Influence of Social Networks on the academic effectiveness of Mining students, Peru

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Abstract

The search for knowledge, mass media, learning methods, new ways of solving academic tasks, and attending classes in times of health emergency; are determining factors in academic efficiency. The present study determined the incidence of the use of social networks on academic effectiveness in students of mining exploitation study program of the Public Technological Higher Education Institute in the La Libertad region, Peru. The study corresponds to a non-experimental, causal correlational descriptive design. A population of 113 students and a sample of 59 were reported, chosen by non-probabilistic sample selection. The information collection instrument was the survey; this allowed to determine levels of social networks in students through the dimensions: generic social networks, professional social networks, and thematic social networks. The Rho Spearman coefficient was used and for the effect linear regression, registering: social networks and their dimension's generic social networks, professional social networks and thematic social networks, significantly influence ($p < 0.01$) in academic effectiveness ($r = 0.966$; $r2 = 93.3\%$; $r = 0.820$; $r2 = 67.2\%$; $r = 0.872$; $r2 = 76.1\%$; $r = 0.881$; $r2 = 77.6\%$). In conclusion, social networks and their complementary elements should be encouraged to increase the students' academic effectiveness under study.

Keywords: Mass media; Learning method; Teacher effectiveness; Student evaluation, Teaching method; COVID-19.

1. Introduction

The new Information and Communication Technologies (ICT) have led to email, computer applications, social networks, and other computer components as essential supports for social, cultural, and educational development at an international level. For this reason, students and teachers need to acquire a high info-technology competence (Del Barrio Fernández & Ruiz Fernández, 2016) that is currently increasing with COVID-19. This pandemic motivated a sudden transition from traditional to digital learning. This reality posed new and demanding challenges to students and teachers (Zheng et al., 2020) since pedagogical experiences in social isolation have been exposing the socio-educational inequalities of students in terms of the use of technologies and resources. Pedagogical studies (Expósito & Marsollier, 2020), a fact that has generated an unprecedented change in the education sector globally until it has become a disruptive change that significantly influences academic performance (Luís et al., 2020).

Although the pandemic in the United Kingdom, for example, caused the suspension of teaching and the postponement of exams (Kinder & Harvey, 2020); Little by little, a kind of asynchronous teaching was implemented through multiple virtual platforms that coexist today with social networks. By this, social networks are valued by the majority of teachers for the achievement of their objectives (Campbell et al., 2020); In a survey of 5,000 Chinese college students during the pandemic, social media was found to have had a significant effect on online knowledge acquisition (Xie et al., 2020); favoring the extraordinary impact of social opinions through Twitter, Facebook and YouTube both in the US and in China (Eachempati et al., 2020). Internationally, the need to resort to parallel learning networks and other unconventional ones to guarantee education in difficult times is a common factor (Rehm & Notten, 2016); For this reason, the consumption of WhatsApp by students as support in learning in this pandemic state increased (Agustin Mawarni et al., 2020). This massive use resulted in learners and teachers finding themselves in virtual classrooms where some had frustrations and concerns regarding their online learning and others had a good experience (Rasiah et al., 2020).

In Estonia, students carry out technological learning through social networks, with Facebook being the most used by educators in the teaching process in the COVID-19 context (Luik & Lepp, 2020). The use of Internet resources and teaching media allows teachers to improve distance learning on various platforms (Zoom, Hangouts, Teams, Skype, Moodle) and social networks (Viber, Skype, WhatsApp, and others) (Gadakchyan et al., 2020); Likewise, to promote research and technological innovation, the use of professional social networks, remote technologies, development and implementation of two elements of gamification, virtualization, for the control and interactivity of students in the educational process has been consubstantial (Anisimova et al., 2020). This evidence supports the relevance of social networks as formal learning tools because they present an educational utility for educational programs offered by universities worldwide (Snoussi et al., 2020).

In Saudi Arabia, it was found that 65.9% of students used Facebook. In Australia, only 87%

of first-year university medical students had Facebook, while in Mexico, 64% of university students aged 18 to 35 reported that the social network most used was Facebook (López González & López Flores, 2017). In confirmation, Italian students, who explored their sedentary and physical activities during the confinement concerning their previous study habits, found that the time spent using electronic devices showed the most significant increase in their educational effectiveness (Gallè et al., 2020).

