

Original Research Article

THE IMPACT OF SOCIAL MEDIA ON THE ACADEMIC LIFE AND PERFORMANCE OF HIGH SCHOOL STUDENTS- EVIDENCE FROM PRIMARY SCHOOL STUDENTS IN DAMMAM REGION SAUDI ARABIA

Abstract

Background and objective

Social media has a vital part of an individual's life that allows people to communicate with one another. In recent days the prevalence of addiction to social media among students is a serious issue. The objective of this study was to assess the impact of social media on the academic life and performance of high school students in Saudi schools, in Dammam Saudi Arabia.

Methods:

This was a cross-sectional questionnaire-based study conducted in a Saudi school over 3 months (Nov 2020 Jan 2021), where 203 high school students were participated in the study. Data collected from the questionnaire included the academic performance in terms of school marks, the duration of social media use, time spend for studying, and social media addiction. Data analysis was performed using a statistical package for social science version 26 (SPSS) was used.

Results: Most of the participants were male students 131 (64%) and half of them 82 (40.4%) were in their academic second year. The mean time spent by students studying in a week was 18.50(M=18.50, SD = 8.33), while 3.79 mean hours per day were spent by students to use social

media ($M= 3.79$, $SD=2.65$). A large majority of the participants using WhatsApp 191(94%) followed by snap chat 176 (86.7%). About 171 (84.2%) agreed that the time spend on social networks takes up their time for studying. Based on Internet distraction, 81.3% of the participants agreed that social network is the main reason for their distraction in studies. The time spend on studying per week were significantly associated with gender ($P= 0.0001$), age ($P= 0.0001$). Also there was significant difference between male and female in the final exam scoring ($P= 0.0001$).

Conclusion

The results found that the use of social media among Saudi school students' found high. Additionally, findings reported that the use of social media has distracted students from studying.

Keywords: social media, Whatsup, Twitter, academic performance; internet addiction

INTRODUCTION

The number of people using the internet, including SM (SM), is growing worldwide, and it has become a vital part of everyone's life, regardless of gender or age ¹⁻³. According to 2021 statics, the worldwide prevalence of SM was increased from 2.07 billion in 2015 to 3.96 billion in 2021. The average time spent by an individual on SM is estimated to be 2 hours 24 minutes ⁴. Additionally, literature evidenced that use of SM is more prevalent among high school students and adolescents ^{5,6}. It was estimated that 93% of American teens aged between 12 to 17 years were used multiple social sites in 2015 ⁷. In Saudi Arabia, according to recent previous reports in 2021, there were a total of 27.80 million SM users, while China ranked first in the prevalence of SM use ⁸. The most common reason for the high prevalence of SM were for the sake of communication ^{1,5} entertainment, or, staying connected with friends and family, facilitating intragroup–intergroup relationships, making new friends, sharing pictures, and exchanging ideas ⁹⁻¹². Some other studies reported that peoples use SM for the sake of news on current events, or to gather health information or to search for health topics, such as grooming or beautifying or drug use ^{5,13}.

Several studies regarding the impact of SM on students have been conducted at both national and international levels and reported that SM harms students' academic performance, additionally, earlier findings also demonstrate that the more usage of SM, the worse their academic performance suffers ^{14,15}. Most previous reports from Arab countries have revealed the increased usage of SM had a massive impact on students' academic performance ¹⁶⁻¹⁹. Additionally, a previous study from a developing country reported lower academic performance among users of SM and concluded that SM ruin the future of teenagers and children of schooling ¹⁸.

Although Social networking sites (SNSs) are services that allow users to build profiles to connect with friends or other people that share similar backgrounds or interests. Of social networking

sites includes a user's personal information including name, gender, and a picture presentation, and allow users to interact with one another in a variety of ways ¹⁹. The most popular Social networking sites are Facebook, Twitter, YouTube, Snapchat, and Instagram ¹⁹. In 2016 a data provided by ²⁰ states that Facebook had 3 million reach monthly on average; Twitter had 500 million active users worldwide. Teenagers and college students (age 18 - 29) are among the highest users of online SM ²². According to a recent survey by Denis Meter, the time spent on SM has increased over the last few years ²³. Each year students are investing an average of nine hours a day of their time being online on Instagram, Facebook, YouTube, Twitter, etc. In this context in Saudi Arabia studies are lacking, therefore we aimed this study to assess the impact of SM on the academic life and performance of high school students.

