Social Media Use and Test Anxiety: Exploring the Relationship

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Abstract

The study focused on the relationship between social media usage and test anxiety. It investigated how specific uses of social media are associated with test anxiety. The study classified the uses of social media into four dimensions and explored the relationship between each of the four dimensions and test anxiety. The study also explored the test anxiety levels of students before, during, and after the test. A descriptive survey design was used for the study. This survey used a Test Anxiety and Social Networking Questionnaire to collect data from 106 College of Education students sampled using a multi-stage sampling procedure. The data collected from the respondents were analyzed using scatter plots, Pearson's Product Moment Correlation Co-efficient, mean scores, and independent samples T-test. It was found that the respondents' test anxiety was generally high and it progressively increased from before to after the test. There was a strong positive correlation between test anxiety during and after the test. This finding suggests that if the students are well prepared for a test and can answer questions to their satisfaction, their anxiety during the test will be low and this will, in turn, reduce their anxiety after the test. The study also found that excessive use of social media networking sites essentially increases test anxiety during and after the test. This implies that students can reduce test anxiety by using social media networking in moderation and focusing on their academic work.

Keywords: social media usage, test anxiety, anxiety before test, anxiety during test, anxiety after test, College of Education

1. Introduction

Anxiety is an individual's response to a perceived inability to handle a situation or challenge to his or her satisfaction. Anxiety arises when an individual feels before, during, or after the occurrence of a situation or challenge that he/she cannot or could not meet the challenges of the situation or challenge. Sarason (1977) defined anxiety as a 'type of cognitive response marked by self-doubt, feelings of inadequacy and self-blame' (p. 4). Individuals experience anxiety because they feel they are not able to do anything significant about a given situation or challenge or they pre-empt that they will not be able to do anything significant about the challenge or situation they faced or are about to face. The latter is a typical product of self-doubt, uncertainty, or apprehension. According to Sarason (1977), anxiety is characterized by one or more of the following: The individual considers the situation difficult, challenging or threatening; when individuals face threatening and difficult situations and they consider themselves incapable of effectively handling the situation or challenge; there is a focus on the undesirable consequences of personal inadequacy instead of personal capabilities; the anticipation of failure and ridicule by others; and lastly, strong self-deprecating pre-occupations competing or interfering with task-relevant cognitive activity.

When the characteristic(s) of anxiety is/are associated with academic evaluation situations, it is termed test anxiety (Hakan, Bulent, & Hasan, 2013). Zeidner (1998) defined test anxiety as a 'set of phenomenological, psychological and behavioral responses that accompany concerns about possible negative consequence or failure on the examination or similar evaluative situation' (p. 17). Test anxiety is about how an individual feels and behaves as a result of the negative effect of underperforming in a test. Test anxiety is a multidimensional construct (Krispenz, Gort, Schültke, & Dickhäuser, 2019) associated with either the fear of or not performing satisfactorily in a test. The multidimensional construct includes physiological, cognitive, and behavioral reactions. Sakka et al. (2020) provide a more recent definition of test anxiety. Test anxiety according to Sakka et al. (2020) is a combination of psychological symptoms and concomitant reactions that is derived from a possible

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adverse effect of examination failure. Central to test anxiety is worry due to an 'eminent suffering' from failure or poor performance in examination or evaluation situations (Lilley, Oberle, & Thompson, 2014). The definitions of test anxiety suggest that students who do not care about high academic performance and their counterparts who prepare so well for tests and are therefore confident of performing satisfactorily on the test are less likely to suffer test anxiety. However, students who are afraid of the consequences of underperforming and those who desire better academic performance but do not manage academic time effectively are at risk of suffering high test anxiety.