However, the evident influence of social networks on the academic performance of university students constitutes a significant difficulty that society faces so that every day the potential danger of young people grows when exposing their private lives to the knowledge public (Flores et al., 2017). Still, social networks are becoming increasingly crucial for educational processes, and their inappropriate use causes poor academic performance due to the signs of addiction it generates (Espinoza, 2018). Likewise, an analysis of social networks among young Hispanics found that they spend much time connected to communicate with the people around them (Soria Ibáñez, 2013); this fact could generate addiction. Likewise, professionals from all branches use social networks as new ways to connect and communicate, facilitating almost instantaneous communication without geographical limits and serve as support in professional training (Espinoza-Portilla & Linares-Cabrera, 2020).

The complex reality experienced in Peru is not alien to that seen in the international context. As a result of COVID-19 new challenges have arisen in social networks, YouTube, Twitter, and Instagram, which contribute to the educational demands of the market (Pérez et al., 2020). Still, at the same time, this fact is following the global challenge of the 2030 Agenda and the Sustainable Development Goals, which present a framework of opportunities in which universities must respond to the demands of a cyber-society with quality problems in education (Domínguez-Fernández et al., 2020).

In Peru, higher education trains professionals in the various fields of science and technology to contribute to their personal, inclusive social development and adequate development in the national and global work environments. Employability skills that contribute to the

development of the country and the sustainability of the environment with productivity and competitiveness (MINEDU, 2016). This approach harmonizes with the rationale for moving further into the cognitive aspects of understanding, examining, and innovating the affectivity of dealing with emotions and sensations (Qadir & Al-Fuqaha, 2020).

In the students of the first semester of Mining Exploitation of the Institute of Higher Technological Education "Erasmo Arellano Guillén" (IEST for its acronym in Spanish), Pataz-Peru, 2021, the regular academic level was reflected due to the limited use of some technological tools and social networks; This fact is counterproductive because, processes such as technological innovation that introduces new features, allows students and teachers to become permanently involved in the various contexts of collaborative platforms and social networks to encourage a modern and quality education. Other limitations found in IEST students were connectivity problems, access to quality equipment, and training to manage social networks for academic purposes.

The present study is relevant to the problem because, from the discussion of its results, the relevance of decision-making for the execution of reinforcement programs aimed at the higher-level student population will derive from variables and their elements as a concrete social contribution. Likewise, the use of generic, professional, and thematic social networks with academic effectiveness is clearly and precisely synthesized, and their association and incidence of said social networks on educational productivity. Methodologically, an updated instrument for measuring the use of social networks is executed, which has been validated and reliable.

Based on the factual and theoretical arguments previously made, the research question was formulated: How do social networks influence higher-level academic effectiveness in times of pandemic, in IEST students; Pataz-Peru? This study aimed to demonstrate how social networks speed up the students' academic performance under investigation. As a hypothesis of the research, it was pointed out that social networks positively affect the academic effectiveness of mining students in times of health emergency.

2. Methodology

Research with a quantitative approach, with the explanatory scope of non-experimental, cross-sectional, descriptive, correlational causal design. The population consisted of 113 students between 17 and 32 years of age, enrolled in the I, III, and V Semester 2020-I of the Mining Exploitation study program of the "Erasmo Arellano Guillén" Public Technological Higher Education Institute, Pataz-Peru, 2021. The Sample was chosen through the intentional non-probabilistic sampling of 59 students (52.21% of the population) from the I Semester 2020-I of the Mining Exploitation study program.

The record of grades was taken to measure academic performance, which has legal validity to guarantee the student's improvement in the different subjects of the higher-level curriculum. The names and surnames of the student, enrollment code, teaching units of each cycle, and their respective qualifications.

