International Journal of Intellectual Discourse (IJID)
ISSN: 2636-4832 Volume 7, Issue 1. March, 2024

Beyond classroom investigation into social media use patterns of Agricultural Technology students

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Abstract
The integration of social media into higher education has reshaped learning and communication dynamics, especially in fields such as agricultural technology in this study, we examine the patterns of social media use among Agricultural Technology students at Abubakar Tafawa Balewa University (ATBU) in Bauchi, Nigeria. The research investigates the purposes, influencing factors, challenges, and the association between degree classification and social media use. The study is guided by the theoretical framework of Connectivism and employs a survey design. The population consists of 225 agricultural technology students at ATBU Gubi Campus, and systematic random sampling was used with a sample size of 100 students. The data collection instrument is a validated questionnaire, and the data analysis performed using SAS JMP version (17) includes descriptive statistics such as mean, quantiles, standard error, and standard deviations for answering the research questions and inferential statistics such as chi-square and Likelihood Ratio tests, were employed to test the hypotheses. The results reveal that social media serves both academic and personal purposes for students, with factors such as content relevance and accessibility influencing usage. Challenges include poor network connection and difficulty in finding relevant content. A significant association is found between degree classification and the purpose of social media use, emphasizing the impact of academic factors. The study contributes to the literature by providing insights into social media usage patterns among agricultural technology students, informing tailored educational interventions and strategies.

Keywords: Agricultural Technology, Classroom, Learning Patterns, Social Media Use

1. Introduction

The integration of social media into higher education has significantly transformed the dynamics of learning and communication, particularly in agricultural technology (John and Jane, 2020). Abubakar Tafawa Balewa University (ATBU) in Bauchi, Nigeria, stands as a beacon of academic excellence, with its programme of Agricultural Technology playing a crucial role in preparing students for careers in agriculture and related fields. In the digital age, the influence of social media on communication, information dissemination, and social interactions cannot be overstated. Recognizing the importance of social media in students' lives, it becomes essential to explore and understand the patterns of social media use among Agricultural technology students at ATBU. Despite the widespread recognition of the role of social media in education, there is a notable gap in research regarding the specific motivations that drive agricultural technology students to use social media platforms. While existing studies highlight the potential for enhancing communication, collaboration, and information sharing among students

(Anderson & Dron, 2017), the unique context of agricultural technology demands a focused investigation into the purposes and factors influencing social media use. The multifaceted and context-dependent nature of the factors influencing students' use of social media in learning necessitates a specialized examination within the field of agricultural technology. Challenges associated with the use of social media for academic purposes have been acknowledged in the literature (Hrastinski, 2017; Selwyn, 2016), but the specific challenges faced by agricultural technology students in utilizing social media for learning purposes remain underexplored.

Moreover, the study seeks to address the potential association between degree classification and the purpose of social media use among agricultural technology students. Understanding how students at different academic levels engage with social media is crucial for tailoring effective educational interventions (Kirschner & Karpinski, 2010). By examining whether patterns of social media use vary significantly across different degree classifications, the research aims to contribute empirical evidence to this discourse. This study holds paramount significance as it bridges a critical gap in the existing literature by providing a nuanced understanding of the social media usage patterns among agricultural technology students at ATBU. By investigating motivations, factors influencing usage, and challenges faced, the research aims to offer tailored insights into the relationship between technology, learning, and the specialized domain of agricultural technology. The study contributes to knowledge by providing insights into the ways these students engage with online platforms beyond the classroom, informing educational strategies and technology integration in agricultural education. This study, therefore, aims to carry out a comprehensive investigation into social media use patterns among agricultural technology students of Abubakar Tafawa Balewa University Bauchi, Nigeria.

2. Literature Review

Exploring Motivations and Challenges

Owusu-Fordjour et al. (2020) conducted a quantitative analysis of Facebook use among university students, shedding light on the motivations driving social media engagement. However, while their study provides insights into general social media usage motivations, the unique context of agricultural technology students warrants a more tailored investigation. For instance, Oguguo et al. (2020) revealed that students spend an average of 2 to 4 hours daily on social media, highlighting the pervasive nature of social media engagement among students. They also found a significant negative relationship between social media use and students' academic achievement, indicating potential challenges associated with excessive social media consumption.

Gaps in the Existing Literature:

Although existing research offers valuable insights into social media use in higher education, there remains a notable gap concerning the specific patterns and dynamics within agricultural technology contexts. This study aims to address this gap by conducting a comprehensive investigation into the social media usage patterns among agricultural technology students at Abubakar Tafawa Balewa University, Bauchi, Nigeria.

