Social Media Usage and Its Influence on Academic Performance in Engineering Students

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ABSTRACT:
BACKGROUND : *Several studies have investigated how social media affects student academic performance. While there were some studies which showed positive impact on students academics, others reported that there were either negative or no effects on their academic performance. Thus, the current study is done to know the relationship between social-media usage and its influence on academic performance among Engineering students.*
MATERIALS AND METHODS: *This is a cross sectional study done among 214 Engineering students of Anil Neerukonda Institute of Technology and Sciences(ANITS) , Visakhapatnam. Data is collected through online Google forms. The Assessment tools used are : Social media engagement questionnaire, Social media addiction scale and Academic performance self -assessment questionnaire.*
RESULTS: *A p- value of 0.0170 (p< 0.05) was obtained by fisher's test reporting significant association between social media addiction and academic performance and a p-value of 0.0340 (p< 0.05) reporting significant association between social media engagement and academic performance.Out of 214 students , 67 % of students agree that new media has changed learning habits, 69% students believe that social media has a connective power and 55% of students agree that social networking sites are instructive.A weak negative correlation of 0.232 was obtained between academic self assessment and social media use though not with GPA.*
CONCLUSION:
Excessive social media usage can negatively affect the students academic performance self assessment.Social media if used effectively for constructive purposes such as learning or sharing information online, social media can prove to be a helpful tool for students,thereby neutralising any negative effects.

I. Introduction

Evolution of internet technology has led to its use as one of the best medium for communication, whereby, two-third of the world's internet population visits social networking or blogging sites, which serves as communication and connection tool.

Social networks include websites and applications which allow users to share content, ideas, opinions, beliefs, feelings, and personal, social, and educational experiences.They also allow communication between a wide range of users world wide [1, 2]. Instagram, Telegram, Facebook, Twitter, Skype, and WhatsApp are the most popular and commonly used virtual social networks [3,4,5,6,7,]

Students are one of the most important users of virtual world and social networks world wide. There are many positive effects associated with the social media use amongst students related to their academics. Students can connect with various educational groups related to their field of study on social media and can easily access all the important and authentic information shared by others[8].

Overuse of social media has a negative impact on students [9]. Reduced academic performance is considered as one of the most important consequences of social networking overuse for students.

II. Aims And Objectives:

1.To understand the perception of students towards the usage of social media
2.To study the impact of social-media usage on academic performance among Engineering students.

3.To evaluate the effect of usage time on social media on students academic performances.

III.   Materials And Methods:

This is a cross sectional study done among   214   Engineering students of Anil Neerukonda Institute of Technology and Sciences(ANITS) , Visakhapatnam. Data is collected   through online Google forms. The Assessment tools used are : Social media engagement questionnaire, Social media addiction scale and Academic performance self -assessment questionnaire.

Participants were from the first to fourth university year of their study. They were provided with an explanation of the purpose of the study and, then, were requested to participate voluntarily after obtaining their consent. A separate data collection form for Social demographic factor and GPA scores   was done .Among these , first yr students GPA could not be included as they just joined and did not complete semester end exams.

Collected questionnaires were sorted, reviewed, and unfinished questionnaires were excluded. Then, all completed data were coded and analyzed. Analyses was done by using Statistical Package for Social Sciences (SPSS) software. version 22
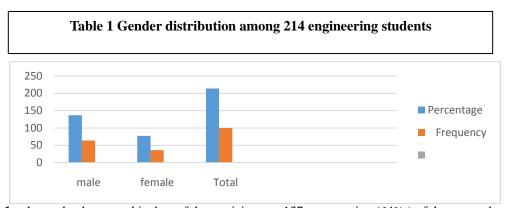
IV.   Results :

Table 1 Gender distribution among 214 engineering students

Figure1 : shows the demographic data of the participants : 137 representing (64%) of the respondents were male and 77 representing (36%) were females .

