



## Relationship Between Information Literacy And Skills As A Determinant To Attitude Towards Science Learning Among Coe Biology Students In Zaria, Nigeria.

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### Abstract

This study is titled "Assessment of Information Literacy Skills as a Determinant of Attitude towards Science Learning among COE Biology Students in Zaria, Nigeria, one of the main causes of students' negative attitudes towards learning science is a lack of information literacy abilities. To achieve this, two research questions and two null hypotheses were formulated to guide the study, among which are: what is the level of information literacy skills of COE Biology students as a determinant towards attitude to science learning and what is the level of relationship between information literacy skills of male and female COE Biology

students as a determinant towards attitude to science learning. There is no significance relationship between the levels of information literacy skills as determinants to COE Biology students as a determinant towards attitude to science learning. A survey research design was adopted for this study. The population comprises all the COE II Biology students (3440) in the 2022–2023 academic sessions in FCE Zaria. A sample of 250 students randomly selected for participation was used for the study. A validated instrument called the Information Literacy Skills Attitude Questionnaire (ILSAQ) with a reliability coefficient of 0.75 was used for the data collection. Linear regression analysis was used to test the null hypothesis at  $P \leq 0.05$  level of significance. Findings revealed that there is a statistically significant difference between levels of information literacy skills and student's attitudes towards science. The finding further revealed that there is a statistically significant difference between male and female information literacy and student's attitudes towards science. The researcher thus concluded that acquiring adequate information literacy skills was helpful in enhancing students' attitudes towards science education. It was therefore recommended that stakeholders in education endeavor to provide the necessary support for information literacy.

**Keywords: Information, Skills, Literacy, Science, Learning, and Attitude**

## Introduction

Any country's technical development is thought to depend heavily on the study of science. According to Olubiyi, (2024), the level of scientific and technical achievement of any country depends on the quality of its citizens' science education. In a similar vein, Okonkwo, (2024), Yusuf, and Ibrahim, (2024) expressed the opinion that it is a widely held belief that the standard of science education in a country's schools enhances its scientific progress. Concerns about the ongoing issues with science education and learning in secondary schools have been voiced by both scientists and concerned Nigerians, this is due to the significance of science in any country's progress specifically Biology (Musa, 2025).

Biology is the scientific study of life, encompassing the study of both plants and animals Yilmaz (2024). The contents cover everything from microscopic organisms to the biosphere as a whole, which includes the surface of the earth and all living things. Ecology, genetics, cytology, entomology, parasitology, anatomy, morphology, physiology, zoology, botany, and other biological disciplines are a few of its subfields. Biology education and research are crucial to the growth of any country. The preparation of the people for key jobs in medicine, paramedicine, agriculture, industry, population, environmental management studies, quarantine services, wild life control, etc, which is a necessary part of developing a nation. Agriculture, human and veterinary medicine, medicine, the creation of disease-curing vaccinations, and other fields all benefit from the use of biology. A tight relationship exists between agriculture and biology. According to Mafiana, Jayeola, and Iduseri, (2022) agriculture is a biological industry that depends on the expansion and development of plants and animals within a specific ecosystem. According to Okose, and Obiunu, (2024), biology's popularity as a science subject

for the Senior Secondary Certificate Examination (SSCE) is due to the fact that it is less difficult to master than chemistry or physics. However, biology student's performance had grown to be a significant source of worry. In comparison to other science disciplines like chemistry and physics, biology typically has the lowest student performance at the SSCE. Students in higher education are increasingly showing poor attitudes towards science.

According to Moruf, Oyeniran, and Muhammed (2025) For students to succeed in the digital age, particularly in higher education and lifelong learning, information literacy (IL) is a crucial component. As a result, it has grown to be a substantial problem in many academic circles. Information literacy (IL) skills are critical for students to master because they follow rapidly developing information and communications technologies (ICTs) and growing amounts of information. However, IL skills go beyond proficiency in the use of ICTs and have been recognized as a pre-requisite for the information society by institutions of higher learning worldwide. In addition to incorporating information literacy (IL) into their curricula, several postsecondary institutions have worked hard to create information literacy initiatives that students can grasp. When students assert that they can find, assess, and use the right information sources, they appear to have difficulty with IL skills. Literature emphasizes the value of including IL skills in a thorough tertiary education according to Saripudin, Fauzi, and Nugraha (2022), this will improve students' experiences in higher education and lay the groundwork for independent lifelong learning and effective community participation. Moruf (2025) opined that as a result, it initiates, sustains, and extends lifelong learning through skills that may rely on technology but ultimately function independently of its skills such as information literacy.

