

# EFFECTS OF SOCIAL MEDIA ON STUDENTS' ACHIEVEMENT IN LEARNING AUTOMOBILE LIGHTING SYSTEM IN TECHNICAL COLLEGES IN NIGER STATE

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## Abstract

This study determined the effects of social media on students' achievement in learning automobile lighting system in technical colleges in Niger State. Two research questions and two null hypotheses tested at ( $P < .05$ ) level of significance guided the study. A quasi-experimental design was adopted for the study. The population for the study was 203 TC II Motor Vehicle Mechanic (MVM) students; this consists of 197 boys and 6 girls. Two intact class made up of 64 TC II students in GTC Minna were assigned to conventional teaching method and 139 TC II students in Sulaiman Barau Technical College (SBTC) Suleja were assigned to the Social Media Instruction (SMI) technique. The instrument used for data collection was the Automobile Lighting System Achievement Test (ALSAT). ALSAT was subjected to face and content validation by three experts in MVM. The study found out that the students taught with conventional lecture method had significantly higher mean achievement score than students taught automobile lighting system with SMI. Despite the fact that the students performed better in the use of conventional lecture method, however, the use of SMI appreciably increased the performance of the students based on gender. It was, therefore, recommended among others that, automobile teachers should be taught the application and usage of various modern teaching techniques such as Social Media Instruction (SMI) for effective teaching and learning of automobile lighting system and other technical vocational courses in technical colleges.

**Keywords:** Achievement, Automobile, Gender, Lighting System and Social media

## Introduction

The world is in the present day rejoicing the advancement in communication technology which has widened the reach of communication through Information and Communication Technologies (ICTs). These ICTs include among others, cable data transmission, computer-assisted equipment, internet and satellite. Today, most frequently utilized media of communication is the social network. The social network is a structure consisting of nodes (individuals or organizations), which are linked by one or more definite form of interdependencies, such as common interest, friendship, kinship and relationship of beliefs, understanding or stature. The nodes, to which an individual is connected, are the social contacts of that individual; the network can also be employed to determine social investment worth that an individual obtains from the social networking sites such as Badoo, Blackberry Messenger (BBM), Facebook Messenger, Instagram, Twitter, WhatsApp and Yahoo Messenger (Thelwall, 2014).

These networking sites are used today by nearly everyone to interrelate with new and old associates either physically or virtually (internet). Amichai-Hamburger and Hayat (2017) stated that development in technology has also affected internet software such as Google Chrome, Internet Explorer and Mozilla Firefox, as a result, leading to chatting sites identified by the name "social media". Furthermore, with social networking sites, an individual can send and receive messages instantly. Buttressing this fact, researchers state that the internet makes a way into more homes because it serves as a universal scene to seeing the youths (particularly the students) discussing in a well-ordered place like the schools (Ahmed & Qazi, 2010; Cramer, Song & Drent, 2016).

In the present day, vital schools' activities like reading and writing are influenced with ICT and as a result, students' interest have been changed by interacting with other associates either visible or virtual from either within or outside the school environment. This trend has grown to be the foundations that need to be concerned to lots of researchers who have the strong believe in knowledge and skill acquisition for the construction, tuning-up and revamping the economic, educational and social sectors of Nigeria (Mustapha, 2017). Mustapha (2016) stated that one of the places of obtaining both knowledge and skill for lifelong learning in Nigerian schools is the Technical Colleges (TCs).

At the TCs, students are being encouraged to take up Science, Technology, Engineering and Mathematics (STEM) and other related subjects; one of the subjects that cut across the STEM is the Motor Vehicle Mechanic (MVM). MVM is a branch of Mechanical Engineering that deals with the practical application of Physics and Material Science, for analysis, design, manufacturing and maintenance of mechanical systems (Mustapha, 2014). In addition, the cardinal objective of the MVM programme at the TCs is to prepare students to acquire appropriate skills and knowledge for employment in the world work (Mustapha, Idris, Abubakar & Ewugi, 2016). In accordance with the stated objective, the curriculum places emphasis on among other field studies and guided discovery. At the TCs, the MVM course is divided into the following departments, viz; engine maintenance and refurbishing and auto-electricity (Idris, Saba & Mustapha, 2014). The components of auto-electricity include the following systems: sensors, battery, ignition, charging, starting and the automobile lighting system (Mustapha, 2018).

