

# **Social Network Analysis and Its Impact on the Student Improved Academic Performance**

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## **Abstract**

Social network is a social interaction, which enables users to communication with each other by posting information etc. Social networks, as the most important communication tools, have had a profound impact on social aspects of community user interactions and they are used widely in various fields, such as education. Student interaction through different communication networks can affect individual learning and leads to improved academic performance. In this paper, a combined approach of social network analysis and educational data mining (decision tree method) was used to study the impact of communication networks, behaviour networks and the combination of these two networks on students' academic performance considering the role of factors such as computer self-efficacy, age, gender. In addition, communication with peers through social networks can help a student socialize, find new friends, discuss with them issues related to studies.

Keywords: social network, technology, communication, information, and student

## **1. INTRODUCTION**

Today the Internet has taken a firm place in people's lives. It is difficult to imagine a young man who at least once a day did not check for updates in social networks and did not leaf through the news lines. The modern reality requires us to stay in touch and keep abreast of the latest news and trends. However, does this trend affect the performance of students?

When social media such as Facebook, YouTube and Twitter appeared, our world was divided into online and offline. Social media are online technology platforms that help to connect people together far and near. It is used to build relationship among people. With their help, we can communicate with each other, even on different continents, listen to music, read books, look at photos and much more. Social media have greatly simplified our lives and tightly tied to ourselves.

During the time spent discovering individuals for acquaintances, youngsters go into different connections and get the chance to speak with a relatively boundless number of individuals and premium gatherings, with a wide range of identities, take in a considerable measure of stories, have the opportunity to trade suppositions and talk about issues important to them. Therefore, users of social networks, in most cases, are a representative of the younger generation.

## II. RELATED WORK

According to Siddiq, F., Scherer, R., and Tondeur, J. (2016), Information technology (IT) advances have changed the way people record history; this change has also had a considerable impact on human interaction. Social networks, as the most important tools, not only have a profound impact on the social aspects of users, but they also have many usages in various fields such as education. Because of the ability to publish information that the internet provides, developing students' skills of dealing with digital information is essential. Students' digital information and communication skills, including different aspects of knowledge, beliefs, attitudes, and ICT values, have become important during the last decade.

Network analysis can be used as a method for evaluating interaction and relationships between students and the impact of these relationships on learning. Since social media tools help information sharing, collaboration, and participation, they are necessary technologies for Higher Education.

According to Evans, C. (2014), Social network is a set of nodes and a social structure that includes a group of people and their relations, such as friendship, cooperation, and exchange of information. The social networking approach describes the patterns of individuals' interaction as a relationship diagram. Nodes or members of the network are often individuals or organizations. In fact, each unit that is connected to another can be studied as a node. The social network analysis provides both a strategy and a valuable method for examining the social structure and patterns of communication and interaction between people, organizations, and institutions. Communication networks and behavioural networks are effective on learning in both Traditional classes and Web-based environments. The behavioral network including friendship network and advisory network assesses the hybrid characteristics of people. This network determines the status of each person based on their relationships with others. Friendship networks often seek access to information and knowledge. Student at the center of

a friendship network is more likely to help others and get help from them. If students do well in the traditional classroom and in the Web-based community, they have a greater chance for friendship with other students. The advisory networks are more useful than Friendship networks. Advisory networks, include communications between individuals for sharing resources such as information, assignments and guidance that is needed to complete the task. Therefore, centrality in these networks is effective in exchange of resources in order to solve the problems.

According to Marin, A., and Wellman, B. (2011), the social network analysis provides four features of structural insight, that is, the systematic relationship between data, graphics, and mathematical or computational models. Its aim is to connect people with social capital, which thereby helps the development and promotion of science. The changing demographic characteristics of students have led researchers to study new ways to improve the learning process.

Rienties and Kinchin (2014) examined the interaction and motivation of learners in online environments that could affect their communication patterns. By combining qualitative evaluation and social network analysis, studied social interactions in the classroom and indicated that instructional design could force students to shape a new form of cooperation that despite being counterproductive can improve the collaborative learning environment.

Dawson, Tan and Mc William (2011) have also explored social networks as a social activity between students, and have indicated their effect on school performance. Moreover, they investigated the effect of social networks on student academic performance in online education, and indicated that Advice network centrality was positively related to student performance. Dawson et al studied the relationships between communication styles, social networks, and learning performance in a computer-supported collaborative learning (CSCL) community, and suggested that communication and social networks are the main factors in a distributed learning environment.

Shambare, R et al. (2012) Conduct a study on Social networking habits among students their study indicates that such Medias most commonly used by Younger's and Facebook is most widely using by a large number of communities and have multiple effects on student's life. The high speed and quickly approach to internet and the development of smart phone technology are most important drivers behind the adoption and connectivity with social networking websites and conclude that SNS enhance their knowledge level.

