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RESEARCH ARTICLE

Facebook and Virtual Communication. An Experimental Study in Higher Education Teachers

Facebook y comunicación virtual. Un estudio experimental en docentes de educación superior

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Summary

The objective of this study was to determine the effect of a Facebook training program in the virtual communication of university teachers. The importance of the theme developed is based on the fact that at present, for the process of interaction and communication between labor, academic, economic or social communities, Information and Communication Technologies (ICT) are being used, where all types of information flow through the available technological tools and social networks, and which is selected by the users, according to the stakeholder to which they belong; one of them is Facebook. The approach was quantitative, with quasi-experimental design, for which a sample of 140 university teachers was divided into two groups: control group with 60 teachers and the experimental group with 80 teachers. The results indicate that there is influence of the Facebook training program in the virtual communication of university teachers, as demonstrated by the statistical test (Mann-Whitney U = 155.500; Z = -1,084, Asymptotic (bilateral) significance .000<.05). This finding can help generate favorable opinions for its possible use of the Facebook platform for educational social interaction purposes.

Keywords: Facebook; Virtual Communication; Higher Education; Social Interaction.

Resumen

El presente estudio tuvo como objetivo determinar el efecto de un programa de capacitación Facebook en la comunicación virtual de docentes universitarios. La importancia de la temática desarrollada se fundamenta ya que en los momentos actuales, para el proceso de interacción y comunicación entre las comunidades laborales, académicas, económicas o sociales, se está haciendo uso de las Tecnologías de la Información y la Comunicación (TIC), en donde fluye todo tipo de información a través de las herramientas tecnológicas disponibles y redes sociales, y que es seleccionada por los usuarios, según el grupo de interés al que pertenecen; uno de ellos es Facebook. El enfoque fue cuantitativo, con diseño cuasi- experimental, para los cual se trabajó con una muestra de 140 docentes universitarios distribuida en dos grupos: control con 60 docentes y el segundo grupo experimental constituido por 80 docentes. Los resultados indican que existe influencia del programa de capacitación Facebook en la comunicación virtual de los docentes universitarios, como se demuestra con la prueba estadística (U de Mann-Whitney = 155.500; Z = -1.084; Sig. Asintótica (bilateral) .000<.05). Este hallazgo, puede ayudar a generar opiniones favorables para su posible utilización de la plataforma Facebook con fines de interacción social educativa.

Palabras clave: Facebook; Comunicación virtual; Educación superior; Interacción social.

Introduction

The dramatic and important technological advances have affected the current society in a significant manner. In this regard, it is necessary that society can administrate, understand and suitably evaluate the technology to which one has access. Following this line of thought, education in particular virtual environments, play a very important role since it meets learning needs of students, and it improves the academic performance. On the other hand, university institutions must provide their students and teachers with technology to produce new knowledge and to be in line with the advances of the virtual education tools. From this perspective, Facebook platform plays an important role so that university teachers encourage their students to develop

critical thinking, enable problem solving and collaboration. Simultaneously, there are many variables that somehow can affect the education process of learning communities, and among the most common variables are motivation and satisfaction. As for motivation, Gutierrez (2016) said, "motivation is what people want to do, decide to do and undertake to do" (p. 1). That is, prior to any action of the person, there will always be some intrinsic or extrinsic motivation that impels him to decide to do something. In this regard, motivation is important for the use of any virtual tool, and it becomes very important for an effective learning. In this regard, Maslow (1991), said that "a consistent theory of motivation should assume, on the contrary, that motivation is constant, endless, fluctuating and complex, and that it is an almost a universal characteristic of virtually all the organismic states in question" (p. 8). This implies that the complexity of motivation in people depends on their moods and even on the personal interests and goals. Regarding satisfaction, Maslow (1991) said that there are basic needs and superior needs. Basic needs are the foundation of an intrinsic system of the human being and considers among them, the need of safety, belonging, love and self-esteem. He also mentions that superior need are characterized by the fact that they bring more happiness and lead to a greater personal growth, but for this to happen, a more suitable environment is required. Online and blended learning has become a possibility for teaching in learning communities in these last years. In this regard, Kucuk and Sahin (2013), say that the concept of learning communities have been strengthened to increase its effectiveness in these learning environments.

