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RESEARCH ARTICLE

Effect of Teacher's Likability on Student's Attitude towards Chemistry

Gabriel M. Obaje and John Eje
Department of Chemistry Kogi State College of Education, Ankpa.

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Abstract

Chemistry is among the essential science subjects taught at the secondary school level in Nigeria's education landscape. There has been a persistent concern about the poor performance in chemistry in Nigeria. The present study investigated teachers' likability as a scarcely explored variable that could explain the variation in students 'attitudes towards chemistry. A cross-sectional survey was employed for the analysis, and the population of the study comprised senior secondary school students in the Kogi State of Nigeria. Participants included males and females senior secondary school students enrolled in the science classes. One hundred and fifty-three students participated in the study. The respondents completed a self-report measure of the Teacher's Likability Scale and the Attitude Toward Chemistry Lessons Scale (ATCLS). The finding showed that most of the participants indicated a negative attitude toward the subject (M = 2.89, SD = 3.32), compared to others (M = 1.18, SD = 3.39) that exhibited an unfavorable attitude towards the chemistry. A linear regression analysis was conducted to test the study hypothesis, and the result showed that teacher's likability statistically significantly predicted attitude towards chemistry F (1,151), 124.716, P< .05. Therefore, the study concluded that a teacher's likability is an essential determinant of student's attitudes towards chemistry. Thus, it is recommended that teachers should improve in their personal and professional attributes.

Introduction:-

Nigeria is currently pushing for increased technology and innovation teaching and learning at all levels of her educational system. This is implicated in the National Policy in Education (2004) proposal for increased funding for science and technology. In contemporary society, the development of any society is measured by its technological advancement because it provides the opportunity for wealth creation, improved quality of life, and real economic growth and transformation in any community (Anaeto et al., 2016).Numerous studies have linked technological innovations to the national development of Nigeria (Ajah & Chigozie-Okwum, 2019; Ajibo et al., 2019; Akpojedje & Ighodaro, 2019; Bubou, 2011; Mashi et al., 2014; Nwankwo & Njoku, 2020; Oghogho, 2013; Oladeji & Adegboye, 2019; Oloruntoyin & Adeyanju, 2013; Siyanbola et al., 2016). The studies emphasized the subject's relevance in improving scientific opportunities and developing relevant skills required in attaining the desired technological position. Perhaps, the primary goal of science education in any given domain is the focus on scientific literacy (Upahi et al., 2020). An essential aspect of science education in Nigeria's educational landscape that contributes significantly to industrial growth and national development is chemistry(Emendu, 2014).

Corresponding Author:- Gabriel M. Obaje
Address:- Department of ChemistryKogi State College of Education, Ankpa.

Chemistry is a part of physical science concerned primarily with matter's properties, composition, and reactions(Otor et al., 2015). Chemistry is an essential branch of science(Hailemariam, 2017), and the fundamentals of the life sciences (Mahdi, 2014). In addition,Sunday et al. (2019)contend that chemistry is among the science subjects that assume a vital position in science because it provides the opportunity for the basic knowledge of the complexities in chemicals and their properties. Eya and Ezeh (2020) noted that chemistry education is essential in developing human existence and attaining sustainable economic growth. Exposure to the basics of chemistry is a crucial pathway to developing students' scientific attitudes, which are transferable to other areas in life(Chepkorir et al., 2014).

Consequently, chemistry in the Nigerian context has been fraught with challenges related to student's lack of interest, negative attitudes, low enrollment, inadequate laboratory facilities, and pedagogical competence(Edomwonyi-Otu & Avaa, 2011; Emendu & Okoye, 2015; Muhammad, 2017; Ojukwu, 2016). Perhaps, the subject is widely purported to be a complex area of study among students(Gladys et al., 2017; Salame et al., 2019), and has been characterized by poor performance (Abudu & Gbadamosi, 2014; Jack, 2013; Nbina, 2012), especially in the secondary level. Perhaps, numerous literature abounds that highlights the underlying factors in student's performance in chemistry (Adewumi & Monisola, 2013; Aluko, 2008; Kolawole et al., 2011; Oboma, 2020; Omoniyi & Ese, 2018; Osokoya, 2016; Owo et al., 2016; Yusuf, 2014). However, attitudes are an essential psychological construct that has received much research attention relating to student's performance.