Theoretical Framework of the Study:

Connectivism, as developed by Siemens (2005), offers a relevant theoretical lens for understanding the dynamics of social media use among agricultural technology students. According to Siemens, learning is a process of connecting information sources, with networks playing a crucial role in facilitating learning. In line with this theory, social media platforms serve as spaces where agricultural technology students can engage in online networks to share, collaborate, and learn from diverse sources (Siemens, 2005). Moreover,

connectivism emphasizes distributed learning, acknowledging that knowledge is not solely located within individuals but is distributed across networks (Siemens, 2005). This perspective aligns with the dynamic nature of social media platforms, where information is continuously updated and shared, providing agricultural technology students with access to a dynamic learning environment (Siemens, 2005). Connectivism acknowledges that knowledge is not solely located within an individual but is distributed across networks. Social media platforms provide a space where agricultural technology students can tap into distributed knowledge resources, including peers, educators, industry professionals, and online content.

Dynamic Learning Environments: Connectivism aligns with the dynamic nature of social media platforms, where information is constantly updated and shared. Agricultural technology students using social media will be exposed to a dynamic learning environment, and connectivism provides a theoretical lens to understand how they navigate and make sense of this constantly changing landscape. The hypotheses proposed for this study stem from gaps and findings identified in the literature review. H_1 posits a significant relationship between social media use patterns and academic performance among agricultural technology students, building on Oguguo et al.'s (2020) findings of a negative association between social media use and academic achievement. H_2 acknowledges the dual role of social media as both a distraction and a learning tool among these students, drawing from mixed findings in prior research (Oguguo et al., 2020). H_3 suggests that the purpose of social media use varies by degree classification, reflecting the need to explore potential differences in usage patterns across student groups. Though not directly addressed in previous studies, this hypothesis aligns with broader aims of understanding social media use across diverse student populations. Finally, H_4 proposes that social media usage patterns are influenced by factors such as internet access, device availability, and personal preferences, based on insights from studies like that of Owusu-Fordjour et al. (2020). These hypotheses provide specific statements for empirical testing to deepen our understanding of social media usage patterns among agricultural technology students.

3. Methodology

The study is a cross-sectional descriptive survey conducted at the Abubakar Tafawa Balewa University Gubi Campus. The study focuses on final-year agricultural technology students from the Faculty of Agriculture & Agricultural Technology and the Faculty of Technology Education. Departments involved include Agricultural Economics, Agricultural Extension, Animal Production, Crop Production, Soil Science from the former, and agricultural education from the latter. The sample size for the study is 100 agricultural technology final year undergraduate agricultural technology students employed using a systematic random sampling technique from a population of 225 students Data collection utilized a structured questionnaire validated by three lecturers from the Department of Vocational and Technology Education. The questionnaire, with both open and closed-ended sections, was administered in July 2023 with the assistance of class representatives. Analysis of the collected data employed SAS JMP version 17 (2020) statistical software, utilizing descriptive statistics for mean, quantiles, standard error, and standard deviations regarding social media usage patterns, types of social media used, and purposes of usage. Furthermore, inferential statistics, including chi-square and Likelihood Ratio tests, were employed to test hypotheses.

4. Results and Discussion

Purpose of Social Media Use by Students

Table 1:

Frequency distributions on the purpose of social media use by students

Level	Count	Prob
Academic	44	0.440
Personal	24	0.240
Both	32	0.320
Test	**Chi-Square**	**Prob>Chi-sq.**
Likelihood Ratio	6.050	0.048*
Pearson	6.080	0.047*

Source: Survey data, 2023

Table 1 categorizes students' social media use into Academic, Personal, and Both purposes.

Academic Purpose: Among respondents, 44 students (44%) reported using social media primarily for academic purposes. This indicates that a significant proportion of students recognize the utility of social media in supporting their educational endeavours.

Personal Purpose: A smaller portion of respondents, 24 students (24%), indicated that they use social media primarily for personal reasons. This suggests that while academic use is prevalent, a considerable number of students also engage with social media for personal enjoyment or socializing.

Both Purposes: Additionally, 32 students (32%) reported using social media for both academic and personal purposes. This group represents students who leverage social media for a combination of educational and non-educational activities.

Statistical Tests:

Chi-Square Test: The chi-square test was conducted to examine the association between academic level and the reported purpose of social media use. The likelihood ratio chi-square value was 6.050 with a p-value of 0.048, indicating a statistically significant association between academic level and purpose of social media use.

Pearson Test: Similarly, the Pearson chi-square value was 6.080 with a p-value of 0.047, further supporting the significant association between academic level and purpose of social media use.

Overall, these findings provide insights into how students at different academic levels utilize social media and underscore the importance of considering academic context in understanding social media usage patterns.

Factors Influencing Agricultural Technology Students' Use of social media in Learning

Table 2:

Frequency distributions on the factors influencing agricultural technology students' use of social media for learning?