METHODS

Study design and participants

A cross-sectional, descriptive study was conducted over 6 months, using structured self-administered questionnaires. The targeted participants were high school students of the Dammam region of Saudi Arabia namely umm Salamah, Sheikh Abdul Aziz ibn Baz, and Sheikh Muhammad bin Abdul Wahab. The children's who were currently studying their courses in the schools and regular students of the schools, who can read and understand the English and Arabic languages were included, while students from other schools were excluded. Before data collection ethical approval was obtained from the Institutional Review Board (IRB) of King Abdullah International Medical Research Center (KAIMRC) RD20/002/A. Participation in the research was voluntary and it was made known to every participant that they had the right to withdraw at any time without providing reasons. Prior to begin the survey there was a question

about the importance of their participation and objective of the study, who agreed to accept the questionnaire was considered it as an informed consent.

Questionnaires and data collection

A set of questionnaires was designed by the researchers to collect information and data^{24,25}. The questionnaire consisted of two sections, the first section focusing on demographic information, such as gender, age, educational level, and experience of using SM. secondly, a section addressing the impact of SM on student's academic life and was assessed on a 5-point Likert scale (Strongly Disagree = 1, Disagree = 2, Neutral = 3, Agree = 4, and Strongly Agree = 5) with a total of 22 items. The questionnaires were validated using a pilot study with 20 participants, after which necessary revisions were made before beginning the research. The approximate time limit for answering the questionnaires was 10 to 15 minutes. The Cronbach's alpha value of 0.71 was found appropriate for the study.

The final questionnaire was sent to the participants through WhatsApp© and Facebook. An invitation link containing a survey questionnaire was sent to the participants registered mobile number. The data collection was carried out using convenience sampling technique without predetermined sampling. All the students on the behalf of their parents, were approached through registered mobile number and completed the research questionnaires. To make the study more representative, researcher was constantly sending the reminders to fill the research questionnaires until we reach the required sample size. For the purpose of data collection and to send reminders there was research team (one researcher and two physicians). The researcher was further followed up until required sample size was reached.

Data analysis

Data extraction is performed for the examination of questionnaires filled out by participants and to check the accurateness and completeness of the data. A descriptive analysis was performed. Categorical data were calculated as frequencies and percentages. Statistical Package for Social Sciences version 22.0 (SPSS Inc., Chicago, IL, USA) was used for statistical analysis. To find out the association between variables one-way ANOVA was used. Statistically, significant test results were determined based on a p-value < 0.05.

RESULTS

A total of 203 participants completed the questionnaires. Among those, most of them were males 131 (64%) and more than half of them were 123 (61.8%) aged between 16 and 18 years old, while 60 (30.2%) were aged between 19 and 21 years. The mean age of the students was 17.73 ± 1.68 (Std). Nearly half 82 (40.4%) of the participants were in their academic second year and slightly more than one-third of the students were belonging to the scientific program 75(36.9%). With regards to the last final exam grades slightly less than one-third of the participants, 52 (26.1%) scored >90 %, while the majority 116(58.3%) of the students scored between 71-90%, and 26(13.1%) of the students scored 51-70% of the marks (Figure-1). The most prevalent SM use among the participants were WhatsApp 191 (94%) followed by snap chat 176 (86.7%), Instagram 80(39.4%) (Figure-2). Among the studied participants about one-third 75(36.9%), they were found from scientific program. The mean time spent by students studying in a week was 18.50(M=18.50, SD = 8.33), while 3.79 mean hours per day were spent by students to use SM (M= 3.79, SD=2.65). The detailed information on the demographic data is given in Table 1.

