how to make peace with themselves and with others; empowering them with skills, attitudes and knowledge that help them live in harmony and unity with self, human kind and with nature.

The National policy on Education (NPE, 2004) has as its main objectives, the preparation of individuals to participate in and raising a generation of people who can think for

themselves and make effective contribution to the life of the society. On this wise, value orientation and education citizenship education posits that respect for the views and feelings of others, dignity of labour, should help students appreciate national values and live as good citizens. Gumut (2007) opined that integrating subject like music, social studies, civics, fine art, history, geography and religious studies in chemistry curriculum could be used to develop students capacity for critical thinking, inquiry and reflective skills in chemistry that will enable them understand obstacles to peace and civic responsibility and maintained that knowledge of chemistry using cultural resources will expose students to requirements, necessary to make humans have respect for one another.

Integrating meaningful socio-cultural resources in classroom chemistry teaching such as drama, folktales, folklores, aesthetic models, story telling, songs, theatrical creativity, ecohabitats, local language advertising and communicating information in mother tongue will arouse students interest for value education that inculcates scientific literacy attitudes. Cecil (2005) suggested that revising chemistry textbooks and training teachers in the use of appropriate cultural resources that promote scientific techniques will make children acquire scientific skills relating to chemistry and be able to link discipline beneficial to conflict communities. Teachers are agents of change and therefore need to be taught how to effect, positive changes on their students. They need insight into how their students past learning

experiences have shaped their current views of school and school knowledge (Akubuilo, 2009). Teachers are assets and access to socio-cultural resources that will provide students with enriched set of materials to meet the challenges of different cultural values. This will give room for networking in preparing the ground work to advance mutual understanding with stronger community involvement, promoting empathy for students of diverse backgrounds in nurturing passion and ideals for making a difference in students lives and in conflict management particularly in crisis-ridden environments.

Statement of the problem

Nigeria has been in crises for the greater part of its journey to nationhood. Virtually all sectors of our national life has experienced one form of crisis or the other. Increase in communal and school-based violence has fuelled interest towards valued education for tolerance. Unfortunately, chemistry teachers are not well informed and positioned in chemistry concepts that should integrate socio-cultural resources in classroom teaching to stem the tide of crisis among its learners. Uya (2009) posited that frustration and precipitous decline of our once vibrant civil societies, stunted political, social and economic growth, massive unemployment, in security of life and property, collapsing educational and infrastructural decay have all contributed to crisis. We must accept this ugly truth and find ways to respond positively and provide solutions based on critical thinking and analysis rather than rhetorics. Chemistry teachers must evolve

creative and innovative ways of infusing socio-cultural resources in chemistry teaching for students value orientation.

Research Questions:

Specifically, this study attempts to answer the following research questions:

1. What socio-cultural resources are to be integrated into chemistry teaching?
2. What are chemistry teachers level of knowledge on socio-cultural resources to be integrated into chemistry teaching?
3. What strategies are needed for effective integration of these socio-cultural resources?

Research Procedure

Design: A survey research design was employed for the study

Population, Sample and Sampling Technique

All the 792 chemistry teachers in Uyo municipality formed the population of the study. Simple random sampling technique was used to select 160 chemistry teachers from 15 secondary schools who formed the sample size for the study.

Instrument for Data Collection

The instrument used for data collection was socio-cultural resources integration in chemistry Questionnaire (SRICQ) developed by the researcher and validated by 3

experienced chemistry graduate teachers and 2 curriculum and planning lecturers in Science, Education. The questionnaire was a 4- point likert-type scale of Strongly Agree (SA) = 4 points, Agree (A) = 3 points, Disagree (D) = 2 points and Strongly Disagree (SA) = 1 point

Method of Data Collection:

The instrument was given to the subjects and collected from them the same day before close of school. A total of 168 questionnaire were administered but 160 were collected back from the subjects and used for data analysis.

Method of Data Analysis: The data collected were analyzed using descriptive statistics of mean (X). The mean was interpreted using the following guide.

