Associated Factors for Autonomous Learning in University Students From Northern Peruvian Cities

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At present, in the university environment, teachers make strenuous efforts to promote the development of autonomous learning in students because the globalized and competitive world requires the person to enter the labor world committed and responsible in the self-management of information acquisition and specialized knowledge for the achievement of their professional improvement in the labor field. The study's objective is to determine the factors associated with autonomous learning in university students in northern Peru. Methodology: a quantitative, descriptive, non-experimental, cross-sectional study. The study sample consisted of 308 university students in the classrooms where two teaching methods are provided (traditional and traditional plus WhatsApp group), a non-probabilistic sample by convenience was used. The results obtained from the university students explain that the level of autonomous learning according to the average score report is regular within the dimensions of initiative and decision-making; likewise, at a global level, it corresponds to a regularly good score in both groups. Concerning the factors associated with autonomous learning, it was evidenced that the use of WhatsApp does not significantly influence independent learning; whereas the covariates sex, academic year and faculty individually are significant. It is concluded that autonomous learning is at a normal level, so it is urgent to use various support tools for the teaching-learning process in the university context to generate critical thinking skills, and decision-making for a competitive global world.

Keywords: associated factors, autonomous learning, university students

INTRODUCTION

In the last decade, instant messaging social networks shaped into the most used by people. In 2018, WhatsApp was the most downloaded social network. In Latin America, the country with the highest level of interaction in said social network was Costa Rica (83%); Chile with 80% and Uruguay with 78%(Sforzin, 2016). Additionally, social networks in the university system are integrated with the use of interpersonal communication tools and direct interaction between students and professors (Gómez Hurtado et al., 2018). This interaction has reduced, in a certain way, the development of classroom lectures with a traditional methodology that emphasizes the storage of contents and the application of memorized evaluations, evidencing learning without taking it into the context of social and educational development (Alcibar et al., 2018).

Previous studies conducted in Saudi Arabia (Eid & Al-Jabri, 2016) and in Italy (Manca & Ranieri, 2016), found that the exchange of documents and socialization through social networks generated better academic achievement in university students. According to previous studies, the characteristics of the social network may be convenient in the university system in order to strengthen various aspects of student participation in the management of teaching and learning, autonomy, and interaction. Motivation, creativity, and creation of support networks and exchange of communication and information in a sustainable way (Flores-Cuevas et al., 2019).

Social networks provide multiple opportunities to be exploited in learning and knowledge processes. Their use allows a fast and interactive interaction, where ideas and concepts are expressed to carry out learning activities or manage the results of their learning, opening spaces for autonomous learning and thinking (Roque Herrera et al., 2018). Likewise, social networks have become a regular means of communication, which can be used in learning development, thus meeting the needs and interests of university students (García-Ruiz et al., 2018). In this context, the role of the teacher as a mediator is essential to promote the construction of knowledge in students, as protagonists of their learning, where he/she guides activities that develop their autonomy, initiative in online communication and systematization of information (Santoveña-Casal & Bernal-Bravo, 2019);(Suyo Vega et al., 2019). Therefore, it is possible to adapt learning activities where students experience the use of social networks, such as WhatsApp, in their university subjects, and its usefulness in practice enables and encourages initiative and decision-making inside and outside the classroom, strengthening their learning (Gómez Hurtado et al., 2018).

In this sense, we determined the objectives of describing the characteristics of the study variables and determining the factors associated with autonomous learning within a traditional environment. Evaluating

this indicator will allow pedagogical teaching strategies to strengthen independent understanding in university students.

METHODOLOGY

Quantitative, descriptive, comparative, non-experimental, cross-sectional design study (Hernandez Sampieri et al., 2014); (Hernández-Sampieri & Mendoza Torres, 2018). The sample consisted of 308 university students in the classrooms where two teaching methods are provided (traditional and traditional plus WhatsApp group) using non-probabilistic convenience sampling. In addition, the outcome variable was autonomous work, defined as "the commitment and active participation of the student to know and improve their competencies and skills" (Gamboa Pinilla et al., 2018).