Table-1 participant's demographic characteristics and academic-related characters

Demographics	Frequency (n)	Percentage (%)
Gender		
Male	131	64.5
Female	72	35.5
Age(years)*		
10-15 years	16	0.8
16-18	123	61.8
19-21	60	30.2
Academic year		
The First year	49	24.1
The second-year	82	40.4
The third-year	72	35.5
The program		
General	59	29.1
literary	69	34.0
scientific	75	36.9
How many hours per week do you usually spend studying?	18.50±8.33	
How many hours per day do you spend on SM?	3.79±2.65	

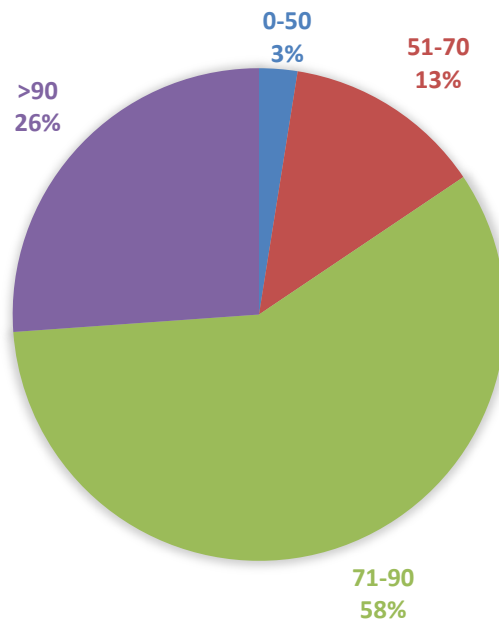


Figure-1last exam grades of the participants

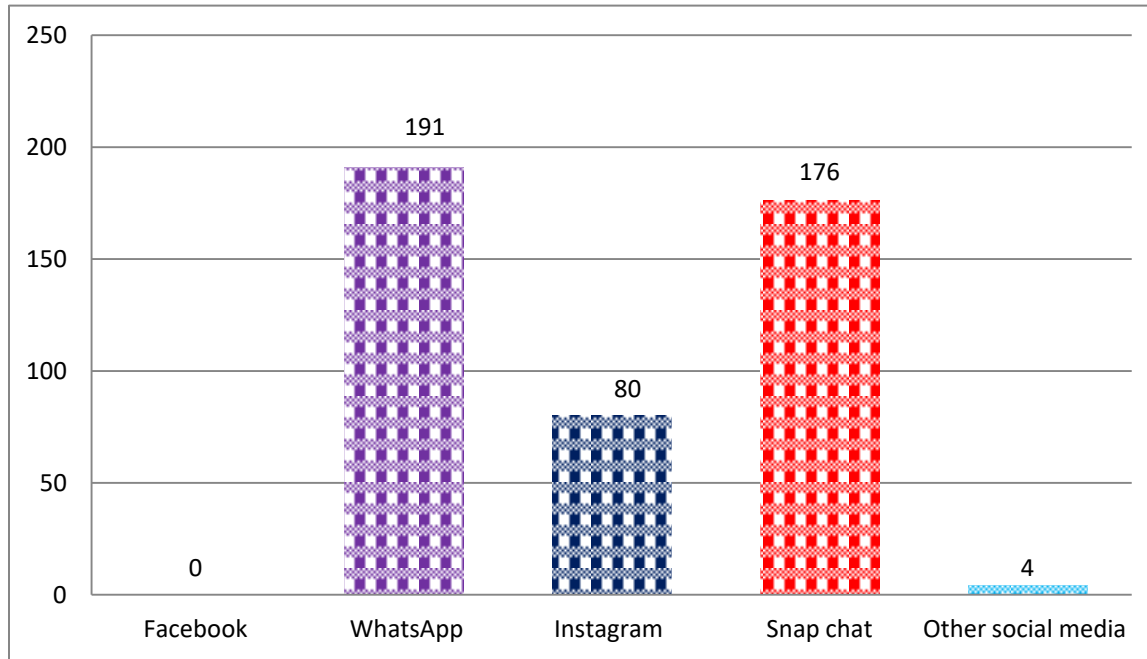


Figure-1 the prevalence of SM among highs school students

Out of these 203 student's majority, 171 (84.2%) agreed that the time spend on social networks takes up their time for studying. Based on Internet distraction, 165(81.3%) of the participants agreed that social network is the main reason for their distraction in studies. most of the surveyed students 160(78.8%) strongly agreed that they spend more hours on SM rather than spend on reading. Interestingly the majority of the students agreed or strongly agreed that their unlimited communication with SM users by their cell phone negatively affects their school performance, Additionally, most of them 160(78.8 %) agreed or strongly agreed that SM has negatively affected their GPA. However, the use of digital SM not only affecting the thoughts, feelings, and ideas of the students but also their writing skills. (84.7%) agreed that their writing skills are affected by the use of SM. 76.4% of the students agreed that engaging too much in SM baffles them. The student's negative perceptions about the use of SM were given in table – 2