The prime activity that competes with students' 'academic time' is the use of social networking sites (popularly referred to as social media). Social networking sites exploded as a kind of online discourse that allows users to create and share content and network at a phenomenal rate. Social networking sites have made communication with distant friends and relatives almost always synchronous and easy (Owusu-Acheaw & Larson, 2015). The primary factors that drove the adoption of social media networking sites are accessibility, and functionality (Kolan & Dzandza, 2018). Every smartphone, tablet, and laptop computer can be used to access social networking sites provided there is internet access. Thankfully, telecommunication operators are reaching out to more and more people as they expand the coverage of their networks, and so internet access has now become commonplace. The managers of social networking sites are making their sites user-friendly, through constant updates and upgrades. Studies have shown that social networking sites have useful applications in academic environments. This, however, is not the reason social networking sites are popular among tertiary education students. Besides using social networking sites for academic purposes (creating and sharing study-related content, engaging in academic discourse on academic content), social networking sites are used for searching and/or seeking information, entertainment, and socialization. It is the last three uses that have made social networking sites very popular among students.

It appears students' use of social networking sites is problematic because students' use of social networking sites is centered on the last three activities. And it is these, according to studies, that make the use of social networking sites by students problematic. Kolan and Dzandza (2018), reported that students spend more time on social networking sites than on their studies. However, they did not recognize that this has a negative effect on their academic work, though about half of the respondents admitted that social media usage distracts their attention from academic work. Kolhar, Kazi and Alameen (2021) found that just 1% of their sample used social networking sites for academic purposes. They found that the prolonged use of social networking sites for non-academic purposes distracts students from their academic work and negatively affects their social interaction and sleep duration. To Malak, Shuhaiber, Al-amer, Abuadas, and Aburoomi (2022), the problems associated with social media usage addiction are two folds. First, it has an indirect effect on academic performance. Social media usage interferes with regular learning patterns and increases stress levels as it takes away resting periods. These lead to a direct increase in anxiety. Besides inducing depression among addicted users, social networking sites have been found to have an impact on self-esteem (Yüksel-Şahin & Öztoprak, 2019). Çutuk (2021) reported a negative correlation between excessive social media use and self-esteem. That is to say, students with low self-esteem were found to be frequent users of social media.

The studies on test anxiety have primarily focused on how test anxiety affects academic performance, excluding variables that may create test anxiety among tertiary education students. Also, studies on social media usage have investigated the kind of social networking sites that are used by students and the effect of social media on students' academic performance. The few that have studied social media and test anxiety have only superficially investigated the association between social media and test anxiety. After establishing the association between test anxiety and social media usage, most of the studies do not determine the particular use of social media that is principally responsible for increasing test anxiety. This study is a deeper exploration of the relationship between social media usage and test anxiety. It explores how specific uses of social media are associated with test anxiety. The uses of social media were classified into four dimensions and the relationship between each of the four dimensions and test anxiety was investigated to find out how each of the four dimensions associates with test anxiety. The study also explores test anxiety levels of students before, during, and after and goes further to determine the levels of anxiety for males and females. Lastly, the use of social media with respect to gender was explored.

2. Method

The study employed a descriptive survey design to collect data from students to study the relationship between media use and test anxiety. The survey used a Test Anxiety and Social Networking Questionnaire to collect data from 106 College of Education students sampled using a multi-stage sampling procedure. Approval was sought from the College Research Committee to conduct the study. One of four levels (Levels 100, 200, 300, and 400) was selected using a simple random sampling technique. Then for that level, one program was also selected

using a simple random sampling technique. The students in the selected program were stratified into males and females. For each stratum, student registration numbers were electronically randomized. The first 70 of the randomized registration numbers of the males were selected while the first 60 females were selected to participate in the study. Students' consent was sought before the students completed the questionnaire. The students were informed that as part of responding to statements on test anxiety and social media use, they would be required to indicate their students' registration numbers. They were assured of anonymity and that the data would be used for research purposes only. Following this, 106 students (60 males and 46 females) opted to participate in the study.