The automobile lighting system syllabus consists of the headlights, filament lamps, headlight alignment, lighting circuits, direction indicators (flashing lights), lighting faults and their remedies. This study is intended to provide the MVM course to meet the needs of the society through relevance and functionality in its content, application, process and method of teaching. The method employed for successful teaching and learning of the automobile lighting system is an issue of concern to educators, because, the methods of teaching play an important role in thrilling the students' creative and critical thinking by persuading students' teamwork in viewing an event or problem from many standpoints ((Jim, 2010; Mustapha, 2018). These can only be reached when a proper instructional method that would enable MVM practitioners to get hold of both the cognitive and psychomotor competencies in the automobile lighting system (Mustapha, 2018). At the present days, the complexity in the MVM industry is growing exponentially in response to the necessity for technologies to pull off low pollutant discharge and to match and maintain the trail of its development via the Information and Communication Technology (ICT). Due to the advancement in ICT and expansion in the use of internet software, students at all levels of education now have divided attention to studies, as a result of available opportunities to be harnessed from the emergence of the social media.

Academic achievement is dependent on several factors including teaching methods and strategies, intelligence, background, motivation, environmental factors and gender (Antherson, 2003). Gender is very important in the study because there is an educational controversial issue which varies from one research to another. When it comes to technical education, some researchers believe with the reason that the female students perform better than male students, while some are on the contrary. Gender is a parallel and socially unequal division into masculinity and femininity. It is the different socially constructed roles and responsibilities expected of women or men in society. Gender is a factor that dominated many educational research efforts in these later years.

Different researchers have conducted research to ascertain the influence of social media on users; for example, Moon (2011) in a study on "impact of Facebook on undergraduate academic performance", averred that social media have a negative impact on students. According to the result, the more students make use of Facebook, and hence, the more it affects their academic performance. Similarly, most of the students use social networking sites mainly for socializing activities, rather than for an academic purpose. Oye (2012) observed that most of the students do feel that social networking sites have a more positive impact on students' academic performance. In another study conducted by Shana (2012), it was revealed that 74% of students use social network mainly for making friends and chatting at the other end, the result showed that only 26% of the students indicated that they use social media for academic purpose. This

resulting finding has been contentious and raised the eyebrows among the academicians on the effect of social media on students' academic achievement.

### **Purpose of Study**

The Study is therefore, set to determine the effects of social media on students' academic achievement in automobile lighting system in Technical Colleges in Niger State, Nigeria; distinctively, the study sought to determine the effect of:

1. Social media on students' academic achievement in learning automobile lighting system in technical colleges in Niger State
2. Social media on students' academic achievement in learning automobile lighting system in technical colleges in Niger State based on gender

### **Research Questions**

The following research questions were raised

1. What is the effect of Social media on students' academic achievement in learning automobile lighting system in technical colleges in Niger State?
2. What is the effect of Social media on students' academic achievement in learning automobile lighting system in technical colleges in Niger State based on gender?

### **Hypotheses**

The following null hypotheses were formulated and tested at  $P < .05$  level of significance

- H<sub>01</sub> There is no significant difference in the mean achievement scores of students taught automobile lighting system using the social media instructional strategy and conventional method of teaching
- H<sub>02</sub> There is no significant difference in the mean achievement scores of students taught automobile lighting system using the social media instructional strategy based on gender.