Table-2 student's agreement about the negative effects of SM use on the academic performance

Questionnaires	Strongly agree n(%)	Agree n (%)	Neutral n(%)	Disagree n(%)	Strongly Disagree n(%)
The time I spend on social networks takes up my time of studying	171(84.2)	11(5.4)	6(0.3)	12(5.9)	3(1.5)
Social networks on the Internet distract me from my studies	165(81.3)	14(6.9)	7(3.4)	13(6.4)	4(0.2)
I spend more hours on SM than I spend reading	160(78.8)	23(11.3)	12(5.9)	6(0.3)	2(0.1)
Unlimited communication on Face book using my cell phone negatively affects my school performance	162(79.8)	19(9.4)	3(1.5)	10(4.9)	9(4.4)
SM has negatively affected my writing skills	172(84.7)	12(5.9)	6(0.3)	4(0.2)	9(4.4)
Engaging in SM forums baffle me	155(76.4)	12(5.9)	25(12.3)	8(3.9)	3(1.5)
SM negatively affected my GPA.	160(78.8)	18(8.9)	7(3.4)	9(4.4)	9(4.4)
I lose focus once I drop out of my studies time using SM	157(77.3)	17(8.4)	20(9.9)	8(3.9)	0(0)

Table-3 presents the student's responses with regards to the positive impact of SM in academics.

With regards to the positive effect of SM in academics, most of them use SM platforms like 175(86.2%) of them uses to participate in educational discussions and 168(82.8%) uses to understand what they learned in their classes. Although a great majority of the students 173(85.2%) take benefit of WhatsApp to share information with their classmates. By investigating the respondents whether the SM had improved their academic grades, 152 (74.9%) of them confirmed this fact, while 163(80.3%) of them agreed that SM positively affected obtaining their GPA. A further follow-up regarding the latest development of SM in their field of

study 175(86.2%) accepted this fact while 84.2% accepted the fact that the use of SM has improved their communication skills. In general, (87.7%) of the respondents use SM to communicate with their teachers. 78.6 % of them agreed that the faculty members encourage them to use SM as part of the class assignments. 82.8% use SM extensively because most of their study assignments are in the form of blogs and online presentations. The time spend on studying per week were significantly associated with gender. Being female were prone to spend more time (mean = 21.82, SD =7.28) in comparison to male students (Mean= 16.68, SD=8.34), indicating significant difference (P= 0.0001). Similarly, the time spend on social media was significant different with age (P= 0.0001). Also there was significant difference between male and female in the final exam scoring (P= 0.0001). The detailed information was shown in table-4

Table-3 student's agreement about the positive effects of SM on the academic performance

Questionnaires	Strongly agree n(%)	Agree n(%)	Neutral n(%)	Disagree n(%)	Strongly Disagree n(%)
I participate in educational discussions on SM platforms	175(86.2)	17(8.4)	10(4.9)	0(0)	1(0.5)
I take advantage of WhatsApp to share information with my classmates	173(85.2)	19(9.4)	8(3.9)	1(0.5)	2(1.0)
SM positively affected my GPA	163(80.3)	18(8.9)	16(7.9)	5(2.5)	1(0.5)
I am following the latest developments in my field of study via SM.	175(86.2)	21(10.3)	6(0.3)	1(0.5)	0(0)
I only rely on the information I got from SM	07(3.4)	10(4.9)	18(8.9)	7(3.4)	161(79.3)
My SM use helped improve my grades	152(74.9)	22(10.8)	25(12.3)	2(01)	2(1.0)
I use social media sometimes to understand what I learned in class	168(82.8)	28(13.8)	2(0.1)	5(2.5)	0(0)
I wouldn't do better in school if I stopped using social media	16(7.9)	11(5.4)	164(80.8)	8(3.9)	4(2.0)
The use of social media is encouraged by the professors as part of the class assignments	159(78.3)	32(15.8)	10(4.9)	2(1.0)	0(0)
We have a group of social media for some courses.	166(81.8)	27(13.3)	8(3.9)	2(1.0)	0(0)