Level	Count	Prob
Easy access to social media platforms	27	0.270
Availability of relevant agricultural technology content	45	0.450

Level	Count	Prob
Interaction with fellow agricultural technology students	18	0.180
Positive impact on academic performance	10	0.100
Test	**Chi-Square**	**Prob>Chi-sq.**
Likelihood Ratio	26.9047	<.001*
Pearson	27.1200	<.001*

Source: Survey data, 2023

The table includes statistical tests to analyze the associations between these factors and the use of social media for learning among agricultural technology students.

Easy Access to Social Media Platforms: Among respondents, 27 students (27%) cited easy access to social media platforms as a factor influencing their use of social media for learning. This suggests that the accessibility of social media platforms plays a significant role in facilitating students' engagement with educational content online.

Availability of Relevant Agricultural Technology Content: The majority of respondents, 45 students (45%), identified the availability of relevant agricultural technology content as a key factor influencing their use of social media for learning. This highlights the importance of content relevance in shaping students' preferences for utilizing social media as a learning tool.

Interaction with Fellow Agricultural Technology Students: A smaller portion of respondents, 18 students (18%), mentioned interaction with fellow agricultural technology students as an influencing factor. This indicates that social interaction and peer engagement also contribute to students' decision to use social media for learning purposes.

Positive Impact on Academic Performance: A minority of respondents, 10 students (10%), reported the positive impact on academic performance as a factor influencing their use of social media for learning. This suggests that while some students perceive social media as beneficial for academic outcomes, it may not be the primary driver of their usage.

Statistical Tests:

Chi-Square Test: Both the likelihood ratio chi-square value (26.9047) and the Pearson chi-square value (27.1200) yielded p-values of <0.001, indicating a statistically significant association between the factors influencing social media use for learning and agricultural technology students. This suggests that these factors significantly influence students' decisions regarding social media usage for educational purposes.

Overall, these findings provide insights into the key factors shaping agricultural technology students' use of social media for learning and underscore the importance of content relevance and accessibility in facilitating educational engagement through social media platforms.

Challenges Faced When Using social media for Agricultural Technology Learning Purposes

Table 3:

Frequency distributions of the challenges faced when using social media for agricultural technology learning purposes

Level	Count	Prob
Poor network connection	31	0.310
Difficulty in finding relevant content	64	0.640
Limited interaction with fellow agricultural technology students	3	0.030
Distraction from non-academic content	2	0.0200
Test	**Chi- Square**	**Prob>Chi-sq.**
Likelihood Ratio	110.8333	<.001*
Pearson	102.8000	<.001*

Source: Survey data, 2023

This table displays frequency distributions regarding the challenges faced by agricultural technology students when using social media for learning purposes. The table also includes statistical tests to analyze the associations between these challenges and the use of social media for agricultural technology learning.

Poor Network Connection: Among respondents, 31 students (31%) reported poor network connection as a significant challenge when using social media for agricultural technology learning. This suggests that inadequate internet connectivity impedes students' access to online educational resources and hinders their learning experiences.

Difficulty in Finding Relevant Content: The majority of respondents, 64 students (64%), identified difficulty in finding relevant content as a major challenge. This indicates that despite the abundance of information available on social media, students encounter obstacles in locating materials that are specifically applicable to their agricultural technology studies.

Limited Interaction with Fellow Agricultural Technology Students: A small portion of respondents, 3 students (3%), cited limited interaction with fellow agricultural technology students as a challenge. This suggests that social media platforms may not always facilitate robust peer-to-peer engagement within the agricultural technology student community.

Distraction from Non-Academic Content: A minority of respondents, 2 students (2%), mentioned distraction from non-academic content as a challenge. This implies that while social media offers diverse content, students may struggle to maintain focus on educational materials amidst the abundance of non-academic distractions.

Statistical Tests:

Chi-Square Test: Both the likelihood ratio chi-square value (110.8333) and the Pearson chi-square value (102.8000) yielded p-values of <0.001, indicating a statistically significant association between the challenges faced when using social media for agricultural technology learning purposes and agricultural technology students. This suggests that these challenges significantly impact students'

experiences with social media-based learning in the agricultural technology domain.

Overall, these findings highlight the prevalent challenges encountered by agricultural technology students when utilizing social media for learning purposes and emphasize the need to address issues such as content relevance, network connectivity, and peer interaction to enhance the effectiveness of social media-based educational initiatives in this field.