Ahmad,A. (2011) their study showed that social networking sites have number of advantages for their users, it enable the community to keep in touch with their peers and relink with old ones and help to find new friends according to your interest from all around the and a large number of persons are linking with these networks. Hence the network of social media is growing globally.

Heeter, (2006) a study at University of Michigan State give information about technology use in higher education, particularly in relation to faculty. This survey interprets teaching and learning habits for staff members online, students that are graduate and undergraduate are also included. About 65 % of faculty and students both read blogs but here faculty for personal information was more likely read them. Students post for both educational and personal proposes. Faculty used online photo sharing programs more than students such as Flickr, but about 50 % of both groups used it. Students used Facebook 70 percent while faculty used less than 10 percent of either Facebook or MySpace. Students send text message more likely.

### **III. MATERIALS AND DISCUSSION**

#### **A. WHAT IS SOCIAL NETWORK?**

Social network is started when people start to communicate. Social means human society, as interference of people and the groups and word media is the medium of expressions. Most of the forms of social network are not digital. It generates a large number of innovations and Social network is one of the biggest inventions of technology, which is now most popular and widely used.

**We define Social Media** as “technologies that made social communication easy and enable discussions among its participants”. While in our study, the word social media means a web-based mobile application that allows people or companies to make, interact with, and share new user-generated or current material, in digital environment. Students are consumers and producers of media.



**Figure 1: Social Network**

## **B. THE SOCIAL NETWORK AND WHY STUDENTS USE IT**

Social network is the collective of online communications channels dedicated to community-based input, interaction, content-sharing and collaboration. Websites and applications dedicated to forums, micro blogging, social networking, social bookmarking, social citation, and wikis are among the different types of social media. Some prominent examples of social media are facebook, twitter, google+, Wikipedia, linkedin, Reddit, and penterst.

The use of social network in education provides students with the following:

- i. The ability to get more useful information, to connect with learning groups and other educational systems that make education convenient.
- ii. Social network tools afford students and institutions with multiple opportunities to improve learning method.
- iii. It also give students the right access to quality information about the school environment, departments, faculties, rules, and regulations.

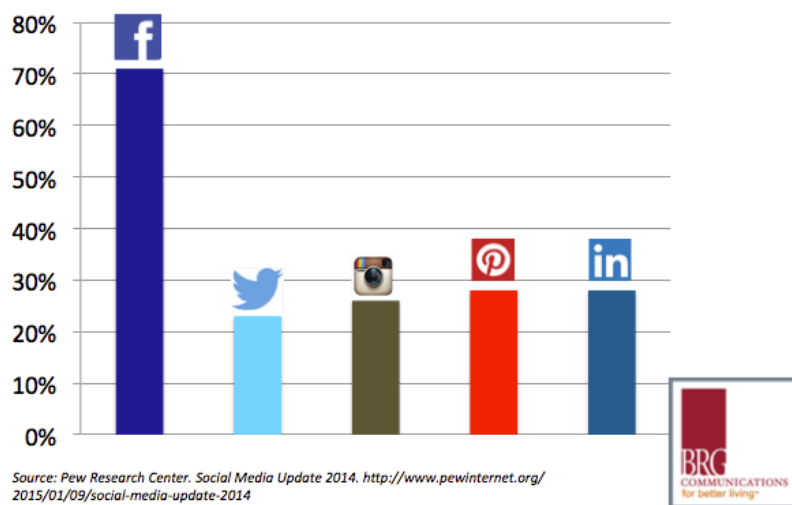
## **C. SOCIAL NETWORK ANALYSIS ON STUDENT**

It has been observed that social media has a wider and faster means of circulating information not only to the students of an institution but also to the generality of the public.

To address the issue on why students are using social network, the researchers floated questionnaires to the respondents (refer to appendix). Item number 1,2,4,5, and 6, gave answer to this matter. Fifty-six (93%) of the respondents has free access to the internet, only four (6.7%) don't have free access to the internet. Almost everyone can freely access the internet with their smartphone anytime.

When it comes to usage of social network, twenty-one (35%) of the respondents said that they are using it for communication; eighteen (29.5%) claimed that they are using it to watch movies and listen to music; fifteen (25.5%) are using it to find information for educational purposes; and only six (10%) for online games. It turned-out that respondents' main purpose is for communication. Aside from communication, study revealed that respondents are using internet and social network for learning. In the course of the study, it was found that forty-three (71.7%) do their assignments using the internet; twelve (20%) preferred the traditional way of going to library and read books for the assignment; and five (8.3%) answered that they neither use social media or library to do their assignments. As we can notice, most students do not need libraries and books to do their assignments, since internet is available.