I use social media to make more friends than I use it for school purposes	164(80.8)	16(7.9)	11(5.4)	9(4.4)	3(1.5)
I have to use social media extensively because most of my study assignments are in the form of blogs and online presentations	168(82.8)	25(12.3)	7(3.4)	3(1.5)	0(0)
Social media has improved communication with others.	171(84.2)	24(11.8)	8(3.9)	0(0)	0(0)
I communicate with teachers via social media	178(87.7)	19(9.4)	6(3.0)	0(0)	0(0)

Table-4 association between demographics, academic characteristics of student's and time spent on social media and for studying

Questionnaires	Mean	Std	F	P-value
How many hours per day do you spend on social media?	3.75	1.51	0.106	0.745
Male	3.88	3.97		
Female				
How many hours per week do you usually spend studying?				
Male	16.68	8.34	19.25	0.0001
Female	21.82	7.28		
The last final exam results				
Male	81.07	15.48	4.72	0.031
Female	85.63	11.44		
How many hours per day do you spend on social media?				
10-15 years	4.94	4.25	2.096	0.126
16-18	3.54	1.53		
19-21	3.85	3.60		
How many hours per week do you usually spend studying?				
10-15 years	12.56	5.04		
16-18	18.85	8.38	6.268	0.002
19-21	20.43	7.46		
The last final exam results				
10-15 years	84.06	9.699		
16-18	83.11	14.36	0.759	0.469
19-21	80.53	15.23		

DISCUSSION

Social networking has become a widespread international trend that has reached practically every country on the planet. SM sites have grown in popularity and evolved into an online platform where users create, share, bookmark, and network at a rapid pace. Students are among the most active users of SM. Although earlier studies revealed that SM has negative effects on the students' performance in academics,¹⁻⁵ which was similar to current study findings. In this study, 81.3% of the students agreed that social networking sites distracted them from their studies. In this study, the most common SM applications use among students were WhatsApp (94.1%), followed by snap chat (86.7%), Instagram (39.4%), and other applications (0.2%). While an earlier study by Bhandarkar et al in 2021 reported WhatsApp and YouTube (91.75%) were the most popular SM applications². Similarly, another previous study published in the Saudi Journal of biological science reported that Snapchat (45%), Instagram (22%), Twitter (18%), and WhatsApp (7%) were the most prevalent SM applications among students⁵. However, in developed countries like Europe and the united states has shown Facebook was the most commonly used SM application among students⁶. This could be because to attract more users and gain more popularity over other SM platforms, SM applications are constantly upgrading their feature set, enhancing their user-friendliness, and expanding their access to information⁶. Additionally, in Saudi Arabia, the lower prevalence of Facebook is due to the Islamic nature of the country, and the parents might be restricted to them.

In this study, most of the students perceived that the time they spend on social networks takes up their time of studying also reported that the distraction from their studies, which is similar to a

previous study published by Kolhar et al in 2021, Abdullahi et al 2020. Most of the earlier studies reported that that SM had influenced their learning activities, and a majority of the students agreed that they were more drawn to SM than academic pursuits ^{24,25}. In contrast to some other studies, both national and international level reports found that the use of SM has a positive effect on academics. For instance, Palla and Sheikh in 2010 reported the Impact of SM on the academic performance of college students in Kashmir found students used SM networking sites to fulfill their educational needs ²⁶. Additionally, Palla and Sheikh's findings also reported that SM networks are simple to use and have been utilizing for three years. Findings also reported that students benefit immensely from the usage of SM since it allows them to share their knowledge and information with others, enhance their academic grades, and improve their reading and writing skills ²⁶. These previous findings were similar to current study findings. In this study, most of the students agreed that SM has helped them to improve their grades in academics, while most of them agreed SM has helped them to participate in educational discussions on SM platforms. Additionally, current findings also evidenced that students used SM extensively because most of my study assignments are in the form of blogs and online presentations. This finding is evidenced that SM has both positive and negative impacts on students' academic performance. Also use of networking sites is more prevalent since most of the study materials and lectures are happening online using social networks to avoid delay in class attendance or to following the guidelines established by the government to control the COVID-19 pandemic.