According to the Social Media Observatory, 2011, boom of social networks, during 2009 and 2010, they were catalogued as an important and effective way of communication among users. Among social networks we can find especially Facebook, which, according to Espuny, González, Lleixá & Gisbert, 2011, in a study made with university students, indicate that it is a friendly and favorable network among the members of an educational institution to keep in permanent communication, as well as, it expands and diversifies communication channels. It is worth mentioning that according to Kolikant, 2010, the communication supported by technologies and/or mobile devices is considered to be Web 3.0, which avoids in a way any type of inconvenient. In this way, the barriers of space and time are reduced since these new ways of communication have allowed changes in our routine roles at professional and personal level. "In the last years, the network has been characterized by the large number of tools that have been developed and allow the participation and communication among users" (Gutiérrez, Román & Sánchez, 2018, p.92).

On the other hand, teachers and students of a university make up a digital network in practice and it includes mobile phones, internet, and media. Facebook, after training, as a learning tool of teachers can help virtual digital communication to be effective. In this regard, Davidovitch and Belichenko (2018) conducted a study with students and proved that Facebook groups are used to facilitate communication, promote a positive social environment, create a dialogue and share learning material among group members. In addition, Hilscher (2013) said that academic implications of Facebook are evident in a virtual learning community, and university students, and their teachers use it as a social tool in their educational environment. Also Mustafa and Emrah (2014) indicated that students from twenty European countries were tested and they were positive and open for virtual communication and the possibility of intercultural communication through virtual channels such as Facebook, MSN or Twitter. Another equally relevant study was the one conducted by Shih (2013), who said that the students could improve their professional knowledge by using other complementary means to classes such as Facebook, as well as in the evaluation of their peers in this virtual environment. In addition, the use of this tool can improve the level of

motivation and learning of students. Following this line of thought, the use of Facebook can become a teaching-learning strategy by the university student that may generate better learning and in less time.

Al-Rawi (2018) conducted a study about online communities by using the Facebook platform. The users who participated in this experience were Canadians and possible immigrants. The results of this study indicate very positive feelings towards Canada and its citizens, and it also indicates that the Facebook administrator operates as a centralized access gatekeeper that filters online communication and directs the discussion towards certain direction. Likewise, Martin, Greiling and Wetzelhütter (2018) indicated that a growing number of German and Austrian companies generate their own Facebook accounts to establish communications with their stakeholders. Findings found in 258 users indicated that users want Facebook to become an important means for them to get most of the information. They also said that these results allow academics and professionals to know more deeply what happen in Facebook from the perspective of real users. Another quasi-experimental study to inquire into the effectiveness of a Facebook-assisted teaching method, into the prevention of cervical cancer and aimed at high school adolescents, was conducted by Lai, *et al* (2015), who concluded that traditional education given in the school can be effective, but the discussion method using Facebook is more effective than discussion in person.

Social Identity and Social Networks

Identity is based on understanding who we are and how we relate to others. In this process, it is necessary to identify with whom we communicate and differentiate ourselves from them, which avoids confusion with others. Íñiguez (2011) calls it experiential dimension of identity. He also says that "singularity, uniqueness, exclusivity seem to be essential characteristics, at least in our culture, of what we call identity" (p. 3). However, certain continuity in time must be added to these characteristics, but the identitarian temporality is presented again with the same or different dilemma, since the human being knows that he is the same person that he was in the past, but at the same time, he recognizes changed and different. He also says that there is another relevant aspect of identity that does not refer to singularity of the person, but the plurality of the group or community, and for complementarity, we talk about social identity, which is called "networks" in the practice of social language.