Attitudes reflect an individual's likeability or disagreements towards any aspect of their socio-world. In other words, it represents a person's cognitive and emotional appraisals, including behavioral responses. Student's attitude to any given subject has been proven to lead to good performance in that subject. Accordingly,Veloo et al. (2015) contend that a favorable attitude increases a student's effort while a negative attitude makes learning difficult. Perhaps, attitudes towards chemistry entail student's overall perception, affection, and the tendency to participate in chemistry-based activities. Attitudes contribute immensely to success in chemistry(Yunus & Ali, 2012). Research has explored several factors that could determine student's attitudes towards chemistry. For example, Chua and Karpudewan (2015)investigated gender and grade level effects on secondary students' attitudes towards chemistry lessons. The result indicates that gender and grade level have a significant impact on attitude towards learning chemistry. Also, Roselyn et al. (2018)examined the effectiveness of the cooperative e-learning approach on learner's attitudes towards chemistry. The result indicated that the students exposed to the collaborative e-learning approach showed a positive attitude towards chemistry. In another study, Tabassum (2020)linked the use of ICT tools and students' attitudes towards chemistry. Salta and Tzougraki's (2004) survey implicated teaching approaches and educational tools in students' chemistry attitudes. In a recent study, Musengimana et al. (2021)found teachers' behavior, students' interest, learning environment, and self-directed effort correlated with attitude towards chemistry. Other researchers have also implicated instructional approach (e.g., Akcay et al., 2010; Juntunen & Aksela, 2013; Khan & Ali, 2012; Kousa et al., 2018; Singh & Chibuye, 2016), and instructor's characteristics (Adegbola, 2019; Chepkorir et al., 2014; Yunus & Ali, 2018) as the variable that affects student's attitudes toward chemistry. Perhaps, studies examining the relationship between teacher's likeability and attitudes to chemistry are lacking in the literature. Thus, justifying the present study.

Teacher's likeability encompasses the overall perception of students relating to their teacher's attractiveness, friendliness, and pedagogical competence. The construct entails students' generally positive attitude towards the teacher (Feistauer & Richter, 2018). Insinuations suggest that most students are more likely to be influenced by one or more instructor characteristics and conceivably develop a favorable attitude towards the instructor and the subject. Accordingly, research contends that pleasant factors positively influence others. Consequently, few authors have investigated the effect of likability in the educational context (Chatelain, 2015; Delucchi & Pelowski, 2000). Thus, the primary purpose of this study is to investigate the role of perceived teacher's likability on secondary school student's attitudes towards chemistry. It is hypothesized that teacher's likability will account for the variation in student's attitudes towards chemistry.

Method:-

The present study was conducted in Kogi State, Nigeria, using a cross-sectional research design. The population of the survey comprised senior secondary school students in the Kogi State of Nigeria. The samples included males and females at the senior secondary level. They were primarily chosen from the science class due to the study purpose. A total of 171 students were approached with the aid of school teachers and administrators between July and September 2021. The respondents were prepared and briefed on the research purpose before the commencement of

the study. Out of 171 students approached, 165 consented to partake in the study and were given the study instrument to fill on the spot. Unfortunately, 12copies of the instrument were retrieved and marked unusable due to wrong filling. However, the adequately filled ones (153) were subjected to statistical analysis.

Measure:-

Teachers Likability

The participants rated the teacher's likability with a 10-item Linkert form scale scored in 5-point ratings ranged from 1 (not likable at all) to 5 (very likable). The instrument was validated following a pilot study, and the Cronbach alpha .78 reliability coefficient was recorded on the scale. A higher score specifies high teacher's likability.

Attitude towards chemistry

Attitude towards chemistry was measured using the Attitude Toward Chemistry Lessons Scale (ATCLS) developed by (Cheung 2009). The instrument assesses different dimensions of attitudes, including liking for chemistry laboratory work, liking for chemistry theory lessons, evaluative beliefs about school chemistry, and behavioral tendencies to learn chemistry. Items in the scale were modified to suit the present context. The Linkert-type scale was tested for reliability with a pilot study, and a Cronbach alpha .78 reliability coefficient was obtained. A positive attitude is indicated with a higher score

Result:-

The mean and standard deviation score of attitudes towards chemistry revealed (M = 2.89, SD = 3.32) for negative attitude and (M = 1.18, SD = 3.39) for positive attitude. This indicates a higher negative attitude towards chemistry among the respondents.