### **Methodology**

The study adopted a quasi-experimental design with a pre-test, post-test nonequivalent comparison group and intact classes assigned to treatment groups. The population for the study was 203 TC II Motor Vehicle Mechanic (MVM) students; these consist of 197 boys and 6 girls. 64 TC II students in GTC Minna constituted the control group assigned to the conventional teaching method while 139 TC II students in Sulaiman Barau Technical College (SBTC) Suleja constituted the treatment group assigned to e-content instruction method. SBTC Suleja was purposively sampled since the study seeks to determine the student's achievement based on gender and SBTC Suleja is the only technical college in Niger State that has female students in the 2017/ 2018 academic session and GTC Minna was randomly selected among the technical colleges in Niger State. The instrument used for data collection was the Automobile Lighting System Achievement Test (ALSAT). ALSAT was subjected to face and content validation by three experts in MVM. ALSAT was trial-tested on 83 students in Government Technical College, Bunza to determine their psychometric indices. A total of 20 items of ALSAT had good difficulty and discrimination indices. Kuder-Richardson (KR-20) was used in determining the reliability which gave a coefficient of 0.85.

A pre-test was administered to the students' in their intact classes in the two colleges which lasted for 30 minutes. To achieve the objective of the study, the students were subjected to 6 weeks of formal instructions. The subject teachers served as a research assistant. The researcher provided written lesson plans validated by experts in MVM. The lesson plans served as guides to the research assistant used for both groups. The research assistants taught all the topics to the control and treatment groups. The method of teaching in the experimental group was e-content while conventional teaching method was used for the control group. The questions administered as pre-test was also given as post-test. The scores obtained from the post-test exercise provided post-treatment data for the study. The ALSAT was re-administered as retention test after two weeks interval. Mean was used in answering the research questions, the standard deviation was

used to validate the mean and Analysis of Covariance (ANCOVA) was used in testing the null hypotheses.

## Results

**Research Question 1:** What is the effect of social media on students' achievement in learning automobile lighting system in technical colleges in Niger State?

**Table 1:**

Mean and Standard Deviation of Experimental and Control Groups of the Effect of Social Media on Students' Academic Achievement in Learning Automobile Lighting System.

GROUP	Pre-test			Post-test		Mean Gain
	N	$\bar{X}$	SD	$\bar{X}$	SD	
<b>Experimental (SMI)</b>	91	48.08	2.65	71.23	3.34	23.15
<b>Control (Lecture Method)</b>	102	48.93	2.32	78.76	3.06	29.83

Data in Table 1 showed that the experimental group had a mean of 48.08 with a standard deviation of 2.65 in the pre-test and mean score of 71.23 and standard deviation of 3.34 in the post-test making the pre-test - post-test gain in the experimental group to be 23.15. The control group had a mean score of 48.93 with a standard deviation of 2.32 in the pre-test and a mean of 78.76 and standard deviation of 3.06 in the post-test, resulting in a gain of 29.83. With these results, the two groups were effective in enhancing students' achievement in the automobile lighting system, but the effect of lecture method on students' achievement in the automobile lighting system is higher than the effect of the SMI strategy.

**Research Question 2:** What is the effect of social media on students' academic achievement in learning automobile lighting system in technical colleges in Niger State based on gender?

**Table 2:**

Mean and standard deviation of experimental and control groups on the effects of social media on students' achievement in learning automobile lighting system based on gender

Achievement	Gender	N	Pre-test		Post-test		Mean Gain
			$\bar{X}$	SD	$\bar{X}$	SD	
Experimental (SMI)	Males	95	45.50	4.87	63.05	2.04	17.55
	Females	15	43.56	3.44	65.34	4.09	21.78

Data in Table 2 indicated that the effect of gender on the achievement scores of students taught Automobile Lighting System with SMI. The result showed that male students taught the Automobile Lighting System with SMI had a pre-test mean achievement score of 45.50 and a post-test mean achievement score of 63.05 making the pretest, posttest mean gain of the male students taught with SMI to be 17.55. Similarly, female students taught with SMI had pretest mean achievement score of 43.56 and posttest mean achievement score of 65.34 making the pretest, posttest mean gain of the female students taught with to be 21.78. The result further indicates that the use of SMI teaching method significantly increased the achievement of both male and female students than the use of lecture method. Hence, computer-assisted instruction is not gender-sensitive as it increased the achievement of both genders significantly.