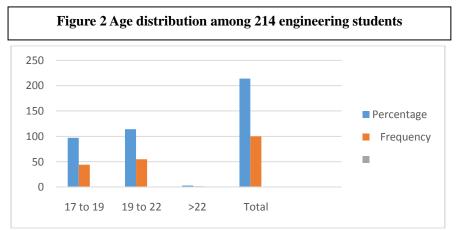**Figure 2 Age distribution among 214 engineering students**

Figure2 : shows the demographic data of the participants: 94 which represents (43.9%) of the respondents were between 17-19yrs, 117 which represents (54.7%) were between 20 to 22 yrs , and 3 which represents (1.4%) were between 22 years and above

Table 3 showing Mean and SD based on age of students

Age	N	Minimum	Maximum	Mean	SD
Age (years)	214	17	36	19.85	1.66

Table 1: A standard deviation of 1.66 and mean value of 19.,85 with range of 17 to 36 was obtained based on age of students

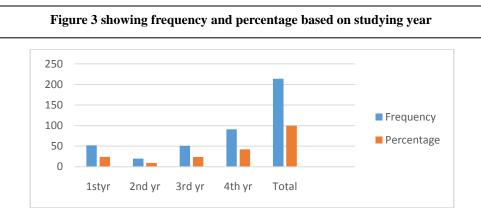**Figure 3 showing frequency and percentage based on studying year**

Figure 3: shows the distribution of the students from selected studying year and faculties : First yr 52 (24.3%), second yr 20 (9.3%), third yr 51 (23.8%),fourth yr 91 (42.5%) of 214 students .

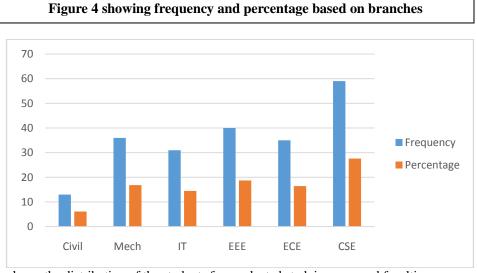**Figure 4 showing frequency and percentage based on branches**

Figure 4 : shows the distribution of the students from selected studying year and faculties :
Students studying civil engineering 13 (6.1%) , mechanical 36 (16.8%), IT 31 (14.5%) , ECE 40(18.7%),CSE 59 (27.6%) of 214 students .
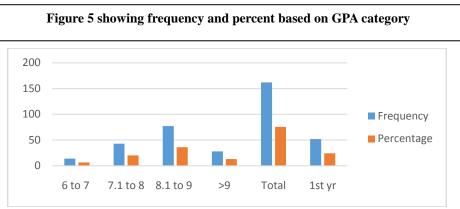
Figure 5 showing frequency and percent based on GPA category

Figure 5: shows the demographic data of the students : 14 representing (6.5%) of the students have GPA score of 6 to 7 , 43 representing (20.-%) have GPA score of. 7.1 to 8 ., 77 representing (36%) have GPA score of 8.1 to 9 and 28 representing (13.1%) have GPA score more than 9.

Table 2 showing mean and SD based on GPA score

GPA	N	Minimum	Maximum	Mean	SD
GPA score	162	6	9.86	8.24	0.77

Table 2 : A SD of 0.77 and mean value of 8.24 with range of 6 to 9.86 was obtained depending on GPA scores.