Table 1:- Table showing the mean and standard deviation score of the respondent's score on the attitude towards chemistry.

Attitude towards physics	N	Mean	S D
Negative attitude	89	2.89	3.32
Positive attitude	64	1.18	3.39

The primary assumption of the study stated that teacher's likability would account for the variation in student's attitudes towards chemistry. Thus, a linear regression model was performed to test the hypothesis. The result of the linear regression analysis established a statistically significant effect of teacher's likability on student's attitude towards chemistry, F (1,151), 124.716 P< .05 with adjusted $R^2$of 483.

Table 2:- Table showing the linear regression result of the effect of teacher's likeability on the respondent's attitudes towards chemistry.

	B	SEB	β	t	R^2	Sig
Constant	1.84	.049		38.76	.483	.000
Teacher's likability	-.69	.062	-.68	-11.18	.000	

Discussion:-

The study aimed to determine the teacher's likability as a factor that could influence students' attitudes towards chemistry. Firstly, the mean and standard deviation scores of attitudes towards physics revealed that the majority of the respondents showed a negative attitude toward the subject (M = 2.89, SD = 3.32). At the same time, some (M = 1.18, SD = 3.39) indicated a favorable attitude towards the subject. This result shows a higher negative attitude towards chemistry among the respondents. Thus, consistent with previous studies(e.g., Arokoyu, 2018; Bani, 2020; Binti & Iksan, 2018; Seba et al., 2013; Xu, 2014). The studies emphasized the prevalence of negative attitudes towards chemistry among students in various education levels. Thus, the subject has been fraught with the challenge of unfavorable attitudes. Perhaps, the trend has been implicated in poor performance in chemistry. Accordingly, Rulev (2021) stated that the concept of chemistry has become synonymous with something unpleasant, and the reason is attributed to a lack of knowledge.

Furthermore, a simple linear regression model was performed to determine the variation in students' attitudes towards chemistry based on the teacher's likability. The analysis indicated that the predictor variable statistically significantly predicted attitude towards chemistry F (1,151), 124.716 P< .05. with the adjusted R^2 showing that the predictor variable contributed 48.3% of the variance in attitude towards chemistry. Thus, the finding affirmed the study's assumption that teacher's likability would account for the variation in attitudes towards chemistry. The result is consistent withMorgan and Bergeron (2007), which established a significant correlation between teacher likability and the likelihood of increased future enrollment in courses with the likable teacher. Students are strongly influenced by teachers who act as role models for students(Choudhary et al., 2019). Perhaps, teacher's characteristics are an essential factor in learning, especially in early education. From this result, it can be deduced that teacher's likability would significantly influence a learner's attitude in any subject, including mathematics and physics. Also, the motivation to engage in academic work could be improved based on the likable status of the teacher. Conversely, a teacher's likability does not necessarily lead to better performance in chemistry. Students who developed a positive attitude towards the subject based on the teacher's characteristics may not better understand the concept of chemistry. Better performance in chemistry depends on the ability to process and store information(Solis-Foronda, 2020). However, teacher's likability provides a pathway through which positive attitudes could be formed.

Strength, Limitation, and future direction

The study provided insight into the relevance of teacher's likability in shaping student's attitudes towards chemistry. The current findings could provide relevant data to education stakeholders, parents, and the general public in strengthening learners' performance in chemistry. Despite this revelation, caution is advised in generalizing the study's finding in that the self-report measure utilized in the study may be problematic. Also, the sampling method may affect the generalization of the result. However, the study recommends that future researchers use other data sourcing measures and expand the samples for a more comprehensive outcome.

Conclusion:-

The study aimed to examine factors influencing attitude towards learning chemistry among secondary school students. The teacher's likability was adopted as the independent variable. The result found that the predictor variable accounted for the variance in attitude towards chemistry. Hence, it is concluded that a teacher's likability is a significant predictor of attitude towards chemistry. Thus, the study recommends that teachers improve their attributes and pedagogical qualities to attract their students' attention. Also, teachers should be more facilitators than strict instructors.

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