Since English is not the native language of the respondents, but English is the medium of instruction at the polytechnic, the researchers asked the respondents if they are using their smartphones during class to grasp some English vocabulary. Twenty-nine (48.3%) answered "always"; twenty-three (38.3%) claimed sometimes; and eight (13.3%) are not using phone during classes. In most cases, students use their phone during the classes.



**Figure 2: Social Network usage**

#### **D. TIME STUDENTS SPEND IN SOCIAL NETWORK**

According to news agency Newpoll, 99% of teenagers aged 16 to 17 years use social networks and 78 percent of children aged 8-9 visit sites like Facebook, young people spend up to 7 hours a day in them. Truth be told, a huge number of individuals today don't speak to their lives without every day visits to interpersonal organizations, draw data from the news sources of Internet destinations, convey through remarks from different networks, and so forth.

For the number of hours spend by respondents on social network, item number 3 of the survey questionnaire addressed this. The frequency of internet users spends on average 4-6 hours per day

in social network is twenty-three (38.3%); seventeen (28.3%) spend 1-3 hours; sixteen (26.7%) spend more than 6 hours on internet for social media; and four (6.7%) are not sure how much time they spend on internet for social media. Overall, the largest part of the respondents uses social network 4-6 hours per day.

#### **IV. RESULT FINDINGS**

##### **A. THE IMPACT OF SOCIAL NETWORK ON STUDENTS ACADEMIC PERFORMANCE.**

According to the results of the survey, it was found out that twenty-three (38.3%) strongly agreed that social media has negative effect on their academic performance. It was revealed on interview with the respondents that sometimes they don't have time to make assignment or study because they had long been on social network; seventeen (28.3%) did not face such problem; twelve (20%) answered neutral; and eight (13.3%) revealed that they don't encounter any problem due to social media usage.

In terms of positive effect of social network, respondents revealed the following: ten (16.7%) strongly agree of the positive effect; thirty-six (60%) agreed; thirteen (21.7%) claimed that it neutral neither positive nor negative; and one (1.7%) disagree of the positive effect.

Summing up, it turned out that the internet occupies a specific place in the life of student respondents. Majority of the respondents cannot leave their phone even during the class session. Majority of them performs homework through the internet, watch the series every day, but it does not interfere with their educational process.



## **V. SUMMARY**

Based on the findings, social network becomes an integral part of the student's full life, took up most of his spare time. The time spend by the respondents on social media stressed that the impact on their academic performance ends up negative. So, the social network, which also has a familiar name as a social networks or web, chooses students as its potential victims. All kinds of computer technologies, mobile phones have significantly expanded the scope of both positive and negative factors of the spiritual and intellectual development of the younger generation.

## **VI. CONCLUSION**

Thus, it can be concluded that social network have a dual impact on student achievement, and it is necessary to approach adolescents' use of social networks with ultimate responsibility. In no case should we forget about the negative consequences that excessive social infatuation could have

## **VII. RECOMMENDATION**

Based on the finding and conclusions drawn, the following recommendation is:

Institutions should focus on making pleasant things useful - promoting social networks as a tool not only for communication and entertainment but also for learning.

## **VIII. REFERENCES**

- Ahmad, A. (2011). Rising of Social Network Websites in India Overview. *IJCSNS International Journal of Computer Science and Network Security*, 11, 155-158.
- Dawson, S., Tan, J. P. L., and McWilliam, E. (2011). "Measuring creative potential: Using social network analysis to monitor a learners' creative capacity", *Australasian Journal of Educational Technology*, Vol. 27, No. 6, pp. 924-942
- Evans, C. (2014). "Twitter for teaching: Can social media be used to enhance the process of learning?" *British Journal of Educational Technology*, Vol. 45, No. 5, pp. 902-915.
- Heeter, L. S., Rainie, L., and Purcell, K. (2011). Social networking sites and our lives. <http://pewinternet.org/Reports/2011/Technology-and-social-networks.aspx>, 3-61.
- Marin, A., and Wellman, B. (2011). "Social network analysis: An introduction", *The SAGE handbook of social network analysis*, pp.11-25.



Rienties, B., and Kinchin, I. (2014). “Understanding (in) formal learning in an academic development programme: A social network perspective”, *Teaching and Teacher Education*, Vol. 39, pp. 123-135.

Shambare, R., Rugimbana, R., and Sithole, N. (2012). Social networking habits among students. *African Journal of Business Management* Vol. 6(2), 578-786.

Siddiq, F., Scherer, R., and Tondeur, J. (2016). “Teachers' emphasis on developing students' digital information and communication skills (TEDDICS): A new construct in 21st century education”, *Computers & Education*, Vol. 92, pp.1-14.