In this descriptive survey, a 49-item questionnaire on test anxiety and social networking was issued to collect data from 106 College of Education students at the end of their second-semester examination. The questionnaire consisted of sections A, B and C. Section A collected demographic information from respondents. Section B was on students' anxiety before, during and after the examination. Section C was adopted from a study by Gupta and Bashir (2018). Gupta and Bashir (2018) developed and tested a questionnaire to assess the social media use of tertiary education students. Section C was used to collect information from respondents on their use of social media for academic, socialization, entertainment and informative purposes. Due to the adoption of the instrument, the reliability of the instrument was tested to be certain that the instrument was reliable enough to be used in the Ghanaian context. The Cronbach's Alpha reliability was estimated at 0.864. Cronbach's Alpha reliability for sections B and C were also estimated as 0.850 and 0.794 respectively. The data collected from the respondents were analyzed using Scatter plots, Pearson's Product Moment Correlation Co-efficient, Mean scores presented in graphical form and independent samples T-test.

3. Results

The result of the study has been presented in this section using graphs and inferential statistics. First, the relationship between anxiety and social media use was investigated using a scatter plot and Pearson's Product Moment Correlation. Both test anxiety and social media use had dimensions. The effect of the dimensions of social media use on test anxiety was investigated using Pearson's Product Moment Correlation Coefficient. In this study, mean scores computed from the responses provided by the 106 College of Education students were used to judge whether a particular construct or dimension was high or low. Mean scores above 2.0 were considered high while scores below 2.0 were considered low. Concerning Pearson's Product Moment Correlation Coefficient (r), Pearson's r was interpreted as Small, moderate and large. The range of values from 0.10 to 0.29, 0.30 to .49, 0.50 to 1.0 were interpreted as Small, moderate and large respectively (Cohen, 1988, pp. 79–81). Small Pearson's r meant that there was a weak correlation between the variables while large Pearson's r meant a strong correlation.

3.1 The Relationship Between Test Anxiety and Social Media Use

To investigate the relationship between social media use and test anxiety, a scatter plot was drawn to determine the nature of the relationship. The scatter plot is shown in Figure 1.

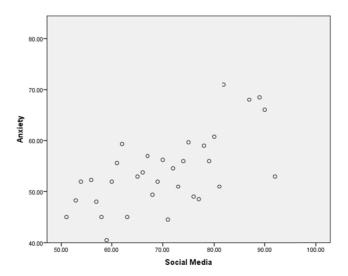


Figure 1. Scatter plot of mean scores for test anxiety and social media use

The scatter plot in Figure 1 shows that there is a positive linear relationship between test anxiety and social media use. The relationship suggests that the frequent use of social media results in higher test anxiety. However, the degree of the relationship was unknown. Pearson's r was used to determine whether the linear relationship between social media use and test anxiety is small, moderate, or large. There was a significant moderate positive correlation between social media use and test anxiety (r = 0.369, r = 106, r = 0.01). This shows that as the respondents frequently use social media their test anxiety increases. Conversely, to reduce their test anxiety the respondents should decrease their frequency of using social media.

3.2 Test Anxiety and its Dimensions

The mean scores of test anxiety and the dimensions thereof were computed to determine whether test anxiety among the respondents was high or low and also to find out if there are differences in test anxiety before, during and after examination. The mean scores for test anxiety and test anxiety before, during and after examination have been presented in Figure 2.

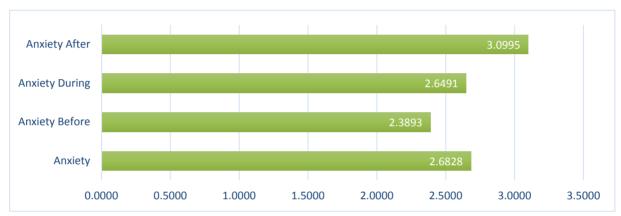


Figure 2. Mean scores of test anxiety and anxiety before, during and after examination

The mean scores shown in Figure 2 indicate that the test anxiety as well as test anxiety before, during and after examination were all above 2.0. The mean score for anxiety which is 2.6828 indicates that the respondents' test anxiety was high. Similarly, the mean scores for test anxiety before, during and after the examination were all high. The mean scores also show that test anxiety is relatively high before examination (2.3893) and it increases as the respondents take the examination. The mean score is highest after the examination. The preparation for and what happens during the test may account for the high anxiety after the test has been taken. Paired correlations were conducted to determine the relationships between the three dimensions of test anxiety.