## Hypotheses

Table 3:  
Summary of Analysis of Covariance (ANCOVA) of the Students Achievement and Scores in Learning Automobile Lighting System

Source	Sum of Squares	df	Mean Square	F	Sig.	Remark
<b>Corrected Model</b>	209.2270	2	17.437	2.432	.000	
<b>Intercept</b>	504.2260	1	504.224	84.230	.000	
<b>Pre-test</b>	.9500	1	.950	4.589	.003	
<b>Method</b>	202.9422	2	488.790	3.768	.059	Accepted
<b>Gender</b>	.0020	1	.443	2.936	.106	
<b>Method and Gender</b>	.3270	2	53.446	2.623	.862	Accepted
<b>Error</b>	93.9780	454	.208			
<b>Total</b>	1011.6452	463				
<b>Corrected Total</b>	209.6435					

Data presented in Table 4 showed the F-calculated for method, interaction treatment and gender on students' achievement in the automobile lighting system. The F-calculated value for the method 488.790 with the significance of F at 0.59 which is greater than 0.05 signifies that the null hypothesis of no significant difference in the mean achievement scores of students taught automobile lighting using SMI strategy and conventional method of teaching is accepted at 0.05 level of significance. Therefore, both SMI and the conventional teaching method enhance students' achievement in the automobile lighting system. The interaction effect of method and gender has F-calculated value of 53.446 with the significance of F at 0.862 which is greater than 0.05. Therefore, the hypothesis of no significant interaction effect of treatment given to students and their gender with respect to their mean scores on the automobile lighting system is accepted. This implies that there is no significant interaction effect of the method given to students taught automobile lighting system using the SMI strategy based on gender.

### Discussion of Findings

The findings revealed that the effect of SMI on students' academic achievement is lower than the effect of conventional teaching method. This implies that students in the control group had a higher mean gain compared to their counterparts in the experimental group after treatment. The result of the study agrees with Moon (2011) on the "impact of Facebook on undergraduate academic performance" averred that social media have a negative impact on students. According to the result, the more students make use of Facebook, the more it affects their academic performance. Contrary to these findings, Oye (2012) also found out that most of the students do feel that social networking sites have a more positive impact on students' academic performance. Corroborating this assertion, Shana (2012) found out that 74% of students use social network mainly for making friends and chatting at the other end, the result showed that only 26% of the students indicated that they use social media for academic purpose.

Accordingly, the findings of on the effects of gender on students' achievement showed that the use of SMI techniques significantly increased the mean achievement scores of both male and female TCII students of MVM trade. This declared that there is no significant effect of gender on students' achievement in relation to the treatment showed that SMI strategy is not gendered sensitive and can produce the same learning effect on both male and female students. In addition, this result is also in agreement with the studies of Iwu and Uzoma (2015) and Ajai and Amoco (2015) whose separate studies reported no statistically significant difference existed between male and female students' mean achievement scores when tested at 0.05 level of significance. Hence, this study found no interaction effects of gender and teaching methods on the achievement of the students in motor vehicle mechanic trade. The findings of this study on interaction effects are in consonance with the opinions of Azih and Nwosu (2011) which equally reported that gender had no significant interaction with the teaching approach on students mean achievement. Furthermore, the effect or influence of gender on students' achievement has been an area of focus by researchers. There are different opinions on which

gender achieves better than the other. There are those that claim that males perform better than the females, yet others uphold that females achieve better than their counterparts. This is why Buadi (2000) opined that the difference in gender as it affects students' and academic achievement is inconclusive.

### Conclusion

Students who spend more time on social media are likely to perform poorly in their academics. This is because, instead of reading their books, they spend their time chatting and making friends via the social media and this will definitely have a negative effect on their academic performance because when the students do not read, there is no way they can perform well academically.

### Recommendations

Based on the findings of the study, the following recommendations were made:

1. Teacher training institutions should structure and restructure the special methodology course to include synergy between the conventional teaching method and SMI in the automobile lighting system.
2. The government should consider the possibility of evolving a policy on teenagers' exposure to social media.
3. Students should reduce their exposure to social media and pay more attention to their studies.

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