2.1. Data collection techniques

The technique for collecting and storing data was the survey from the application of the instrument with a questionnaire, using the technical sheet to measure the levels of use of social networks that assesses: Dimension one: generic social networks of eight items, Dimension two: social networks 08-item professionals, Dimension three: thematic social networks of eight items. Being a total of 24 items, with three response options Never = 0, Uncommon = 1, Frequent = 2 and Very frequent = 3. Likewise, the instrument was applied to a pilot sample, with whose data the validity was performed with confirmatory factor analysis with KMO of adaptation to sampling = 0.682 and sig. <0.01 with 42.748% accumulated of the total variance explained by five components with average homogeneity values: Generic networks '0.6111', Professional networks '0.5219', Technical networks '0.50'. Continuing with the reliability calculation with Cronbach alpha with α Generic networks = 0.829 α Professional networks = 0.825 α Technical networks = 0.827.

Information from the same students was collected through a Google Form on the use of social networks. Likewise, the responses to the survey form were received in the Excel database. It was accepted and authorized by the

director of the IEST, Pataz-Peru. The students were informed about the reasons for the evaluation, the voluntary nature of their participation in the research, and the confidentiality of the answers. Before applying the survey, the students were guided by their email to answer by executing the corresponding (Agustin Mawarni et al., 2020).

2.2.   Data processing

The data were entered into the SPSS v. 25; the validity analysis was performed with confirmatory factor analysis and reliability with Cronbach's Alpha; the descriptive part with prescription of levels and calculation of

frequencies and percentages of the variables and sub-variables; The normality test was executed, identifying that the variables with their dimensions detect a non-parametric distribution (some sig. <0.05), for this reason, the Rho Spearman statistical test to measure correlations with significance was applied in the inferential part (p <0.05); linear regression was used to measure the impact of the use of social networks on academic effectiveness.

3.   Results

3.1.   Levels and dimensions of social networks

Table 1. Levels and dimensions of social networks in times of pandemic

Levels	Dimensions					
	Generic Social Networks		Professional Social Networks		Thematic Social Networks	
	fi	%	fi	%	fi	%
Deficient	0	0.00	0	00.0	6	10.2
Regular	50	84.7	48	81.4	53	89.8
Right	9	15.3	11	18.6	0	00.0
Total	**59**	**100**	**59**	**100**	**59**	**100**

As can be seen in Table 1, students are more supreme at the normal level in the dimension thematic networks (89.8%, 53), generic networks (84.7%, 50), professional networks (81.4%, 48).

3.2.   Levels of academic effectiveness

Table 2. Levels of academic effectiveness in times of pandemic

Levels	Academic effectiveness	
	f	%
Start (0-10)	4	6.8
Process (11-13)	41	69.5
Expected achievement (14-17)	14	23.7
Outstanding Achievement (18-20)	0	0.0
Total	**59**	**100**

The students, according to table 2, are located with greater hegemony in the process level of the academic efficacy variable (69.5%, 41) and

the expected achievement level (23.7%, 14), followed by the beginning level (6.8%, 4). There

are no students at the outstanding achievement level.

3.3. Relationship between social networks and academic effectiveness

Table 3. Relationship between social networks and academic efficacy in times of pandemic

Rho Spearman correlation	Academic effectiveness
Generic social networks	0.835**
	0.000
Professional Social Networks	0.849**
	0.000
Thematic Social Networks	0.879**
	0.000
Social media	0.969**
	0.000

Table 3 shows the existence of a highly significant relationship between social networks, generic networks, professional networks, thematic networks with academic effectiveness ($r = 0.969$ **; $r = 0.835$ **; $r =$ 0.849 *; $r = 0.879$ **; ⊻ p <0.01.

3.4. Predictors of social networks in academic effectiveness

Table 4. Predictors of social networks and sub-variables in academic effectiveness in times of pandemic

Model	R	R square	R squared fitted	Standard error of the estimate
Social media	,966[a]	,933	,932	,493
Generic social networks	,820[a]	,672	,666	1,092
Professional social networks	,872[a]	,761	,757	,933
Thematic social networks	,881[a]	,776	,773	,901

As evidenced in table 4, social networks, generic networks, professional networks, thematic networks significantly favor academic effectiveness whose values are ($r2 = 93.3\%$; $r2 = 67.2\%$; $r2 = 76.1\%$; $r2 = 77.6\%$; ⊻ p <0.01).