Table 1. Paired samples correlations

#	Dimensions	N	Correlation	Sig.
Pair 1	Anxiety Before & Anxiety During	106	0.586	.000
Pair 2	Anxiety Before & Anxiety After	106	0.464	.000
Pair 3	Anxiety During & Anxiety After	106	0.652	.000

From Table 1, all Pearson's r shows a large significant positive correlation between any two dimensions. This indicates that there is a strong association between any two of the dimensions. The anxiety before the test and anxiety after the test had been taken had the least associations. There was a moderate significant positive correlation between anxiety before and anxiety after (r = 0.464, n = 106, p < 0.000). This correlation suggests that even though high anxiety before the test will result in high anxiety after the test, the other pairs of dimensions have much stronger associations. As shown in Table 1, there is a large positive significant correlation between anxiety before the test and anxiety during the test (r = 0.586, n = 106, p < 0.000). The large correlation between anxiety before and during the test suggests that if the respondents could manage their test anxiety before taking examinations, they would have a decrease in anxiety during the test, and then lead to a decrease in test anxiety after the test has been taken. The Pearson's r for the third pair in Table 1 attests to this. There was a large positive correlation between anxiety during and anxiety after (r = 0.652, n = 106, p < 0.000).

The predictor of anxiety after the test is the anxiety during the test while the best predictor of anxiety during is anxiety before. The anxiety after had a better association with anxiety during, however, the anxiety after cannot precede anxiety during. Therefore, if the respondents could manage their anxiety before the test, the anxiety during the test will reduce and the anxiety after the test will also reduce.

To find out the levels of anxiety, before, during and after for males and females. The mean scores for the three dimensions were computed by sex.

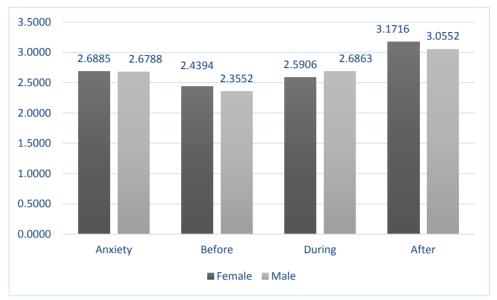


Figure 3. The means scores for the dimensions of test anxiety by sex

There is a slight difference in the anxiety for males and females and test anxiety before, during, and after test for both males and females shown in Figure 3. All the mean scores were above 2.0, indicating high test anxiety and test anxiety before, during, and after test for both males and females. The trend for anxiety before, during and after followed the same trend as shown in Figure 2 for both males and females. The mean scores increased from 2.3552 to 3.0552 for males, while for females it increased from 2.4394 to 3.1716 after the test. Females had higher anxiety after the test than males, meanwhile, they had lower anxiety during test than males. The mean values show that relatively, males had lower test anxiety prior to taking test but it increased by 0.3311 during the test

3.3 The Use of Social Media and its Dimensions

The social media usage among the respondents were also investigated using means scores, scatter plots, Pearson's Product-Moment Correlations Coefficient. Mean scores were used to determine whether social media usage among the respondents was high or low. To find out if the differences in mean scores for females and males are statistically significant or not, an independent samples T-test was used. Finally, the association of four dimensions of social media use with test anxiety was investigated to determine the degree of association, using a scatter plot and Pearson's r. The mean scores for social media use and its dimensions have been presented in Figure 4.