As for social networks, Facebook is one of their best tools, since it grows in terms of use and operability. In this aspect, three key elements are included for the interaction: a profile built in a content system, the ability to indicate or suggest other users with whom connection can be established and the capacity to see who are already connected with the person who wants to establish connection (Boyd &Ellison, 2007; Ahlqvist et al., 2000, cited by Lau, 2013, p. 18). In addition, with respect to these three abilities, it is necessary to mention three essential components for the success of social networks: content, community and web 2.0. Following this line of thought, the ability to create communities is fundamental to share contents with other people, using the Facebook tool. Likewise, online social networks are being used by millions of people with the purpose of facilitating communication and connections with other users (Clark y Roberts, 2010, cited by Dickstein-Fischer, 2013, p. 9).

Propósitos y Representaciones
May.- Aug. 2019, Vol. 7, N° 2: pp. 45 - 74
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Problems Originating in Social Networks

Problems derived from social networks have been evident in recent years in the press, where harassment of any kind, slander, intimidation are recurrent and which often generate insecurity in users. Couros (2008) says that, once fear of insecurity is eliminated, social networks sites can open new and broaden learning worlds for educators as well as for students. Innovative teachers must recognize the Facebook potential to bridge the cultural gaps and at the same time, generate authentic learning environments. Tawney (2014) points out that in the relationships between people in Facebook there are problems involving the human being, relationship, communication and romanticization.

Student Participation with Facebook Tool

The student participation has evolved along with the notion of how university students learn. Dissertations are no longer conceivable in the classrooms with passive students, personal development has been integrated with learning (Barber, 2012, cited by Sikes, 2015, p. 16). That is, students are expected to fully participate in their university experiences in order to have academic success, but at the same time, in the immediate future, to have successful, affective and committed lives (ACPA, 1996, Keeling, 2004; 2006, cited by Sikes, 2015, p. 16).

Studies conducted about the use of Facebook by university-age people have revealed consistent and similar patterns of use. University students review their Facebook accounts daily (Nadkarni & Hofman, 2011; Quan-Haase & Young, 2011; Vitak et al., 2011, cited by Vigil & Wu, 2015, p. 2) and spend between 30 and 60 minutes per day in the website (Ellison, Seinfield, & Lempke, 2007; Ellison et al., 2011; Pempek et al., 2009; Quan-Haase & Young, 2010, cited by Vigil & Wu, 2015, p. 2). One of the most popular social network sites and that has an impact on education is Facebook since it is an effective tool to give information and knowledge, it also puts more emphasis on online collaboration and information exchange due to its social networks and its characteristics are focused on the user (Kalbande, et.al, 2012, cited by Parvez & Akhtar, 2013, p. 2). There are many reasons for users to participate in Facebook, one of them is to maintain communication between them and their families; if users are students, Facebook encourages communication between them and their teachers (Huang et al., 2010, cited by Aydin, 2012, p. 110).

On the other hand, as for evaluation of students participating in the use of the Facebook platform, the needs for self-efficacy in unique learning strategies focused on the student can be addressed. Teachers and members of the classroom can use the superlative button or virtual gifts to recognize the achievement of the students in public, private or anonymous exhibitions (Bowers-Campbell, 2008). In university students, it is more interesting and simple to implement teaching strategies taking advantage of their commitment. Charlton, Devlin & Drummond (2009) say that Facebook replaces with efficacy other technologies of social networks. Based on these findings, we have developed the so-called tool CommonGround, designed to run on the Facebook platform, that takes advantage of the students' commitment to the service, and unites the characteristics of communication and "social awareness" inherent to such platform. Charnigo & Barnett-Ellis (2007) pointed out that the Facebook platform provides a sophisticated level of connectivity which is beneficial for users, and also conducts a daily monitoring of popular interests (for example, favorite books) and demographic data of the members (number of members, political

guidance) and makes comparisons with general averages of Facebook members. DePe (2011), when he refers to available spaces in social networks, and in particular in Facebook, indicates that university students belonging to peripheral cultures can participate, especially those who are physically isolated from others and who share that culture. Internet with its Facebook tool can be a main means for these people to connect with those who they identify. In addition, it is a forum for them to position themselves in the world making arguments about how they want to be perceived by others.