Although many other studies reported social networking platforms potentially allows people to make social connections and network with others who have similar backgrounds, activities, personal or professional interests, or real-life relationships ^{24,27}, while other studies found that

students used SM to communicate with others, 43% of them utilized them to pass the time²⁴ while other study reported that SNSs were commonly used by students to acquire information and communicate with friends²⁸. Similar previous studies also reported both positive and negative effects of the use of SM, which is similar to current findings²⁹. According to a recent survey conducted in Nepal, frequent usage of Facebook among health science students has both beneficial and negative consequences for their social lives and health. The most prevalent negative health consequences are seen by Facebook users were burning eyes (21%), disturbed sleep (19%), and headache (16%). Although a similar study by Lahiry et al in 2019 reported that despite the students' enthusiasm for social sites reported a total of 42.45% of them given a favorable while 45.6% of the negative impact of SM usage on physical well-being³⁰. In addition to this using SM, makes individuals become addict to it.

CONCLUSION

A majority of the participants reported prolonged use of social networking sites for academic purposes as well as to get entertainment. most of the students agreed that the use of SM distracted them from studying, while students reported both positive and negative effects of SM in academic life. These habitual behaviors can distract students from their academic work, adversely affect their academic performance, social interactions, which also lead to a sedentary lifestyle and physical inactivity, which in turn can render them vulnerable to non-communicable diseases and mental health problems.

Availability of data and materials: The datasets used and analyzed during the current study are available from the corresponding author on reasonable request.

COMPETING INTERESTS DISCLAIMER:

Authors have declared that no competing interests exist. The products used for this research are commonly and predominantly use products in our area of research and country. There is absolutely no conflict of interest between the authors and producers of the products because we do not intend to use these products as an avenue for any litigation but for the advancement of knowledge. Also, the research was not funded by the producing company rather it was funded by personal efforts of the authors.

References

1. Booker CL, Kelly YJ, Sacker A. Gender differences in the associations between age trends of social media interaction and well-being among 10-15 year olds in the UK. BMC public health. 2018 Dec;18(1):1
2. Plaisime M, Robertson-James C, Mejia L, Núñez A, Wolf J, Reels S. Social media and teens: A needs assessment exploring the potential role of social media in promoting health. Social Media+ Society. 2020 Feb;6(1):2056305119886025.
3. Sproutsocial: Social media demographics to inform your brand's strategy in 2021. Available at <https://sproutsocial.com/insights/new-social-media-demographics/>. Last accessed on May 27, 2021.
4. Backlinko: **Social Network Usage & Growth Statistics: How Many People Use Social Media in 2021**. Available at <https://backlinko.com/social-media-users>. Last accessed on May 27, 2021.

5. Chou, W. S., Hunt, Y. M., Beckjord, E. B., Moser, R. P., & Hesse, B. W. (2009). Social media use in the United States: Implications for health communication. *Journal of Medical Internet Research*, 11(4), e48. doi:10.2196/jmir.1249.
6. Duggan, M., Ellison, N. B., Lampe, C., Lenhart, A., & Madden, M. (2015, January). Social media update 2014. Pew Research Center. Retrieved from <http://www.pewinternet.org/2015/01/09/social-media-update-2014/>.
7. Lenhart, A., Purcell, K., Smith, A., & Zickuhr, K. (2010). Social media & mobile Internet use among teens and young adults (Millennials). Washington, DC: Pew Internet & American Life Project.
8. Statista: **Number of social network users in selected countries in 2020 and 2025.** Available at <https://www.statista.com/statistics/278341/number-of-social-network-users-in-selected-countries/>. Last accessed on May 27, 2021.
9. Barker, V. Older adolescents' motivations for social network site use: The influence of gender, group identity, and collective self-esteem. *Cyberpsychol. Behav.* 2009, 12, 209–213.
10. Manago, A.M.; Taylor, T.; Greenfield, P.M. Me and my 400 friends: The anatomy of college students' Facebook networks, their communication patterns, and well-being. *Dev. Psychol.* 2012, 48, 369–380.
11. Baker, R.K.; White, K.M. Predicting adolescents' use of social networking sites from an extended theory of planned behavior perspective. *Comput. Hum. Behav.* 2010, 26, 1591–1597.
12. Leung, L. Generational differences in content generation in social media: The roles of the gratifications sought and of narcissism. *Comput. Hum. Behav.* 2013, 29, 997–1006.