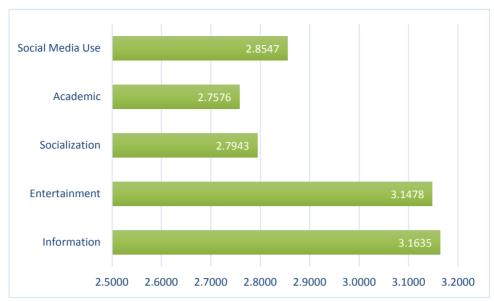


Figure 4. Mean scores for social media use and its dimensions

The mean scores shown in Figure 4 are not surprising. In Figure 1, it was observed that there is a positive correlation between test anxiety and social media use, implying that, while test anxiety has been found to be high, social media use cannot be low. The mean scores for social media use and the four dimensions were all above 2.0. This is an indication that social media usage among the respondents was high. The highest use of social media was for informative purposes (3.1635). The mean score for informative purposes was only 0.0157 above the use of social media for entertainment. Both information and entertainment had mean scores above 3.0, suggesting that the use of social media for these dimensions was very high relative to socialization and academic purposes. Academic had the lowest mean score. Even though the use of social media for academic purposes was found to be high, Figure 4 shows that, the respondents used social media for other purposes much more than for academic purposes. To find out if this trend holds for both males and females, the use of social media by males and females was investigated using mean scores. The result is shown in Figure 5.

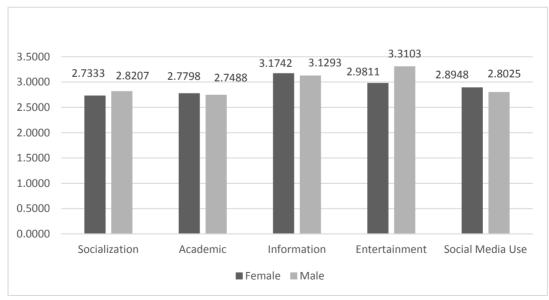


Figure 5. Mean scores of social media use and its dimensions by sex

From Figure 5, it can be seen that social media use was higher among females than males. The mean score for females was 0.0874 higher than that of males. However, this difference was not statistically significant. This was

revealed by an independent samples T-Test conducted to find out if there is a significant difference between the mean scores of males and females with respect to social media use. It was found that there is no statistically significant difference between the mean score of females (M = 2.802495, SD = 0.381633) and males (M = 2.894804, SD = 0.389399; t = -1.220, p = 0.225). This implies that the level of use of social media is the same for females and males. The mean scores suggest that male respondents used social media more for entertainment than females while females use social media for informative purposes than males. The mean score for the use of social media for academic work was just about the same as the use of social media for socialization. However, while the mean score for use of social media for academic purposes for males was higher than that of females, the females' mean score for academic work was higher than the males'. Though the difference in mean scores are marginal, they are worth pointing out.

3.4 The Association of the Dimension of Social Media Use with Test Anxiety

The relationship between the dimensions of social media use and test anxiety was explored to find out how the dimensions of social media use are associated with test anxiety. Scatter plots were used to find out the nature of the associations. The graphs are presented in Figure 6. The scatter plots shown in Figure 6 show that two of the dimensions (Entertainment and Information) appear to have no association with test anxiety. For socialization and academic, the scatter plots suggest the existence of a weak positive linear association. The four graphs in Figure 6 are suggesting that the moderate positive correlation between test anxiety and social media use seen in Figure 1 is contributed largely by academic and socialization dimensions of social media usage.

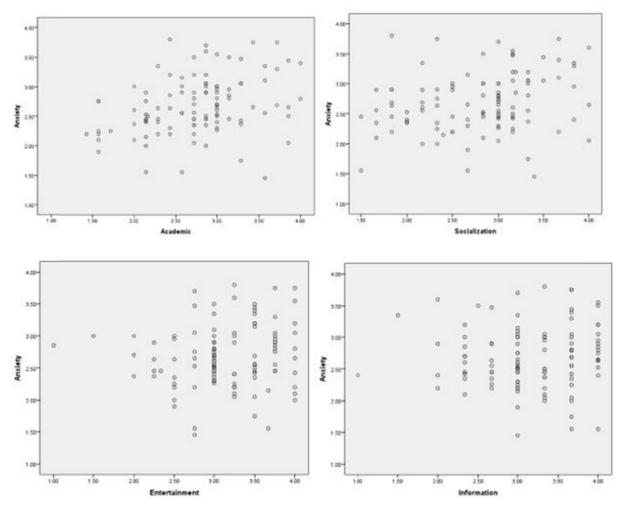


Figure 6. Scatter plot of test anxiety and dimensions of social media use

However, the degree of association cannot be deduced accurately from the graphs. The relationship between test

anxiety and the dimensions of social media was further explored using Pearson's r. The result is presented in Table 2.