The design of information literacy abilities can be seen in depth through a number of factors. In Musa (2023), Catts and Lau categorize them as including:

communication and ethical use of information; definition and articulation of information; location and access to information; appraisal of information; organisation of information; use of information; and additional skills. A scientific student's main goal in seeking information is to close a knowledge gap. It may be assumed that a science student will find it simpler to do research or complete tasks with the goal of generating an original piece of work when they are fully equipped with the abilities listed and can apply them effectively. Information-literate individuals must believe they are capable of carrying out tasks successfully, and their scientific outlook must support the qualities of their work or provided services. Thus, it is important to consider students' attitudes towards information literacy skills. This study aims to determine whether information literacy abilities would improve students' attitudes towards learning science because a lack of information literacy skills may have an impact on students' attitudes.

The idea of student's attitude as an indicator of a man's psychological and neural state emerged at the beginning of the 20th century. Prior to this, experts used the physical concept of attitude to represent seated people's posture, fictional characters on television, and painters Musa, Isah and Salau (2025). After sociological advancement, it was considered that the mind was more important than the body. In order to portray the eager readiness of people in times of learning urgency, Musa et.al (2025) saw attitude as a mental idea and an evaluative attribute. The pupils may be able to receive positive feedback on the work they are practicing if they are willing to have a positive attitude towards the learning scenario. Thus, students will have an advantage in their skill competency if they have a favorable attitude towards information literacy skills. This study, which examines COE biology students in Zaria, Nigeria, bases its findings on the assumption that information literacy skills are a determinant of students' attitudes towards learning science.

## **Statement of the Problem**

The use of information as a resource for business, the widespread reliance on information by citizens to make informed decisions, and the growth of the information industry within the knowledge society are all characteristics of the twenty-first century (Moore, n.d.). Information literacy abilities are now essential for every student, both inside and outside of formal learning environments, in the same way that they have become so in the fields of science and education. However, the way that pupils approach learning science has given rise to concerns, as a large proportion of students begin to skip science classes as early as secondary school (Adamu, 2021). According to Adamu (2021), one of the main causes of students' negative attitudes towards learning science is a lack of information literacy abilities. It will be worthwhile to investigate whether evaluating information literacy abilities might change the mindset of biology students towards learning science in FCE. Nigeria's Zaria.

## **Objectives of the Study**

The objective of this study is to:

- i. Determine the level of information literacy skills of COE Biology students as a determinant towards attitude to science learning.
- ii. Analyze the information literacy level of male and female COE biology students as a predictor of their attitude towards learning science.

## **Research Question**

The study sought to answer the following questions:

- i. What is the level of information literacy skills of COE Biology students as a determinant towards attitude to science learning?

- ii. What is the level of relationship between information literacy skills of male and female COE Biology students as a determinant towards attitude to science learning?

### **Null Hypothesis**

The null hypotheses are set to be tested at  $P \leq 0.05$  level of significance:

**HO<sub>1</sub>:** There is no significance relationship between the level of information literacy skills as a determinant to COE Biology students as a determinant towards attitude to science learning.

**HO<sub>2</sub>:** There is no significance relationship between the level of information literacy skills as a determinant to male and female COE Biology students as a determinant towards attitude to science learning.

### **Methodology**

The study used a survey-based correlational study design. In order to establish how NCE Biology students feel about learning science, the survey collects information on information literacy levels and scientific attitudes. All of the COE Biology students at FCE, Zaria, for the academic year 2022-2023 made up the study's population. 3441 students altogether, 3441 of them male and female, respectively. The study's sample was chosen using the simple random sampling technique of a lottery. Randomly chosen from the population were 105 female students and 96 male pupils. 346 COE II Biology students in all were chosen as study subjects. Based on the advice of Krejcie and Morgan (1970), a sample size of 346 was taken from a population of 3441-4000. One instrument, the Information Literacy Skills Questionnaire (ILSQ), and the Attitude Towards Science Questionnaire (ASQ), were used to collect the data for this study. Sections A and B make up the Information Literacy Skills Questionnaire (ILSQ). There are 15

questions on information literacy in Section A and 15 questions on information skills in Section B. The researcher also created the Attitude towards Science Questionnaire (ASQ), which consists of 20 questions based on 5-Likert Scale points.