Table 3 showing Social media addiction questionaire and responses

Social media addiction scale	n	Strongly disagree	Disagree	Neutral	Agree	Strongly agree
I connect with my friends using apps like Facebook,WhatsApp,Instagram,Twitter etc.	214	9(4.2)	3(1.4)	11(5.1)	135(63.1)	56(26.2)
I look at the photos shared on social network profiles	214	9(4.2)	12(5.6)	26(12.1)	140(65.4)	27(12.6)
I search for my friends using social networking sites	214	23(10.7)	49(22.9)	42(19.6)	82(38.3)	17(7.9)
I enjoy spending time in social-networking sites	214	9(4.2)	27(12.6)	62(29)	95(44.4)	20(9.3)
I want to view social networking sites starting at early hours of a day	214	30(14)	71(33.2)	35(16.4)	65(30.4)	13(6.1)
I wonder whether my friends read my posts	214	29(13.6)	71(33.2)	39(18.2)	65(30.4)	10(4.7)
I wonder who visits my personal profile	214	31(14.5)	79(36.9)	32(15)	63(29.4)	9(4.2)
I don't be aware of the time I spend navigating facebook, WhatsApp, Instagram,twitter	214	28(13.1)	73(34.1)	40(18.7)	61(28.5)	11(5.1)
I follow the content Ian interested in from social media	214	8(3.7)	26(12.1)	36(16.8)	111(51.9)	32(15)
I follow latest news and events from social networking	214	5(2.3)	12(5.6)	17(7.9)	135(63.1)	45(21)
Social networking sites cementmy friendships	214	21(9.8)	48(22.4)	64(29.9)	74(34.6)	6(2.8)
I comment on the photos my friends share	214	31(14.5)	45(21)	39(18.2)	89(41.6)	10(4.7)
I prefer social-media over television	214	23(10.7)	42(19.6)	51(23.8)	84(39.3)	14(6.5)
I feel that I have a poor communication with my friends when I don't access facebook,whatsapp, Instagram,twitter	214	29(13.6)	70(32.7)	34(15.9)	70(32.7)	11(5.1)
I believe that social-media has a connective power.	214	3(1.4)	13(6.1)	25(11.7)	147(68.7)	26(12.1)
I believe that new media has changed learning habits	214	5(2.3)	6(2.8)	20(9.3)	142(66.4)	41(19.2)
I spend my free time surfing the internet	214	4(1.9)	25(11.7)	35(16.4)	123(57.5)	27(12.6)
I believe that social networking sites are instructive	214	3(1.4)	18(8.4)	59(27.6)	118(55.1)	16(7.5)
I participate in events on social networking sites	214	32(15)	80(37.4)	39(18.2)	54(25.2)	8(3.7)
I believe that new media technologies change human life.	214	4(1.9)	9(4.2)	23(10.7)	129(60.3)	47(22)
I read personal blog posts and search content	214	9(4.2)	61(28.5)	40(18.7)	85(39.7)	19(8.9)
I freely share my ideas on social networking sites	214	30(14)	64(29.9)	44(20.6)	67(31.3)	9(4.2)

Table 3 **:**Out of 214 students,135 (63.1) participants agree and 56 (26.2) students strongly disagree that they connect with friends using apps like facebook,whatsapp,instagram, twitter etc.And 129 (60.3).
Only few participants agree that they are having poor communication when they dontaccess facebook, whatsapp,instagram,twitter(32.7) , 67 % o agree that new media has changed learning habits(66.4). A total of 69% students believe that social media has a connective power and. 55% of students agree that social networking sites are instructive

Table 4 howing social media engagement questionaire and responses

Social media engagement	n	Not one day	One day	Two days	Three days	Four days	Five days	Six days	Every day
How often do you use social media in the 15 minutes before you go to sleep?	214	34(15.9)	8(3.7)	16(7.5)	14(6.5)	8(3.7)	8(3.7)	3(1.4)	123(57.5)
How often do you use social media in the 15 minutes after you wake up?	214	54(25.2)	18(8.4)	19(8.9)	16(7.5)	9(4.2)	7(3.3)	4(1.9)	87(40.7)
How often do you use social media when eating breakfast?	214	132(61.7)	16(7.5)	14(6.5)	14(6.5)	4(1.9)	1(0.5)	3(1.4)	30(14)
How often do you use social media when eating lunch?	214	142(66.4)	13(6.1)	16(7.5)	8(3.7)	3(1.4)	2(0.9)	1(0.5)	29(13.6)
How often do you use social media when eating dinner?	214	152(71)	10(4.7)	15(7)	7(3.3)	2(0.9)	3(1.4)	0(0)	25(11.7)

Table4 :
Out of 214 students, 57% aof students admit that they use social media before going to bed and 41% agree that they use social media in the morning.Only few students (14%) admitted that they use social media while having breakfast and lunch.