Table 2 explains why in Figure 6 the scatter plot for the relationship between anxiety and entertainment and anxiety and information depicted no relationship while the relationship between anxiety and socialization, and anxiety and academic showed a positive relationship. Pearson's r run to determine the relationship between anxiety and the four dimensions of social media use. There was no correlation between test anxiety and the use of social media for sharing/seeking information (r = 0.049, n = 106, p > 0.618). There was a small positive correlation between test anxiety and the use of social media for entertainment (r = 0.12, n = 106, p > 0.222) which was not significant. There was a significant moderate positive correlation between test anxiety and the use of social media for socialization (r = 0.235, n = 106, p < 0.016). Lastly, there was a significant moderate positive relationship between test anxiety and the use of social media for academic purposes (r = 0.327, n = 106, p < 0.001). The moderate positive correlation found between test anxiety and social media use was contributed by two of the four dimensions of social media use. The results suggest that using social media for sharing/seeking information and entertainment does not result in test anxiety. However, respondents who used social media for study-related or study-related activities are more likely to experience test anxiety.

Table 2	The relation	between	anxiety	and the	dimensions	of social	media use

Dimension of Social Media Use		Anxiety
Informative	Pearson Correlation	0.049
	Sig. (2-tailed)	0.618
	N	106
Entertainment	Pearson Correlation	0.12
	Sig. (2-tailed)	0.222
	N	106
Social	Pearson Correlation	.235*
	Sig. (2-tailed)	0.016
	N	106
Academic	Pearson Correlation	.327**
	Sig. (2-tailed)	0.001
	N	106

4. Discussion

Test anxiety is influenced by students' use of social networking sites, which is referred to by many as social media. While social media may not be the key factor influencing test anxiety experienced by students, it is the only variable whose association with test anxiety was investigated. The study went a step further, unlike similar studies to find out how four dimensions of social media usage relate to test anxiety and how sex influences social media use and test anxiety. Investigating the association of the dimensions of social media with test anxiety revealed which particular use of social media associates better with test anxiety and which ones do not. This way, researchers and students will be better informed on how to use social media with minimal effect on their test anxiety. Three dimensions of test anxiety (Before, During and After) were correlated to find out the possibility of one influencing the other and find out if a trend exists among the three dimensions. Also, investigating three dimensions of test anxiety in this study provided general knowledge on how to reduce test anxiety, especially after taking a test.

There was a moderate positive association between test anxiety and social media use among college students. This positive correlation implies that the more time a student spends using social media, the higher that student's test anxiety. This finding is justifiable under the 'Pickle Jar' theory. The Pickle Jar theory is a time management theory that illustrates how unimportant activities can take up the time to be used for more important activities (Wright, 2002). As mentioned by Nurudeen, Abdul-Samad, Owusu-Oware and Tanye (2022) the theory hinges on the idea that the total time spent within a given period is fixed, however, the activities that can be done within the time are not fixed. Students may spend the time within a semester on activities that have a direct and positive effect on their academic work or spend time on non-academic related activities, making the students either better prepared or ill-prepared for a test. The second scenario accounts for the effect of social media usage on test anxiety. Ddungu, Nakijoba, Awobamise and Merab (2021) found that students devote more time using social media networking sites than reading their books. In this study too, it was found that the least use of social media was for academic purposes while entertainment and informative purposes were at the top. The effect of spending

time for studies visiting social media networking sites is that students are likely to suffer from test anxiety due to poor preparation for the test. Social media therefore has a direct negative effect on test anxiety. This finding is consistent with the findings of Malak, Shuhaiber, Al-Amer, Abuadas and Aburoomi (2022).