The researcher developed the ILSQ and SAQ, and a team of specialists from psychology and science education verified them in order to: Verify the amount of time allotted for the instrument. Check the test item's content to see if it corresponds to the study's objectives. Check to see that the language chosen corresponds to the participants' ability level. The final version of the instrument was created with the assistance of the comments, corrections, suggestions, and recommendations on the face and content validity of the test items.

To assess the reliability of the instrument, pilot test was carried out, and the split half method was applied to a sample of 30 students who make up the population but are not included in the study's sample. According to Olayiwola's (2010) recommendation, the reliability was found to be 0.73, which is suitable for the study. Olayiwola said that the closer the reliability is to 1, the more dependable it is, and the closer it is to 0, the less reliable it is.

## **Results**

Assessing information literacy and skills as a factor in NCE II students' attitudes towards science education at the Federal College of Education in Zaria, Kaduna State, Nigeria, is the study's main goal. The level of significance decided for rejecting or maintaining the stated hypotheses was set at  $P \leq 0.05$  and the data obtained were responded to and analysed using descriptive statistics and inferential statistics using SPSS version 26. The results obtained are presented in Table 1, 2 and 3 respectively.

**RQ<sub>1</sub>:** what is the level of information literacy skills of NCE Biology students as a determinant towards attitude to science learning?

To answer research question one, the data generated from ILSQ and SAQ were subjected to descriptive statistics and the summary of the result is presented in Table 1.

**Table 1: Descriptive Statistics on the Level of Relationship between Information Literacy Skills and Students' Attitude towards Science Learning.**

Variables	N	Mean	Std. D	R	Remark
Information Literacy Skills	346	5.29	14.5	0.89	High Positive relation exist
Scientific Attitude	346	2.55	7.08		

Result in Table 1 showed the R value of 0.89, which indicates the existence of high positive relationship between Information Literacy, Skills and Scientific Attitude. This shows that there is relationship between Information Literacy, Skills and Scientific Attitude respectively.

**HO<sub>1</sub>:** There is no significance relationship between the level of information literacy skills as a determinant to COE Biology students as a determinant towards attitude to science learning.

To test the null hypothesis one, the data generated from ILSQ and SAQ were subjected to linear regression statistic and the summary of the result is presented in Table 2. **Table 2: Summary of Linear Regression Analysis on the Level of**

**Relationship between Information Literacy Skills as Determinants to Students Attitude towards Science.**

Variables	n	Mean	Std. D	Level of Effects	R	R <sup>2</sup>	Adjusted	F	P	Remark
							R <sup>2</sup>			
Information Literacy Skills	346	5.29	14.5	0.95	0.98	0.80	0.80	874	0.01	Sig
Scientific Attitude	346	2.55	7.08	0.98						

**Significant at P value < 0.05 level**

- a. Dependent Variable: Scientific Attitude
- b. Predictors: (Constant), ILS

Information literacy, skills, and a scientific attitude are significantly correlated, according to the results of the regression analysis in Table 2. The estimated F value of 874.6 is greater than the critical 3.000 F, while the p value of 0.01 is less than the selected 0.05 alpha threshold of significance. Similar to this, there is a strong correlation between students' attitudes towards learning science and their information literacy skills. This is because the calculated R, R<sup>2</sup>, and adjusted R<sup>2</sup> values of 0.90, 0.81, and 0.81 are all higher than the standard regression level of 0.44. Therefore, the null hypothesis, which claimed that there was no relationship between information literacy level as determinant to COE Biology students' attitudes towards learning science, is hereby rejected.

**RQ<sub>2</sub>:** what is the level of relationship between information literacy skills of male and female NCE Biology students as a determinant towards attitude to science learning?

To answer research question one, the data generated from ILSQ and SAQ were subjected descriptive statistics and the summary of the result is presented in Table 3.

**Table 3: Descriptive Statistics on the Level of Relationship between Information Literacy Skills and Attitude towards Science Learning of Male Students’.**

Gender			Mea		R	Remark
	Variables	n	n	Std. D		
Male	Information	148	41.3	29.4	0.89	High Positive relation exist
	Literacy and Skills		1			
	Scientific Attitude	148	2.49	6.84		

The R value in Table 3 suggested a favorable relationship between information literacy and skills and male students' attitudes towards science, with a R value of 0.89. This demonstrates the high positive relationship between information literacy, skills, and the attitude of male students towards science.