Table 5 showing academic performance self assessment responses

Academic performance self -assessment	n	Yes	No
Iam having inconsistent or poor class attendance	214	22(10.3)	192(89.7)
Iam having difficulty in following the way the professors presenting material	214	54(25.2)	160(74.8)
Iam having communication problems with my advisor	214	39(18.2)	175(81.8)
Iam unclear about my grading, course requirements	214	55(25.7)	159(74.3)
Iam having trouble in getting the classes I wanted	214	41(19.2)	173(80.8)
Iam attending one or more classes I don't like or I'm not interested in	214	86(40.2)	127(59.3)
I am attending one or more classes that were too difficult for me	214	86(40.2)	128(59.8)
Iam not getting any extra help or tutoring	214	60(28)	154(72)
Iam having trouble in talking to my professors	214	48(22.4)	166(77.6)
Iam having trouble in managing my time	214	92(43)	122(57)
Iam not able to study effectively	214	99(46.3)	115(53.7)
Iam having difficulty in concentrating on studies	214	92(43)	122(57)
Iam having trouble with multiple choice tests	214	53(24.8)	161(75.2)
Iam having trouble with essay tests	214	54(25.2)	160(74.8)
Iam having trouble with problem tests	214	67(31.3)	147(68.7)
Iam having difficulty in labs	214	58(27.1)	156(72.9)
Iam having a slower reading speed than other students	214	50(23.4)	164(76.6)
Iam having difficulty in reading comprehension	214	29(13.6)	185(86.4)
Iam having trouble with things like spelling, punctuation or sentence construction in written work	214	42(19.6)	172(80.4)
Iam having difficulty with organising thoughts in writing	214	67(31.3)	147(68.7)
Iam having weak mathematical skills	214	50(23.4)	164(76.6)
Iam having weak note taking skills	214	58(27.1)	156(72.9)
Iam having trouble in identifying key and supporting points in lectures and tests	214	54(25.2)	160(74.8)
Iam spending more time on athletics	214	38(17.8)	176(82.2)
Iam spending more time on student organisations or activities	214	51(23.8)	163(76.2)
Iam having trouble in getting along with my roommates or people in my residence	214	38(17.8)	176(82.2)
Iam feeling homesick	214	26(12.1)	188(87.9)
Iam trying to find a quiet place to study with no distractions	214	124(57.9)	90(42.1)
Iam having financial problems	214	73(34.1)	141(65.9)
Iam having family problems	214	58(27.1)	156(72.9)
Iam having low motivation	214	65(30.4)	149(69.6)
Iam having health problems	214	36(16.8)	178(83.2)
I spend more time in partying	214	18(8.4)	196(91.6)
I use alcohol and /other drugs	214	3(1.4)	211(98.6)
Iam staying up too late /lack of sleep	214	68(31.8)	146(68.2)
Iam having other emotional problems	214	57(26.6)	157(73.4)
I don't know where to get help/counselling for personal or relationship problems	214	52(24.3)	162(75.7)

Table 5: Out ofavg (n) 214 students, most of the participants (58-%) admit that they are having difficulty in finding place for studywith no distractions.46% of estudents admit that they are not able to study effectively._Some participants (40-%)reported that they are attending classes which are not interested in.A total of 43% participants admitted that they are having difficulty in concentrating on studies.Some participants 30% of the students reported that they are having low motivation .

Table 6 : Academic performance self assessment questionaire with GPA category and their association estimated using fisher's exact test

Academic performance self - assessment	GPA category				Fisher's Exact Test	p - value
	6 to 7	7.1 to 8	8.1 to 9	More than 9		
Yes	5(27.8)	4(22.2)	9(50)	0(0)	10.58	0.0090*
No	9(6.2)	39(27.1)	68(47.2)	28(19.4)		
*- P<0.05 there is a significant association between Academic performance self -assessment and GPA category by using Fisher's Exact Test						

Table 6 above showed that the calculated fisher's exact test p - value of 0.0090 (p < 0.05) reporting significant association between academic performance self - assessment and GPA category

Table 7: Social media engagement questionaire with GPA category and their association estimated using fisher's exact test

Social media engagement	GPA category				Fisher's Exact Test	p - value
	6 to 7	7.1 to 8	8.1 to 9	Morethan 9		
Not one day	3(15)	7(35)	5(25)	5(25)	0.04	0.8510
one day	3(7.3)	8(19.5)	24(58.5)	6(14.6)		
Two days	1(3.8)	9(34.6)	12(46.2)	4(15.4)		
Three days	4(9.3)	12(27.9)	18(41.9)	9(20.9)		
Four days	1(9.1)	3(27.3)	7(63.6)	0(0)		
Five days	0(0)	0(0)	0(0)	1(100)		
Six days	0(0)	1(25)	3(75)	0(0)		
Every day	2(12.5)	3(18.8)	8(50)	3(18.8)		
*- P<0.05 there is no significant association between Social media engagement and GPA category by using Fisher's Exact Test						

Table 7 above showed that the calculated fisher's exact test p- value of 0.8510 which is greater than the normal p - value of 0.05 indicating that there is no significant association between social media engagement and GPA category.