4. Discussion

The results regarding the use of social networks show that students are located with greater supremacy at the regular level in the dimension of thematic social networks (89.8%, 53), generic social networks (84.7%, 50), professional social networks (81.4 %, 48). Therefore, a vocational orientation of social networks should be used, which strengthens the development, growth, integration, and cooperation of teachers for the benefit of students (Fernandez & Shaw, 2020); Likewise, in Saudi Arabia, the website most used by both sexes was YouTube (42.3%, n = 185) as thematic social networks; however, men preferred to use Twitter and Wikis (p = 0.001) as generic social networks; likewise, women affirmed that social networks help to link basic science with clinical science (p = 0.003). Another study relevant to the subject agrees that the use of social networks by their teachers and students promotes the development of cognitive

skills activities relevant to students' academic training (Alsuraihi et al., 2016).

Related to academic efficacy, the highest hegemony is found at the process level (69.5%, 41) and the expected achievement level (23.7%, 14), followed by the beginning level (6.8%, 4). They were not having any students of the Mining Exploitation course at the outstanding achievement level in times of pandemic. This decrease in health emergencies substantially impacted higher-level students, and the virtual irruption in education caused significant psychological suffering. The objective of the study was to evaluate the factors associated with psychological distress, lack of follow-up to the task in the use of social networks among medical students during the period of forced home quarantine from March to May 2020 (Arima et al., 2020), the multiple linear regression analysis that was used to establish whether the Internet use models are connected to social networks was recommended. Three models of Internet use were distinguished: active online, passive online, and player, finding that these models are significantly connected. About this, young Poles spend more time on the Internet, contacting friends, following them on Facebook, YouTube, and passively scrolling through social networks (Dyczewski, 2020).

A highly significant relationship was found between the use of social networks, generic social networks, professional social networks and thematic social networks with academic performance ($r = 0.969$ **, $p <0.01$ high positive relationship; $r = 0.879$ **, $p <0.01$ high positive relationship; $r = 0.849$ **, $p <0.01$ high positive relationship; $r = 0.835$ **, $p <0.01$ high positive relationship). Social networks, generic social networks, professional social networks, thematic social networks, significantly favor academic performance ($r2 = 93.3\%$; $r2 = 67.2\%$; $r2 = 76.1\%$; $r2 = 77.6\%$; ¥ $p <0.01$). Supported by the previous observations, it coincides with (Guillén López, 2019), where he surveyed fifth-year students of a Faculty of Medicine in Lima, Peru. It was asked about the social networks in which they had an account, frequency of use, and time they spend on Facebook and YouTube; Of which 52 students responded, all had an account on Facebook, 46.2% on Instagram, 34.6% on Twitter as generic networks, 15.4% on SlideShare and 7.7% on LinkedIn as professional networks. Of those who had

Facebook, 50% used it an hour or more daily. 63.5% viewed YouTube videos as thematic networks one or more times a day.

Also, there is less use of other social networks (Twitter, Instagram, Google+). However, the use of LinkedIn was higher, as 21% of Canadian students had an account. As mentioned on the LinkedIn website, its mission is to connect professionals worldwide to help them increase their productivity and performance. By joining, they gain access to information that will help you stand out in your professional field that they already have a successful profession, and many people use it more to get a job; the topics posted in said the professional social network is more academic and scientific and have less distracting than other social networks. Therefore, it could be helpful to higher-level students (Guillén López, 2019).

5.   Conclusion

The results regarding the use of social networks show that students are located with greater supremacy at the expected regular level in the dimension of thematic social networks (89.8%, 53), generic social networks (84.7%, 50), professional social networks (81.4%, 48). Regarding academic effectiveness, they showed that students are located with greater hegemony at the process level (69.5%, 41) and the expected achievement level (23.7%, 14), followed by the beginning level (6.8%, 4). There is no student at the outstanding achievement level in times of epidemic. A highly significant relationship was found between social networks, generic social networks, professional social networks, thematic social networks with students' academic performance from the IEST, Pataz-Peru in virtual learning environments in times of health emergency. It was found that all the students of the institute of mines have at least one account on social networks, preferably Facebook; they use it at least once a day, similar to what is found in other countries. Social networks, generic social networks, professional social networks, thematic social networks, significantly favor academic effectiveness ($r2 = 93.3\%$; $r2 = 67.2\%$; $r2 = 76.1\%$; $r2 = 77.6\%$; ¥ with $p <0.01$).

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