Even though students use social media to share academic information, reading materials and engage in academic discourse via social media, no social media networking site is designed such that it limits students to only academic use. Hence, even when students are using social media for academic purposes, they will still be receiving and responding to messages and even participating in group chats. In effect, they will be alternating between the use of social media for academic and non-academic purposes. This simultaneous use of social media for academic and non-academic purposes creates interferences in students' learning, making the use of social media for academic purposes ineffective. This may account for the moderately positive correlation between the academic dimension of social media usage and test anxiety. But for this reason, the use of social media for academic purposes should have reduced test anxiety because it adds up to the preparation for tests. Instead, the use of social media for entertainment had a very low positive correlation with test anxiety which was not significant while there was no correlation between the use of social media for informative purposes and test anxiety. It is known that entertainment is more anxiety-easing (Lilley, Oberle, & Thompson, 2014) than searching for information on social media, however for the sample used in the study, using social media for informative purposes does not put them at risk of suffering test anxiety, relative to entertainment. Searching/seeking for information via social media may cause test anxiety when the material being searched or sought for is academic-related. It is worth noting that the Pickle Jar theory only applies when the time for academic work is used for entertainment or searching/seeking information. Hence as long as the use of social media is not interfering with time for academic work, the likelihood of social media usage increasing test anxiety is low. The use of social media is likely to increase test anxiety when it is used as a desperate measure to prepare for a test or when students over-rely on it to prepare for a test. In other words, if students resort to the use of social media for preparing for a test when they feel hard-pressed with time or are ill-prepared for a test or due to possible distractions while using social media for studies, or they over-rely on the use of social media as a tool for learning. However, if they use social media for entertainment or searching/seeking general information, their test anxiety will be low.

The result of the study shows that for both males and females, test anxiety is highest after the test has been taken. Test anxiety progressively increases from the period before the test to the period after the test. The result of the study showed that test anxiety is high among the respondents. Test anxiety is high when students are taking high-stake tests. The end-of-semester examination taken by the respondents is comparable to a high-stake test. The students are not examined entirely by the tutors who taught the courses. There is an external body that composes, prints, distributes, and sends supervisors to colleges to supervise the administration of the tests. If the students' test anxiety is high, this arrangement could be a contributing factor. Though the means of the respondents' test anxiety before, during and after the test progressively increased, the association of the three dimensions was studied to establish what may account for the high-test anxiety after the test has been taken. A strong positive correlation between test anxiety during and after the test, affirms the importance of good preparation for tests. Students will have high test anxiety before the test because they will be uncertain about what questions they will be answering. However, if the students have been well prepared and are able to answer questions to their satisfaction, their anxiety during the test will be low and this will, in turn, reduce their anxiety after the test. A low-test anxiety after the test is most likely to boost the confidence of students in taking another test, thereby reducing their anxiety.

5. Conclusion

The accessibility and functionality of social networking sites have made the use of these sites indispensable in the lives of the College of Education students. The students use social media networking sites for socialization, entertainment, informative and academic purposes. Of these four uses, the least use of social media networking sites is for academic purposes. The students mostly use social networking sites for what they were created for; entertainment and informative and socialization purposes. The use of social networking sites for entertainment and informative purposes appears not to have any association with test anxiety. Entertainment, seeking, sharing and searching for information are anxiety easing. However, the use of social networking sites for these purposes is not that harmless. The use of social networking sites for these purposes tends to take away valuable academic time and introduce stress and sleep deprivation which have a direct impact on test anxiety. Excessive use of social networking sites therefore increases test anxiety. The association of test anxiety before, during and after test is strong. The strongest association exists between test anxiety during and test anxiety after the test. A well-prepared student will suffer less anxiety during the test and experience lower anxiety after the test. Since

test anxiety after the test has a strong association with test anxiety before test, the anxiety after the test is carried into another test to increase the test anxiety before the test. Therefore, to reduce test anxiety, students should moderate their use of social networking sites and rather focus on their academic work.

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