



The Relationship between Learner Attitude towards the Use of Facebook Social Networking Platform and Academic Achievement in Computer Programming in Public Secondary Schools, Nairobi County, Kenya

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Abstract

There is an intense infiltration of social networking platforms (SNPs) in the education sector. However, there are inadequate empirical studies to inform integration of these platforms in teaching and learning. The purpose of this study was to establish the relationship between the learner attitude towards the use of Facebook Social Networking Platform (FSNP) and academic achievement in computer programming. The study targeted form three students taking Computer Studies. Quantitative data was obtained using pre-test and post-tests scores. Likert scale pre-attitude and post-attitude questionnaires were used to obtain qualitative data. Purposive sampling was used to obtain 250 students from 3 boys' and 3 girls' public secondary schools offering Computer Studies. Descriptive statistics computed included frequencies and means. Inferential statistics included t tests and Pearson's Correlation Coefficient (r). Findings revealed a positive relationship between learner attitude towards the use of FSNP as a learning resource and learner academic achievement as demonstrated by t statistic [$t(4) = 9.992, p = .000$] for pretest and [$t(4) = 93.958, p = .000$] for the post-test mean scores. The correlation coefficients, $r = 0.555$ and $r = 0.958$ for the pre-attitude/pre-test and post-attitude/post-test implied a positive change in correlation between academic achievement and the learner attitude towards using FSNP as a learning resource. The study concluded that there is a positive relationship between learner attitude towards the use of FSNP and learner academic achievement. The study recommends that schools should embrace the use of FSNP in teaching and learning.

Keywords: Facebook Social Networking Platform, Learner Academic Achievement, Learner Attitude, Computer Programming, Computer Studies

Introduction

Social networking platforms (SNPs) have been appreciated by learners who use

them for academic and non-academic purposes. Helou and Rahim (2010) concur with this position in their assertion that learners appreciate the use of SNPs and freely extend interactions with their instructors beyond the classroom. In a related study involving US and European learners, Ozer, Karpinskia and Kirschner (2013) established that the willingness of learners to use SNPs alongside their studies impacted on their academic achievement. Further, in a qualitative study using action research to examine the use of SNP-supported LMSs in distance education at Firat University in Turkey, Özmen, and Atici (2014) report that learners had a positive attitude towards the use of SNPs which facilitated interactions with colleagues, course content and instructors. The Facebook social networking platform (FSNP) continues to raise concerns in the academia with research data revealing that the platform enjoys increased and widespread use across all the ages in developing countries like Kenya. Clement, (2020) observes that FSNP is the most popular among other SNPs like WhatsApp, Twitter (now X) and Pinterest accounting for 2.45 billion of SNP users across geographical, social, political and economic borders. While revealing the reasons why FSNP attracts many users, Kormos (2019) described the platform as a website where users share photographs, links to other websites, ideas, chats and access to live videos, hence the urge to remain connected through the platform. Based on these statistics, demographics, and facts about FSNP, Aslam (2020) concluded that 88% of the subscribers are youth between 18-29 years of age and that FSNP continues to gain popularity among younger users around the world. Clement (2020) reported that 38.6% of FSNP users in Kenya are learners in secondary schools and colleges aged between 13 - 24 years. The observation by Clement (2020) suggests that learners in secondary schools in Kenya are using this platform which might be having an impact on their academic achievement. While agreeing on widespread non-academic use of FSNP among school going children in Kenya, Kiplagat and Ombiro (2016) observed the increased concerns among educationist and parents about how this affects learners' academic achievement. Furthermore, no documentation that hints on the relationship between attitude of learners towards the use of FSNP as a learning resource and academic achievement in Computer programming among students in public secondary schools in Nairobi County, Kenya.

While FSNP presents itself as a resource ideal for teaching and learning, studies worldwide hold different viewpoints on its use and impact on learner academic achievement. For instance, while focusing on the effectiveness of FSNP in improving learning practices in Computer Science in the Philippines, Callo and Baguna (2017) observed that FSNP provided an interactive platform which facilitated learning interactions among learners resulting in improved individual achievement making it an ideal learning resource. Similarly, in a study on the academic use of FSNP in Japan, Abraham, Mir, Sahara and Sato (2018) linked improved learner achievement in English to the collaborative interactions on the platform. Further, while analyzing the penetration and reception of SNPs in higher educational institutions in India, Vivakaran and Neelamalar (2018) opined

that use of FSNP boosts pedagogical interactions among learners and teachers that translates to gains in learner achievement. Whereas these studies were carried out on college and university students, there is an indication FSNP has been embraced by both teachers and learners as a learning resource. However, there is scanty information on the relationship between learner attitude towards the use of the platform as a learning resource and academic achievement.