Statement of Hypothesis: Association between Degree Class and Purpose of Social Media Use

Table 4:

Contingency analysis of students' degree class by purpose of social media use

Parameter	*Chi-Square*	*Prob>Chi-Sq.*
-Loglikelihood	6.2683843	
R-Square (U)	0.0594	
Likelihood Ratio	12.537	0.0510
Pearson	12.618	0.0495*
Table Probability (P)		6.969^{e-6}
Two-Sided Prob ≤ P		0.0406*

Source: Computed from survey data, 2023

The results from the contingency analysis of students' degree classes by the purpose of social media use are presented in Table 4. The statistical tests, including the likelihood ratio chi-square and Pearson chi-square, indicate a significant association between degree classification and the purpose of social media use among students. Specifically, the Pearson chi-square value of 12.618 with a p-value of 0.0495 suggests a statistically significant relationship.

This finding aligns with the theoretical framework of connectivism, which emphasizes the role of networks and connections in facilitating learning through social media platforms. According to connectivism, individuals engage in learning by connecting with diverse sources of information and interacting within networks (Siemens, 2005). In the context of this study, the significant association between degree classification and the purpose of social media use may reflect differences in how students from various academic backgrounds utilize social media for learning.

Moreover, the theory of social constructivism posits that learning is a social process shaped by interaction and collaboration with others (Vygotsky, 1978). Concerning social media use, students' degree classifications may influence their preferences for engaging with peers and instructors on social media platforms to seek academic support, share resources, or collaborate on learning tasks. Thus, the observed association between degree class and the purpose of social media use could be attributed to variations in students' social learning experiences within their academic programs.

Furthermore, the significant association highlights the importance of considering the academic context in understanding social media usage patterns among students. Agricultural technology students, for instance, may have distinct learning goals and preferences compared to students in other disciplines, which could influence how they utilize social media for educational purposes.

In summary, the findings suggest that degree classification plays a role in shaping the purpose of social media use among students, with implications for how educators and policymakers design interventions to support learning through social media platforms in higher education settings.

By combining data from numerous global researches, the paper explores current online habits among agriculture technology students. While the discussion over the relationship between social media use and academic accomplishment continues, contradicting data add to the complication of the problem. There is an inverse relationship between higher online social networking use and lower GPAs. Kirschner and Karpinski (2017), on the other hand, discover no significant detrimental influence on academic achievement as a result of social media activity. According to Mwirigi et al. (2021), Facebook is the most popular platform for agricultural undergraduates in Kenya, allowing academic activities such as resource sharing and contact with instructors. Similar tendencies can be seen in South Korea, where Instagram is used to share agricultural-related content.

The findings of this study offer valuable insights into the intricate relationship between students' social media use and academic purposes, challenging the notion of randomness in purpose selection. Agricultural technology students, in particular, demonstrate a noteworthy connection between their use of social media for learning and factors such as content relevance, accessibility, social interaction, and perceived academic impact. These findings underscore the multifaceted nature of social media engagement in educational contexts and emphasize the importance of considering various factors influencing students' usage patterns.

Moreover, the study identifies key challenges hindering effective social media integration into education, including difficulties in finding relevant content and network connectivity issues. These practical concerns highlight the need for addressing infrastructure and content-related barriers to enhance the efficacy of social media as an educational tool.

Furthermore, the statistically significant association between students' degree classification and social media purpose underscores the pivotal role of academic factors in shaping students' social media usage patterns. Approximately 5.94% of the variability observed in social media purpose can be attributed to degree class, highlighting the influence of academic context on students' preferences and behaviours.

5. Conclusion and Recommendations

In conclusion, this study contributes to our understanding of social media's role in education and underscores the importance of addressing practical challenges and considering academic context in leveraging social media for effective learning and communication in agricultural technology and higher education more broadly.

The recommendations put forth in this study underscore the importance of optimizing the benefits of social media in agricultural technology education for students.

First, educators and content creators should prioritize curating and making agricultural technology content easily accessible on social media platforms. Enhancing the availability and accessibility of relevant content will contribute to a more enriching learning experience and increased engagement among students.

Secondly, educators are encouraged to actively integrate social media into the learning process through various pedagogical approaches such as assignments, discussions, or projects. By leveraging social media as a learning tool, educators can foster collaboration, critical thinking, and knowledge sharing among students.

Thirdly, continuous assessment of factors influencing social media use is recommended to adapt educational strategies to evolving student preferences. Regular evaluation of students' social media usage patterns and feedback can inform instructional design and facilitate the

alignment of educational initiatives with students' needs and expectations.

Finally, collaborative efforts among institutions, policymakers, and service providers are advised to improve network infrastructure and ensure reliable internet connectivity for a seamless learning experience. Investing in robust network infrastructure and addressing connectivity issues will facilitate uninterrupted access to educational resources and support the effective integration of social media into agricultural technology education. By implementing these recommendations, educators and stakeholders can harness the full potential of social media to enhance learning outcomes and enrich the educational experience of agricultural technology students.

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