2.50 4.00 Agree and High for Tables 1&2 respectively

1.00 2.49 - Disagree and Low for Tables 1& 2 respectively.

Results:

Table 1: Mean Ratings of chemistry Teachers on socio-cultural resources to be integrated in chemistry teaching.

S/N	Socio- cultural resources	SA	A	D	SD	X	Remark
1	Theatrical activity connect knowledge to chemistry concepts creativity	356	150	16	13	3.30	High
2	Story- telling on frequent basis updates teachers information on available chemistry resources	224	183	38	24	2.93	High
3	Dance-drama enhances knowledge -pool for concept acquisition in chemistry	304	174	16	18	3.20	High
4	Folktales and folklores enhances positive learning outcomes	272	141	36	27	2.98	High
5	Aesthetics facilities like floral and ecohabitats promote knowledge acquisition in manipulating chemistry concepts	68	75	224	6	2.33	Low
6	Scientific skills for chemistry act ivities are generated at tourism sites.	252	93	100	11	2.85	High
7	Indigeneous books depicting native game models on cultural and heritage preservation facilitates chemistry knowledge	332	93	44	24	3.08	High
8	Quality time is invested in sensitizing learners awareness on indigeneous folklores with scientific concepts that aids chemistry knowledge	204	114	108	17	3.03	High
9	Local advertisement in mother -tongue improves creative skills on chemistry concepts	244	129	42	35	2.81	High
10	Carnivals depicting ri ch cultural heritage emphasizes knowledge of chemistry concepts.	68	81	218	15	2.38	Low

Results on Table 1 above showed that eight out of the ten enumerated socio-cultural resources had mean ratings of between 2.81 and 3.30, while only two socio-cultural resource types which include carnivals depicting rich cultural heritage that emphasizes knowledge of chemistry concepts and aesthetics like floral and ecohabitats promote knowledge acquisition in manipulating chemistry concepts had mean ratings of less than 2.50. In other words, chemistry teachers are of the opinion that all socio-cultural resources listed except about two should be integrated into chemistry teaching.

Table 2: Mean Ratings on chemistry Teachers' level of knowledge on socio-cultural resources.

S/N	Socio- cultural resources	SA	A	D	SD	X	Remark
1	Theatrical activity connect knowledge to chemistry concepts creativity	212	123	78	27	2.75	High
2	Story- telling on frequent basis updates teachers information on available chemistry resources	164	93	114	31	2.51	High
3	Dance-dram enhances knowledge -pool for concept acquisition in chemistry	76	33	228	16	2.21	Low
4	Folktales and folklores enhances positive learning outcomes	92	51	178	31	2.20	Low
5	Aesthetics facilities like floral an d ecohabitats promote knowledge acquisition in manipulating chemistry concepts	324	162	28	11	3.28	High
6	Scientific skills for chemistry activities are generated at tourism sites.	192	219	36	21	2.93	High
7	Indigeneous books depicting native game models o n cultural and heritage preservation facilitates chemistry knowledge	144	117	92	39	2.45	Low
8	Quality time is invested in sensitizing learners awareness on indigen eous folklores with scientific concepts that aids chemistry knowledge	248	120	58	29	2.84	High
9	Local advertisement in mother -tongue improves creative skills on chemistry concepts	160	138	66	34	2.48	Low
10	Carnivals depicting rich cultural heritage emphasizes knowledge of chemistry concepts.	126	105	104	48	2.39	Low

Results on Table 2 above showed that only five out of the ten socio-cultural resources had mean ratings of 2.51 and above. This means that, chemistry teachers' level of knowledge on five socio-cultural resources which include theatrical activity that connects chemistry concepts to creativity, story-telling on frequent basis for teachers' update on information regarding chemistry concepts, aesthetic facilities like floral and

ecohabitats in manipulating concepts on chemistry, tourism sites that generate scientific skills for chemistry activities and quality time invested in sensitizing learner awareness on indigenous folklores that connects chemistry knowledge are high. The level of knowledge on the remaining five socio-cultural resources is low.