The attitude of learners towards the use of any technology to aid in learning has an effect on their academic achievement. In agreeing to this view point, in a study that sought to establish the effect of students' attitude towards technology on their academic achievement among Punjan students taking civil, electrical and mechanical engineering, Hussain, Mahmood, & Nasreen (2017) revealed that learners with a higher level of attitude towards using technology in their learning posted higher academic achievement than those with lower levels. Therefore, establishing the relationship between attitude of learners towards a given technology informs policy makers, teachers and parents on how to guide the learners on effective utilization of the technology for academic purposes. Several studies have been carried out to establish the attitude of learners towards the use of FSNP technology for academic purposes. For instance, Gamble and Wilkins (2014) carried out a mixed method approach study to investigate the attitudes and perceptions of Japanese university students' use of Facebook in an educational setting and the platform's capacity to be used in a way similar to a traditional learning management system (LMS) for various specific language-learning activities. In this study Gamble and Wilkins (2014) revealed that students had a positive attitude towards FSNP which could be associated with the platform's capacity to offer a flexible learning community environment where multimedia learning materials can be presented, access is not delimited by time and geographical location and learners are actively engaged in the learning activities. However, Gamble and Wilkins (2014) involved university students who have the capacity to make choices in terms of the learning platform to adopt and did not specifically focus on the relationship between the learners' attitude towards the platform and their academic achievement.

Additionally, in an investigation concerning students' attitudes towards knowledge and skills in Facebook among students in the University of Hail's English department Salameh (2017) established that students had a positive attitude towards usability, efficacy and satisfaction of knowledge and skills other than adequacy of the education content shared on the platform. However, like the study by Gamble and Wilkins (2014), Salameh's study did not consider the relationship between attitude of the learners towards the platform and academic achievement. The findings in the study by Salameh (2017) further complimented the results of a study involving undergraduate students in Morocco in which Faizi, Afia and Chiheb (2018) investigated students' attitude towards using Facebook as an educational tool. While Faizi, et al. did not also focus on relationship between learner academic achievement and learner attitude towards the platform, they observed positive

students' attitude towards use of the platform not only for social interactions and entertainment but also for learning purposes in different subjects.

Further, Moghadam and Shamsi (2021) confirmed that students had a positive attitude toward the implementation of FSNP as a medium of learning in a recent study conducted in a language center for college students in Fasa, Iran, to explore learners' attitudes towards Facebook as a medium of engagement during the Covid-19 quarantine. According to Moghadam and Shamsi (2021), the students' positive attitude toward using FSNP for learning purposes was due to the platform's ability to increase students' confidence; engage students in motivating ways using chats, knowledge sharing through posts, document sharing, and live videos; provide an interpersonal and interacting learning community for both students and teachers; promote collaborative learning and support virtual learning in the aftermath of lockdown. However, like the study by Gamble and Wilkins (2014), Faizi, et al. (2018) which were exploratory in nature and involved university students who tend to use the SNPs more responsibly than those in high schools Moghadam and Shamsi (2021) did not address the relationship between learner attitude and academic achievement in a specific discipline like computer studies, particularly among students in public secondary schools in developing countries such as Kenya. On the contrary, a conducted a descriptive survey research at the University of Port Harcourt that investigated undergraduate students' attitude towards the use of social media for learning purposes carried out by Williams and Adescope (2017) revealed no significant differences were observed between students in different faculties regarding their attitude towards social media and increased learning. Williams and Adescope (2017) attributed the findings of their study to the fact that students had existing social media (SM) accounts and were using them for other purposes other than educational. However, the study by Williams and Adescope (2017) involved university students and did not focus on a specific social media like FSNP, relationship between the learner attitude towards SM and academic achievement.

While the reviewed literature revealed that learners may have a positive or a negative attitude towards social networking platforms (SNPs) such as FSNP, the findings cannot be used to draw an inference about the relationship between the learner attitude towards using the platforms as learning resources and academic achievement. Furthermore, these studies were surveys, exploratory in nature and did not involve students studying computer programming in public secondary schools in developing country like Kenya where the use of social networking platforms is relatively new and disallowed among learners at that level. To bridge these gaps, this study sought to empirically determine how learners' attitudes toward using FSNP as a learning resource were related to their academic achievement by including Computer Studies students from public secondary schools in Nairobi City County, Kenya.