**Table 3.1: Descriptive Statistics on the Level of Relationship between Information Literacy Skills and Attitude towards Science Learning of Female Students’**

Gender	Variables	n	Mea n	Std. D	R	Remark
Female	Information	198	41.3	29.2	0.91	High Positive relation exist
	Literacy Skills		2			
	Scientific Attitude	198	2.60	7.33		

The R value of 0.91 in Table 3.1's result indicates a positive link between information literacy abilities and female students' attitudes towards science. This demonstrates the association between information literacy abilities and the attitudes of female students towards science.

**HO<sub>2</sub>:** There is no significance relationship between the level of information literacy skills as a determinant to male and female NCE Biology students as a determinant towards attitude to science learning.

To test the null hypothesis two, the data generated from ILSQ and SAQ were subjected to linear regression statistic and the summary of the result is presented in Table 4.

**Table 4: Summary of Linear Regression Analysis as a determinant between Information Literacy Skills and Attitude towards Science of Male Students.**

Gender	Variables	N	Mea n	Std. D	Level of Effects	R	R <sup>2</sup>	Adjusted R <sup>2</sup>	F	P	Remark
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	Information	148	41.3	29.2	0.982						
	Literacy and	2									
Male	Skills					0.91	0.7	0.79	40.0	0.0	Sig.
						9			1	1	
	Scientific	148	2.60	7.33	0.995						
	Attitude										

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**Significant at P value < 0.05 level**

In the same vein, Table 4.1 represents the relationship between information literacy skills of female student's attitude towards science.

**Table 4.1: Summary of Linear Regression Analysis on the Level of Relationship between Information Literacy Skills and Attitude towards Science of Female Students.**

Gender	Variables	N	Mean	Std. Dev.	Level of Effects	R	R <sup>2</sup>	Adjusted R <sup>2</sup>	F	P	Remarks
Female	Information Literacy Skills	198	41.3	29.2	0.982	0.91	0.82	0.82	472	0.03	Sig.
	Scientific Attitude	198	2.60	7.33	0.995	0.91	0.79	0.79	40.1	0.01	Sig.

**Significant at P value < 0.05 level**

Results of the regression analysis in Tables 4 and 4.1 demonstrate a substantial correlation between male and female students' information literacy skills and scientific attitudes. The p values of 0.01 and 0.03 are less significant than the selected alpha level of 0.05, while the computed F values of 40.1 and 472 are higher than the 3.000 F critical for the same reason. In a similar vein, there is a strong correlation between students' attitudes towards science and their information literacy skills. This is because the calculated R, R<sup>2</sup>, and adjusted R<sup>2</sup> values of 0.91, 0.79, 0.82, and 0.79 are all higher than the standard regression level of 0.440. The null hypothesis, which stated that there was no significant relation between information literacy level and students' attitudes towards learning science in COE Biology for male and female students, is thus rejected.

**Discussion of Findings**

The data in Table 3 demonstrates a substantial correlation between students' attitudes towards learning science and their level of information literacy skills. Therefore, the null hypothesis was disproved. This showed that students' information literacy abilities might be able to predict their attitudes towards science. This result concurs with Gündüzalp, (2021) conclusion that there is a high correlation between students' attitudes towards learning science and their information literacy abilities.

Results in Tables 4 and 4.1 demonstrate a substantial correlation between students' attitudes towards learning science and their information literacy skills. Therefore, the null hypothesis was disproved. This demonstrated that information literacy and skills can predict both male and female students' attitudes towards science. This result is consistent with Gündüzalp, (2021) conclusion that there is a significant link between students' information literacy abilities and attitudes towards learning science.

## **Conclusion**

It was observed in this study that information literacy and skills are determinants of male and female students' attitudes towards learning science. Based on these findings, certain conclusions were drawn, including the possibility that a student's attitude towards science could be determined by their information literacy and abilities.

## **Recommendations**

Based on the findings of the study, the following recommendation was made:

Since it has been demonstrated that teaching information literacy and skills affects students' attitudes towards science education, it should be included as a separate subject in the core curriculum and spread out over the course of an NCE.

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