13. Lenhart, A., Purcell, K., Smith, A., & Zickuhr, K. (2010). Social media & mobile Internet use among teens and young adults (Millennials). Washington, DC: Pew Internet & American Life Project
14. El-Badawy TA, Hashem Y. The impact of social media on the academic development of school students. *International Journal of Business Administration*. 2015 Jan 1;6(1):46.5.
15. Subrahmanyam K, Greenfield P. Online communication and adolescent relationships. *The future of children*. 2008 Apr 1:119-46.
16. Alwagait, E., Shahzad B., & Alim S. (2014). "Impact of social media usage on students' academic performance in Saudi Arabia", *Computers in Human Behavior*.
17. Shahzad B., Alwagait E., & Alim S. (2015) "Investigating the relationship between social media usage and students grades in Saudi Arabia: A mixed method approach", *Recent Advances in Electrical & Engineering and Educational Technologies*, 211—214.
18. Tariq W, Mehboob M, Khan MA, Ullah F. The impact of social media and social networks on education and students of Pakistan. *International Journal of Computer Science Issues (IJCSI)*. 2012 Jul 1;9(4):407.
19. Kaplan AM. Social media, the digital revolution, and the business of media. *International Journal on Media Management*. 2015 Oct 2;17(4):197-9.
20. Alwagait E. Arabic Observatory for Websites and Social Media (AOWSM). *International Journal of Knowledge Society Research (IJKSR)*. 2014 Apr 1;5(2):1-6.
21. Greenwood S, Perrin A, Duggan M. Social media update 2016. Pew Research Center. 2016 Nov 11;11(2):1-8.
22. Wang Q, Chen W, Liang Y. The effects of social media on college students. *MBA Student Scholarship*. 2011 Nov;5(13):1548-379.

23. Wilding D, Fray P, Molitorisz S, McKewon E. The impact of digital platforms on news and journalistic content. University of Technology, Sydney. 2018 Dec 7.
24. Kolhar M, Kazi RN, Alameen A. Effect of social media use on learning, social interactions, and sleep duration among university students. *Saudi Journal of Biological Sciences*. 2021 Apr 1;28(4):2216-22.
25. Abdullahi AY, Musa MM, Yusif ND. The Impact of Social Media on Academic Performance among Undergraduate Students of Bayero University, Kano. *International Journal of Education and Evaluation*. 2020;6(1):43-52.
26. Palla IA, Sheikh A. Impact of social media on the academic performance of college students in Kashmir. *Information Discovery and Delivery*. 2020 Dec 10.
27. *Wikipedia Contributors. Social Networking Service. The Free Encyclopedia; 22 October*. 2017. [Last accessed on 2018 May 01]. Available from: https://www.en.wikipedia.org/w/index.php?title=Social_networking_service&oldid=806485975 .
28. Adithya KH, Ali K, Mahadevamurthy M. Use of Social Media among Dental Students of Farooqia Dental College, Mysore: A Study. *International Conference on Open Access – Scholarly Communication Reincarnated: A Futuristic Approach*. Bangalore University. 2013. [Last accessed on 2018 Sep 30]. Available from: <http://www.eprints.uni-mysore.ac.in/id/eprint/14837> .
29. Chretien KC, Goldman EF, Beckman L, Kind T. It's your own risk: medical students' perspectives on online professionalism. *Acad Med*. 2010 Oct;85(10 Suppl):S68-71. doi: 10.1097/ACM.0b013e3181ed4778. PMID: 20881708.

30. Lahiry S, Choudhury S, Chatterjee S, Hazra A. Impact of social media on academic performance and interpersonal relation: A cross-sectional study among students at a tertiary medical center in East India. *J Educ Health Promot.* 2019 Apr 24;8:73. doi: 10.4103/jehp.jehp_365_18. PMID: 31143790; PMCID: PMC6512220.

UNDER PEER REVIEW