Statement of the Problem

Computer Studies students have consistently posted poor performance in the final Kenya Certificate of Secondary Education (KCSE) on the compulsory questions drawn from the form three topic on “Elementary Programming Principles”. The annual reports by the Kenya National Examinations Council (KNEC) indicate that learners consistently performed poorly in this question in section B of Computer Studies Paper 1 (451/1) in the KCSE examinations for five years (KNEC Report, 2015, 2016, 2017, 2018 and 2019). While Computer Studies syllabus recommend teachers to use innovative instructional resources to teach the subject, there are no existing studies that point out on the use Facebook Social Networking Platform (FSNP) to learn computer programming in Kenya nor any that inform on the relationship between learner attitude towards the use of the Facebook Social Networking Platform (FSNP) as a learning resources and academic achievement in computer programming in public secondary schools in Nairobi City County, Kenya. This is despite the increased use of the platform among learners in secondary schools for non-academic purposes. This study sought to empirically determine the relationship between learner attitude towards the use FSNP as a learning resource and learner academic achievement in computer programming among students in public secondary schools in Nairobi City County, Kenya.

Purpose of the study

There is an intense infiltration and an increased use of social networking platforms such as FSNP, WhatsApp, Twitter (now X) among others in the education sector. However, there lacks formal policy frameworks to guide the integration of these platforms in teaching and learning. This can be associated to the lack of or insufficient empirical studies that can inform the development of the policies, more so, on the learner attitude towards the use of these platforms as learning resources. The purpose of the study was to determine the relationship between learner attitude towards the use of Facebook social networking platform (FSNP) as a learning resource and academic achievement in computer programming in public secondary schools, Nairobi county, Kenya.

Objective

The specific objective of this study was to determine the relationship between learner attitude towards the use of Facebook SNP as a learning resource and academic achievement in computer programming in public secondary schools, Nairobi county, Kenya.

Hypothesis

Based on this objective, the null hypothesis; “*HO₁: There is no significant relationship between learner attitude towards use of Facebook SNP as learning resource and academic achievement in computer programming in public secondary schools, Nairobi county, Kenya*” was formulated and tested.

Methodology

Research Design

This study adopted the quasi-experiment research design involving non-equivalent groups. The non-equivalent groups design is the common type of quasi-experimental designs because it is similar to the classic experimental design except that the groups are not randomly assigned (Rubin & Babbie, 2017). The non-equivalent groups design was adopted because the form three Computer Studies students who participated in the study differed in numbers and characteristics in terms of entry behaviour, gender and entry behaviors. White and Shagun (2014) state that in a quasi-experimental study, a control group that is as similar as possible in baseline characteristics to the treatment group in terms of baseline characteristics is considered and one is able to manipulate the control and treatment groups to determine the causal effect. A pre-test and post-tests were used to collect data for the study. This study targeted a population of two thousand five hundred (2,500) form three computer studies students from thirty-seven (37) boys’ and twenty-eight (28) girls’ public secondary schools offering Computer Studies in Nairobi County, Kenya. Most schools in Nairobi County have robust information and communication technology (ICT) infrastructure including reliable Internet connectivity required to implement the Computer Studies curriculum, thus found suitable for the study unlike others located outside the capital city of Kenya.

The study employed purposive sampling to obtain about two hundred and fifty (250) Computer Studies students from three (3) boys’ and three (3) girls’ public secondary schools in Nairobi County which offer computer studies as an examinable subject by the Kenya National Examinations Council (KNEC) in form four. Form three students were selected to participate in this study because at this level they take computer studies as an elective subject and usually not busy preparing for the final national examinations like their colleagues in form four. In order to meet the objectives of this study, students who participated in the study were from the public boys’ and girls’ secondary schools that: offer computer studies as KNEC examinable subject, have reliable Internet connection, have a student to computer ration of at least 1:2 and have reliable electricity supply.

Validity and Reliability

In order to ensure internal validity in this study, the same pre-test was used as post-test with reorganization of the test items done so that the learner could not easily notice the similarity of the tests. For external validity, matching method was used to purposely sample schools that guaranteed similar learning conditions for both control and experimental groups. Piloting of the tests, the questionnaire for students and lesson observation schedule was done in three schools to determine the difficulty level of the questions. To test for internal consistency of the research instruments used in this study, the results obtained from the student achievement tests (pre-test and Post-test) and the data from the questionnaire for students were used to compute the correlation coefficient using the split-half technique to eliminate chance error. The resulting split-half averages were used to compute Cronbach's Alpha (α) reliability coefficient. The achievement tests had an r value of 0.81 and the questionnaires for students had an r value of 0.86. According to Kothari (2019), a reliability coefficient of more than 0.5 is considered adequate enough for instruments to be used in social research. This implied that the instruments were highly reliable.