Synchronous Communication

Online learning is a possibility that university students currently have for learning. However, there are some observations, in the sense that this type of communication does not help much for reflection and critical thinking. However, it is a very good possibility for the university students to have access to specific areas of their academic education programs. In this regard, synchronous communication is understood as the interaction between two or more people in a simultaneous way and that can be physical or virtual. As for virtual communication with this characteristic, some tools available nowadays are used: videos, audio, among others. In this regard, Breffni O'Rourke, & Stickler, (2017) define synchronous communication as dialogic communication that is established with simultaneous presence (co-presence) in a shared communicative space. In addition, Huang (2018) states that computer-assisted collaborative learning facilitates, for example, the expansion of a second language acquisition because communication is in real time through text, audio and video communication. Moreover, Ko (2015) says that from a theoretical perspective, computer-supported collaboration based on group software provides individuals with the possibility of a higher level of information exchange, coordination and navigation, improving the equal participation. Furthermore, Rochester (2017) proposes that the asynchronous aspect assumes the collaboration, allows the development of critical thinking and consequently, the access to high levels of learning and knowledge, stimulating long-term memory.

Asynchronous Communication

Asynchronous communication implies that students interact in different times and ways (forums, mails, etc.). Giesbers, Rienties, Tempelaar & Gijselaers (2013) say that the synchronous and asynchronous aspects favors the commitment and learning of the student.

In addition, Maushak & Ou (2007) say that communication in asynchronous communities has the advantages over communication in synchronous communities mainly in distance education. That is, in asynchronous communication students are given, in addition to knowledge, the possibility of spending more time for critical reflection. Wu (2018) said that the asynchronous communication helps to align the positions of each student. Online learning is a need that universities have to ensure that sometimes students do not to leave their face-to-face studies. For that reason, Kebble (2017) pointed out that the online learning environment promotes a sense of connection and assimilation that can improve the learning experience and commitment of a person.

Method

Research work was designed with the purpose of determining the effect of a Facebook training program in virtual communication of teachers of a private university of Lima (Peru), using the

Propósitos y Representaciones
May.- Aug. 2019, Vol. 7, N° 2: pp. 45 - 74
http://dx.doi.org/10.20511/pyr2019.v7n2.268

Facebook platform. To prepare the program, the following phases were followed: planning where the call was organized, presentation of the training workshop and its benefits. Moreover, materials were given for the training workshop development and a place for it was arranged. As for execution: virtual training workshop was conducted in 4 days, 4 sessions in the facilities of the private university. Finally, in the evaluation phase, the observation technique was used through a checklist.

Facebook training gave information about the different web 2.0 services that exist in the environment and that favor the teacher-student interaction, delving into the main characteristics of the one focused on virtual communication. In addition, its specific goal is to train teachers participating in the management of web 2.0 tools for their application in the development or management of their subjects, focusing on the use of Facebook, and on the other hand, so that they know the different types of services that web 2.0 offers in the teaching-learning field and managing the main options of Facebook privacy and communication.

Facebook training was practical so the activities were developed with applicative character. Didactic methods were used such as group dynamics, individual works, active participation in sessions and outside of them. Means and materials used were presentations, overhead projector, web resources, readings, among others.

The design was quasi-experimental with a control group of 60 teachers and other experimental group of 80 teachers, which was trained. The virtual communication variable was measured through two dimensions: synchronous communication with indicator: real-time communication Messages/chat and asynchronous communication dimension with three indicators: communication in different times, tasks with deadlines, messages. The observation technique was used through an 18-item checklist.