The exposure variable was the use of WhatsApp and was operationally defined if the teaching medium had or did not have academic reinforcement through the WhatsApp social network. There were two groups of students: (i) university students who only had traditional teaching (face-to-face) and (ii) university students who had traditional teaching with academic reinforcement through WhatsApp groups. Likewise, the instrument created by the researchers was applied and consisted of 4 items and a Likert scale (1 = Never; 5 = Always), presenting 02 subscales: Initiative and Decision-making, composed of 2 objects each. The instrument showed good content validity through evaluating five experts and good reliability using Cronbach's Alpha of the total device and dimensions for each group, reporting indicators between 0.80 - 0.95 (Annex 01). The measurement scale was numerical, through the score obtained by the student. The following covariables were also collected: age (years completed); sex (male and female); year of study (first, second, third, fourth, and fifth); and faculty (administrative and legal, education and health).

For data collection, the authorization of the study subjects was requested for the execution of the study. Then, we proceeded to ask the teachers for the cell phone numbers of the university students to whom the study was presented so that they would provide the facilities to share the survey, elaborated in Google forms, through their WhatsApp group. The teachers who agreed to give the facilities were classified into those who had WhatsApp groups (cases) and those who did not have WhatsApp groups (controls) during the months of (September to December).

Once classified, the group of cases proceeded to provide the survey link with the freedom to choose whether or not to participate in the study. Before the acceptance of the verbal informed consent, explained in the survey header. The participants' questions were presented, and at the end of the survey, the student sent their answers. Those data were automatically stored in the Google Forms cloud, in the account of the study's principal investigator, no one else had access to the information, and it was used solely for this study.

RESULTS

TABLE 1
CHARACTERISTICS OF THE STUDY SAMPLE (N=308)

Variables		n(%)
Age (Me + Sd)		21.2 ± 3.3
Sex		
	Male	74 (24.0)
	Female	234 (76.0)
Year of study		
	1	175 (56.8)
	2	59 (19.2)
	3	43 (14.0)
	4	23 (7.5)
	5	8 (2.6)

Faculty		
	Administrative and legal	123 (39.9)
	Education	132 (42.9)
	Health	53 (17.2)
Whatssap usage		
	No	158 (51.3)
	Yes	150 (48.7)
Initiative (Me + Sd)		7.6 ± 2.0
Decision making (Me + Sd)		7.6 ± 2.1
Autonomous learning (Me + Sd)		15.2 ± 4.0

It is observed in the sample of 308 university students in the majority are women, a higher number of student population prevails in 1 year, and participated in the study a greater number of students of the education career, in the case of the use of Whatsapp was 48.7%

TABLE 2
FACTORS ASSOCIATED WITH AUTONOMOUS LEARNING (N=308)

	Raw Model		**Full Model (adjusted)**	
Variables	**β(IC95%)**	**p-valor**	**β(IC95%)**	**p-valor**
Age (Me± Sd)	0.02 (-0.11 - 0.15)	0.72	-	-
Sex				
Male	**Reference**		**Reference**	
Female	1.27 (0.14 - 2.41)	0.028	1.01 (-0.23 - 2.26)	0.11
Age of study				
1	**Reference**		**Reference**	
2	1.40 (0.35 - 2.46)	0.009	1.21 (0.14 - 2.28)	0.026
3	1.59 (0.44 - 2.75)	0.007	1.18 (-0.18 - 2.53)	0.090
4	-0.36 (-2.22 - 1.50)	0.705	-0.29 (-2.20 - 1.61)	0.761
5	1.59 (-1.33 - 4.50)	0.285	1.66 (-1.11 - 4.43)	0.240
Faculty				
Administrative and legal	**Reference**		**Reference**	
Education	0.59 (-0.39 - 1.57)	0.235	0.16 (-0.89 - 1.21)	0.762
Health	1.45 (0.10 - 2.79)	0.035	0.76 (-0.75 - 2.27)	0.322
WhatsApp Usage				
No	**Reference**		**Reference**	
Yes	0.49 (-0.41 - 1.39)	0.284	-	-

The findings found in the descriptive analysis evaluate the sociodemographic characteristics and dimensions of autonomous learning for cases and control. Frequency and percentage measures were used to summarize categorical variables and steps of central tendency and dispersion for quantitative variables. For numerical variables, the normality assumption was evaluated using the Shapiro-Wilk test. Likewise, linear regression with robust variance was used to evaluate the factors associated with the autonomous learning score through the crude and adjusted model, reporting coefficients (β) and confidence intervals (CI95%). The association between each covariate and the dependent variable was evaluated in the crude model, being significant with $p<0.20$. For the adjusted model, all the covariates that were significant in the

simple model were evaluated, with the dependent variable being significant with $p<0.05$. The statistical program STATA v16.0 (Stata Corporation, College Station, Texas, USA) performed the analysis.