Table 3: Strategies for integrating socio-cultural resources in chemistry teaching.

Table 3 indicates that about 96% of the population indicated that the following strategies should be employed for integrating socio-cultural resources in the teaching of chemistry

- Using aesthetics of ecohabitats in teaching topics like pH of solutions, buffer solutions will excite students' interest in chemistry concepts.
- Employing tourism sites related to chemistry for students' creativity in hands-on, minds-on and hearts-on activities for the teaching of oxygen, water-pollution, masking and demasking agents.
- Preparing conferences at industrial sites with socio-cultural resources, related to chemistry concepts that introduces chemistry teachers to industrial chemistry applications.
- Engaging retired personnels with scientific and technical knowledge of socio-cultural resources to teach teachers
- Teachers with socio-cultural resources knowledge to

come and help model chemistry packages that adapts indigeneous socio-cultural resources relevant to chemistry teaching.
- Sensitizing teachers and students awareness on the accruing benefits of socio-cultural resources for motivational teaching..

Discussions

The results of findings reveal that eight out of the ten socio-cultural resource listed should be integrated in chemistry teaching. This gives an indication that chemistry teaching contents lack relevant and beneficial socio-cultural resources. The fact that 5 out of the ten socio-cultural resources enumerated are rejected show that chemistry teachers need to broaden their knowledge and develop innovative and creative skills on how to use socio-cultural resources for maximum productivity and students' lesson outcome. Chemistry teachers agreement on integration of up to 8 socio-cultural resources in chemistry teaching is in line with Gumut (2007) who opined that integrating subjects like music, fine art, social studies, history, religious studies and geography will develop reflective skills in chemistry that will make learners responsible and have respect for other humans. Chemistry teachers' low level of knowledge on five (5) out of the ten (10) socio-cultural resources enumerated on the other hand, is an indication that they are ill-prepared for the integration of socio-cultural resources needed for the students. Teachers' training as of date lack socio-cultural resources use in teaching

chemistry and as such cannot impart needed knowledge to the students. The five (5) socio-cultural resources in which they had very high mean rating may be as a result of media-interaction interest in visiting tourism sites, reading magazines, watching films and learning form their children.

For strategies on effective infusion of socio-cultural resources, study results showed that chemistry teachers are all in support of the suggested strategies for integrating socio-cultural resources in chemistry teaching: There is need for meaningful implementation of these strategies for learners attitudinal change for value orientation.

Educational Implication

The importance of integrating socio-cultural resources is chemistry content teaching does not only end with helping learners become relevant and self-reliant, but for chemistry teachers to emphasize connection between what happens in the classroom and the wider society. Emphasis should be placed now on identifying socio-cultural resources for practical application in the teaching of chemistry in the classroom. Hence, teaching-learning approach should be practical and experiential for sustainable national development and value-orientation.

2. The high number of low level of knowledge on socio-cultural resources listed in Table 2 suggest that much work is needed in the area of teacher preparation. Teacher education programmes for prospective science education teachers

should be oriented towards the application of socio-cultural resources with chemical concepts to facilitate value orientation inculcation.

3. The need for effective implementation of the suggested strategies calls for everyone's cooperation including the government for these laudable ideas to work. Teachers cooperation is highly important and needs to be encouraged by the provision of functional laboratories and equipment and other forms of incentives.

Conclusion

Conflicts are a necessary presence in any growing society and so there is need to integrate socio-cultural resources in chemistry teaching contents. It is imperative to train chemistry teachers to effectively harness socio-cultural resources for chemistry content teaching by initiating their potentials to bring about attitudinal change in students. These resources will help chemistry teachers' model, use and initiate specific learning tasks to nurture talents, creativity and skills in learners. Chemistry teaching enriched with socio-cultural materials will make teachers think about learning in new and finnovative ways for value reorientation in their students and the society in general.

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