Data Collection

To determine the relationship between learner attitude towards the use of Facebook social networking platform (FSNP) as a learning resource and academic achievement in computer programming in public secondary schools, Nairobi county, Kenya, a pre-test was administered to the students before and after experiment was started. A 5-Likert scale pre-attitude questionnaire on the use of FSNP as learning resources for learning computer programming was administered. The questionnaire items focused on learner opinions on self-esteem, motivation and engagement when using the platform. The topic on "Elementary Computer Programming" was taught with FSNP integrated in the teaching and learning process. Learners were further allowed to interact on the platform to exchange ideas, learning materials and solve problems. After the teaching, a post-test was administered and a post-attitude questionnaire similar in structure as the pre-attitude questionnaire but with adjusted items to capture the learner attitude after using the platform as a learning resource was administered. The pre-test and post-test scores were recorded.

Findings and Discussion

Findings

The objective of the study was to determine the relationship between learner attitude toward the use of Facebook SNP as a learning resource and academic achievement. The means (M) of the pre-test and post-test and those of the students' questionnaire responses on their attitude towards FSNP as a learning resource (pre-attitude and post-

attitude) were analyzed per each school and tabulated as shown in Table 1.

Table 1: Students' means of pre and post test scores and responses on attitude towards use of FSNP as a learning resource

School Code	Mean of Pre-Test Scores	Mean of Students' Responses to Pre-Attitude Questionnaire	Mean of Post-Test Scores	Mean of Students' Responses to Post-Attitude Questionnaire
S1	14.08	3.21	30.57	3.95
S2	16.70	3.42	31.00	3.87
S3	11.84	3.77	30.06	4.06
S4	13.86	3.81	29.95	4.02

Table 1 shows that students in schools S1, S2, S3 and S4 had means $M = 14.08$, $M = 16.70$, $M = 11.84$ and $M = 13.86$ in the pre-test, means $M = 30.57$, $M = 31.00$, $M = 30.06$ and $M = 29.95$ in the post-test, means of $M=3.21$, $M = 3.42$, $M = 3.77$ and $M = 3.81$ in the pre-attitude questionnaire responses and means of $M=3.95$, $M = 3.87$, $M = 4.06$ and $M = 4.02$ in the post-attitude questionnaire responses respectively. Other schools had S2 mean $M = 16.70$, $M = 31.00$, and $M = 3.87$ for pre-test, post-test, and student attitude responses, respectively; S3 mean $M = 11.84$, $M = 30.06$, and $M = 4.06$ for pre-test, post-test, and student attitude responses, respectively; and S4 mean $M = 13.86$, $M = 29.95$, and $M = 4.02$ for post-test and student attitude responses, respectively. Table 4.1 also shows that there was a positive change in the means of the students' responses on the post-attitude and pre-attitude questionnaires. Table 1 further shows a positive change in mean scores between the pre-test and post-test for each school. This indicated that the intervention of using the FSNP as a learning resource had a positive effect on learner attitude towards the platform which contributed to gains in academic achievement in computer programming among learners in public secondary schools.

To test the hypothesis "HO₁: There is no significant relationship between learner attitude toward the use of Facebook SNP as a learning resource and academic achievement", a t-test was used to compare the mean scores of pre-test and students' responses to pre-attitude questionnaire and the means of the post-test and students' responses to post-attitude questionnaire toward the use of FSNP as a learning resource as shown in table 2. The Pearson Correlation Coefficient was used to determine of relationship between the learner attitude towards the use FSNP as learning resource and academic achievement as shown in Table 2.

Table 2: Comparison of students' means of pre and post-test scores and responses on attitude (pre-test and post-test) towards use of FSNP as a learning resource

	Pre-Test Attitude/ Pre-Attitude	Post-Test Attitude/ Post-Attitude
Mean of Test Scores	14.123	30.390
Mean of Attitude Questionnaire Responses	3.493	3.975
Observations	4	4
t-test	9.992	93.580
P(T<=t) one-tail	0.000	0.000
Pearson Correlation Coefficient	0.555	0.958