Results

The levels of participation of teachers were very significant and it was conducted in schedules according to their availability. As for the virtual communication variable, a pretest was applied to the two groups (control and experimental) before starting the Facebook training program and the posttest was applied at the end of such program. In addition, the evaluation was conducted taking into account the synchronous and asynchronous communication dimensions, which are detailed below:

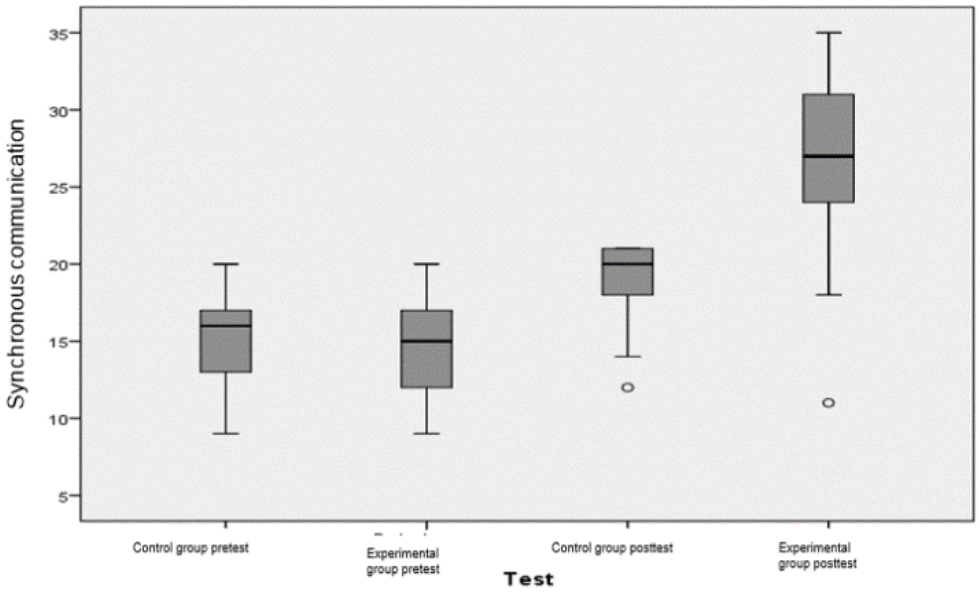

Figure 1. Boxplot between control and experimental groups for synchronous communication.

As seen in Figure 1, when pretest is applied to both groups, it is evident that the median of the control group is equal to 16; in contrast, the median of the experimental group is 15. Likewise, regarding the posttest, the control group presents a median equal to 20, while the experimental group has a median equal to 27.

Table 1.

Test statistic for the pretest of the synchronous communication dimension.

Test statistic[a]	Synchronous communication
Mann-Whitney U Test	2144.000
Wilcoxon signed-rank test	5384.000
Z	-1.084
Bilateral asymptotic significance	.278

a. Grouping variable: Test

Table 1 shows the statistic of Mann-Whitney U Test indicates that there are no significant differences in the pretest results between the control and experimental groups in relation to the synchronous communication dimension (Mann-Whitney U Test = 2144.000; Z = -1.084; (bilateral) asymptotic significance= 0.278 > .05). This result confirms the graphic of Figure 1.

Propósitos y Representaciones
May.- Aug. 2019, Vol. 7, N° 2: pp. 45 - 74
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Table 2.
Test statistic for the posttest of the synchronous communication dimension.

Test statistic[a]	Synchronous communication
Mann-Whitney U Test	263.500
Wilcoxon signed-rank test	2093.500
Z	-9.033
Bilateral asymptotic significance	.000

a. Grouping variable: Test

Table 2 shows that the Mann-Whitney U Test Statistic indicates that there are significant differences in the posttest results between control and experimental groups in relation to the synchronous communication dimension (Mann-Whitney U Test = 263.500; Z = -9.033; (Bilateral) asymptotic significance = 0.000 < .05). This result confirms the graphic of Figure 1.