DISCUSSION

The results obtained from the university students found that the level of autonomous learning reported a regular average score within the dimensions of initiative and decision-making; likewise, at an overall level, a regularly good score. Concerning the factors associated with autonomous learning, it was found that the use of WhatsApp does not significantly influence independent learning, while the covariates sex, academic year, and faculty individually are significant(García-Ruiz et al., 2018); (Suyo Vega et al., 2019)

On the other hand, the results on characterizing the levels for the dimensions and global dimensions of autonomous learning reported average scores of common and regular good, respectively, for university students. Most students show the ability to relate their things and ideas, understand phenomena and information, and propose alternative solutions autonomously, but they achieve this progressively during the development of the activities guided by the teacher (Gamboa Pinilla et al., 2018); (Arauco-Mandujano et al., 2021); (Maldonado-Sánchez et al., 2019).

Regarding the factors associated with autonomous learning, it was reported that the use of WhatsApp is not individually significant; however, contrary studies presented to ours said that the positive attitude of students towards the educational use of WhatsApp stands out and encourages its incorporation as a support tool in the teaching-learning process (Suárez Lantarón, 2018).

While sex, year of study, and faculty of study, are significant to autonomous learning in women, for having a better capacity for autonomy in learning. This reality is not different, as shown in the results of the research that the development of women is conditioned both by the characteristics of the context and social interaction, which regulate their insertion in today's society, which rescues the new practices in the performance of women, their psychological empowerment, their autonomy and adaptation to change, generating an urgent need to provide them with job opportunities (Reyes-Bravo, 2012). In an ideal context, women should be given decision-making opportunities in the labor market since they have a better capacity for autonomy in learning (Solórzano-Mendoza, 2017).

It should be noted that, in the adjusted model, in the group of cases, the fifth year of studies participants reported 3.70 (1.98; 5.41) better autonomous learning than the participants of the first year of studies. This statement is confirmed by a previous study that affirms that first year students can develop improve their performance during their professional training, and one of the determining factors in the active mediation of the teacher, in spaces of interaction and participation, where they can generate their autonomy in learning activities (Guzmán Torres et al., 2018).

In this sense, examining how independent learning develops in traditional basic education would be worthwhile. While in the control group, the participants of the health faculty reported 1.87 (0.11; 3.63) better autonomous learning than the administrative and legal faculty students. Although we do not have a previous argument determining this difference in the development of autonomous learning, this could be applied only in the university population studied since more studies would have to be conducted in people from other universities and among these faculties to determine this difference.

CONCLUSIONS

The findings show that university students in the level of autonomous learning reached a regular average, as well as in the dimensions of initiative and decision making, indicating that the use of WhatsApp does not significantly influence autonomous learning, but in the covariates sex, academic year and faculty individually, it is considered significant. It is also observed that, in the factors associated with autonomous learning, the use of WhatsApp is not meaningful individually; however, the students' positive attitude towards the use of WhatsApp as a means of communication in their learning activities should be highlighted.

Likewise, in characterizing the levels for the dimensions and global of autonomous learning, a regular and regular good average score is observed for university students, respectively. It should be noted that gender, year of study, and faculty of study are significant for autonomous learning in women since they have a better capacity for independent learning conditioned by ontext and social interaction characteristics. In the adjusted model, in the group of cases, the participants of the fifth year of studies reported 3.70 (1.98; 5.41) better autonomous learning than the participants of the first year of studies because they were developing their performance in their independent learning progressively in each year, according to the interaction with their classmates and the teacher.

Finally, it is recommended to incorporate the educational use of WhatsApp as a support tool in the teaching-learning process and to open learning spaces that generate better performance in the learning process in the university educational diversity.

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