Table 8: Social media addiction questionaire with GPA category and their association estimated using fisher's exact test

Social media addiction scale	GPA category				Fisher's Exact Test	p - value
	6 to 7	7.1 to 8	8.1 to 9	More than 9		
Strongly disagree	0(0)	0(0)	1(50)	1(50)	14.31	0.2000
Disagree	2(22.2)	2(22.2)	3(33.3)	2(22.2)		
Neutral	7(7.5)	22(23.7)	52(55.9)	12(12.9)		
Agree	5(8.8)	18(31.6)	21(36.8)	13(22.8)		
Strongly agree	0(0)	1(100)	0(0)	0(0)		
*- P<0.05 there is no significant association between Social media addiction and GPA category by using Fisher's Exact Test						

Table 8 above showed that the calculated fisher's exact test p-value of 0.2000 which is greater than the normal p value of 0.05 reporting that there is no significant association between social media addiction and GPA category.

Table 9 Association between social media engagement and academic performance self assessment estimated using fisher's exact test

Social media engagement	Academic performance self - assessment		Fisher's Exact Test	p - value
	Yes	No		
Not one day	0(0)	26(100)	13.59	0.0340*
one day	4(7.4)	50(92.6)		
Two days	3(9.7)	28(90.3)		
Three days	9(15.5)	49(84.5)		
Four days	2(12.5)	14(87.5)		
Five days	1(33.3)	2(66.7)		
Six days	1(14.3)	6(85.7)		
Every day	6(31.6)	13(68.4)		
*- P<0.05 there is a significant association between Social media engagement and Academic performance self -assessment by using Fisher's Exact Test				

Table 9 based on fisher exact test results showed a pvalue of 0.0170 (p< 0.05) reporting significant association between social media engagement and academic performance.
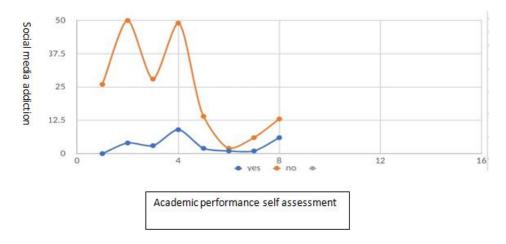
Academic performance self assessment

Table 10 Association between social media addiction and academic performance self assessment estimated using fisher's exact test

Social media addiction scale	Academic performance self - assessment		Fisher's Exact Test	p - value
	Yes	No		
Strongly disagree	0(0)	2(100)	11.33	0.0170*
Disagree	0(0)	11(100)		
Neutral	9(7.2)	116(92.8)		
Agree	17(23)	57(77)		
Strongly agree	0(0)	2(100)		
*- P<0.05 there is a significant association between Social media addiction scale and Academic performance self -assessment by using Fisher's Exact Test				

Table 10 based on fisher exact test results showed a pvalue of 0.0340 (p< 0.05) reporting significant association between social media addiction and academic performance.
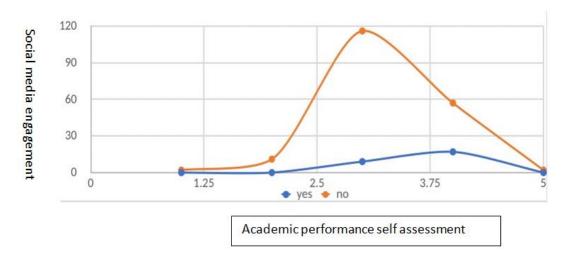

Academic performance self assessment

Table 11Correlation between GPA, Academic performance self assessment, social media engagement and Social media addiction estimated using spearman's rho test