Table 2 shows a t statistic [$t(4) = 9.992, P=.000$] and Pearson Correlation Coefficient of 0.550 for pre-test (pre-attitude) and t statistic [$t(4) = 93.975, P=.000$] and Pearson Correlation Coefficient of 0.958 for post-test (post-attitude). Table 2 also shows means of test scores for pre-test and pre-attitude questionnaire responses as 14.123 and 3.493 respectively and that of post-test and post-attitude questionnaire responses as 30.390 and 3.975. The increase in the two means indicated that the intervention of using FSNP as a learning resource led to increased learner academic achievement and learner attitude. The p-value for each of the two groups was $p=.000$, which is less than the significance or confidence level of $p=.05$, hence the null hypothesis "H₀: There is no statistically significant relationship between learner attitude toward the use of Facebook SNP as a learning resource and academic achievement" was rejected and the alternate hypothesis accepted. This demonstrated that there was a statistically significant relationship between learner attitudes toward using FSNP as a learning resource and academic achievement. Further, Table 2 shows the Pearson correlation coefficients, $r = 0.555$ for pre-test/pre-attitude and $r = 0.958$ for post-test/post-attitude respectively, indicating a positive change in correlation between the change in academic achievement and the learner attitude toward using FSNP as a learning resource. This implied that the change in academic achievement increased as the learner attitude towards the use of FSNP as a learning resource increased, thus implying that there is a positive relationship between learner attitude towards use of FSNP as learning resource and learner academic achievement. Further still, the hypothesis test results suggest that learners' attitudes toward using FSNP as a learning resource contributed significantly to learner academic achievement in computer programming among students in public secondary schools Nairobi City County, Kenya.

Discussion

The findings of this study on the relationship between learner attitude toward the use of FSNP as a learning resource and academic achievement consistent with the findings of a study conducted in Japan by Gamble and Wilkins (2014). Gamble and Wilkins used a

mixed methods approach to investigate the attitudes and perceptions of Japanese university students' use of Facebook in an educational setting, as well as the platform's capacity to be used in a way similar to a traditional learning management system for various specific language-learning activities. According to their findings, students have a favorable attitude toward using FSNP for educational purposes. Gamble and Wilkins attributed the positive attitude to the platform's ability to provide a flexible community learning environment in which multimedia learning materials can be presented, access is not limited by time or geography, and learners are actively engaged in learning activities. The findings concurred with those of ElsayedSanad (2016), who investigated the perceptions and attitudes of English as a Foreign Language (EFL) undergraduate students toward Facebook as an educational learning tool. According to ElsayedSanad's research, students' positive attitudes toward using Facebook as a learning resource are due to the platform's ability to foster social and academic engagement, which is a significant predictor of learner academic achievement. Despite ElsayedSanad's study involving university students, its findings highlight the reason why the secondary school participants in this study had a favorable view of the usage of FSNP in learning and academic achievement. The findings of this study are supplemented by the findings of a study involving undergraduate students in Morocco in which Faizi, Afia, and Chiheb (2018) who investigated students' attitudes toward using Facebook as an educational tool. However, while Faizi, et al. (2018) did not focus on learner academic achievement as this study did, their observations, that positive students' attitudes toward the use of the platform concur with those of this study that students like to use the FSNP not only for social interactions and entertainment but also for learning purposes in various subjects.

Further still, the results of this study are supported by findings from a recent study conducted by Moghadam and Shamsi (2021) to investigate learners' attitudes toward Facebook as a medium of engagement during Covid-19 quarantine. Moghadam and Shamsi concluded in their study that students had a favorable attitude toward the use of FSNP as a medium of instruction. According to Moghadam and Shamsi (2021), students' positive attitude toward using FSNP for learning purposes was due to the platform's ability to increase students' confidence; engage students in motivating ways using chats, knowledge sharing through posts, document sharing, and live videos; provide an interpersonal and interacting learning community for both students and teachers; promote collaborative learning and support virtual learning beyond the aftermath of Covid-19 pandemic.

Despite the fact that many previous studies involved college and university students from all over the world, their findings serve as the foundation for supporting the findings of this study, which involved form three Computer Studies students in public secondary schools. This study provides empirical evidence that positive learner attitude toward using FSNP as a learning resource leads to significant improvements in academic achievement. This can be attributed to the platform's technological and pedagogical

affordances (Mulwa, Mwanda, Gatutmu and Muriithi, 2022).

Conclusion

The effect of FSNP on academic achievement can be associated with the learner attitude towards the use of the technology as a learning resource. Learners with positive attitude towards an educational technology have self-esteem; are motivated and engaged. Such learners willingly share ideas, information, knowledge, and experiences with colleagues, which increases self-efficacy, resulting in effective technology-assisted learning using FSNP.

Recommendations

The study recommended that: Schools should embrace FSNP and other social networking platforms as instructional resources to allow students to interact and collaborate on the platform other than denying them the access. The study also recommends that the government of Kenya should develop relevant policies that provide guidelines on integration of emerging online learning platforms. The study recommended further studies involving other emerging SNPs and different learning areas.

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