Correlations		GPA score	Academic performance self - assessment	Social media engagement	Social media addiction scale
GPA score	Spearman's rho	1.00	0.173*	0.02	0.00
	Sig. (2-tailed)		0.03	0.81	0.99
	N	162	162	162	162
Academic performance self -assessment	Spearman's rho	.173*	1.00	-0.221**	-0.232**
	Sig. (2-tailed)	0.03		0.001	0.001
	N	162	214	214	214
Social media engagement	Spearman's rho	0.02	-0.221**	1.00	0.381**
	Sig. (2-tailed)	0.81	0.00		0.00
	N	162	214	214	214
Social media addiction scale	Spearman's rho	0.001	-0.232**	0.381**	1.00
	Sig. (2-tailed)	0.99	0.00	0.00	
	N	162	214	214	214

Table 11: shows weak but negative correlation of academic performance self assessment with social media engagement (-0.22) and social media addiction scale   (-0.232) but not with GPA (no correlation)

V.   Discussion

Out of 214 students, 137 participants were males and 77 respondents were females. Percentage of students studying first, second, third and fourth year in this study include 24.3%,9.3%,23.8 and 42.5% respectively. Percentage of students studying Civil , Mechanical, IT ,ECE,CSE groups include 6.1%,6.8%,14.5%,18.7%,27.6% respectively. Among these, Avg GPA scores of 6 to 7 was obtained from 6% of students, 7.1 to 8.7 score from 36% and 8.1 to 9.8 was obtained from 13.1% of students.

Results from this study indicated positive perceptions of students toward using social media in learning (Table3). Majority of them (60%) agreed that new media technologies have changed human life and have a connective power (Table3). In this study , 63% (Table 3) of the students used social media for non - academic purposes to chat with others (i.e. facebook, whatsapp, instagram, twitter etc) and 44% (Table 3) of students browse social networking sites to pass time .

At present, social media platforms can be used to obtain necessary information that serves educational purposes. However, socialmedia usage negatively affected the academicprogress, and studies have shown a strong positive relationship between social media use and academic performance. In this study, a p-value of 0.034 was obtained by using fisher's exact test reporting significant association between socialmedia addiction and academic performance (Table10).

Paststudies have found that students who spend more time on social mediasites are likely to demonstrate poor academic performance. This is because they spend time chatting online and making friends on social media sites instead of reading books. This has a negative effect on their academic performance (Owusu-Acheaw and Larson,2015,Abbasetal.,2019). Hence   it is important to determine the duration of time that they spend on social media sites.A study conducted by Lenhart and Madden (2007).in the United States also majority of young people spend several times in the dayon social mediaand thev use them to   make new trends and stav in touch with existing ones .In this study also, 57%   of students   use social media before going to bed and 41% check social media immediately aftter waking up daily. (Table 4) and   a p-value of   0.017(p< 0.05)   was   also obtained showing significant association between social media engagement and academic performance(Table 9).Few students   admitted that spending on social networking sites effected their study time(Table 5) .Similar to   Gilbert et al study, results from the current study also showed negative impact of social media on academic performance of students. Manjur kolhar study reported that increase in duration of time spent on social media has negative impact on concentration and effective studying.The current study also showed similar results.Students also reported low motivation, lack of interest in attending classes,unable to find a study place with no distractions showing poor academic performance (Table 5).Instead of spendingtheir free time on fun in social media activities,students should use social media platforms foracademic purposes or to search for new informationand gain more knowledge to improve their academicperformance. Failure to do so can have adverse effectson knowledge integration and lead to poorperformance in competitive examinations. Socialmedia use has increased substantially amonguniversity students. Social media use has both positiveand negative effects.

However, the negative effects aremore pronounced because students tend to use such platforms to have fun and pass time rather than foracademic purposes. This may distract them from learning and academic activities.

LIMITATIONS :
As our study is of cross-sectional design, it was not possible to explain the causal relationships between variables of social networking addiction and academic performance of students.
In the current study, the data were collected by self-reporting method that could have affected the accuracy of the results.
The total sample of the study was students from only one university. Thus, the findings maybe a subject of generalization issues.

CONCLUSION:
Social media have a dual impact on student's academic performace.
Students should try to create a balance between social media use and their studies, so that they do not get distracted while studying. When using social media, students should try to use it more often for educational purposes such as acquiring or sharing information, seeking help from classmates or professors to get their doubts clarified. Hence, if used effectively for constructive purposes such as learning or sharing information online, social media can prove to be a helpful tool for students. On the other hand, excessive social media use can seriously negatively affect their academic performance.

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