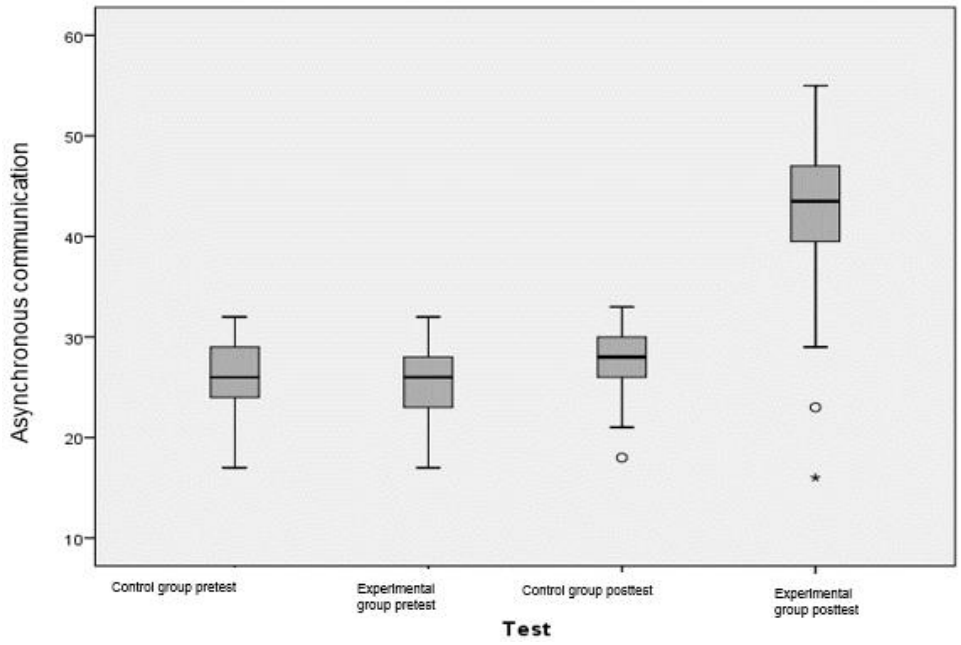

Figure 2. Boxplot between control and experimental groups for asynchronous communication.

As seen in Figure 2, when pretest is applied, it is evident that the median for both groups (control and experimental) is equal to 25. In contrast, in the posttest, the control group presents a median equal to 28, while the experimental groups presents a median equal to 44.

Table 3.

Test statistic for the pretest of the asynchronous communication dimension.

Test statistics[a]	Asynchronous communication
Mann-Whitney U Test	2166.000
Wilcoxon signed-rank test	5406.000
Z	-.990
Bilateral Asymptotic significance	.322

a. Grouping variable: Test

Table 3 shows that the Mann-Whitney U Test Statistic shows that there are no significant differences in the pretest results between the control and experimental groups in relation to the asynchronous communication dimension (Mann-Whitney U Test = 2166.000; Z = -.990; (Bilateral) asymptotic significance = 0.322 > .05). This result confirms the graphic of Figure 2.

Table 4.

Test statistic for the posttest of the asynchronous communication dimension.

Test statistics[a]	Asynchronous communication
Mann-Whitney U Test	161.000
Wilcoxon signed-rank test	1991.000
Z	-9.438
Bilateral asymptotic significance	.000

a. Grouping variable: Test

Table 4 shows that the Mann-Whitney U Test Statistic shows that there are significant differences in the posttest results between the control and experimental groups in relation to the asynchronous communication dimension (Mann-Whitney U Test = 161,000; Z = -9.438; (Bilateral) asymptotic significance = .000 < .05). This result confirms the graphic of Figure 2.

Propósitos y Representaciones
May.- Aug. 2019, Vol. 7, N° 2: pp. 45 - 74
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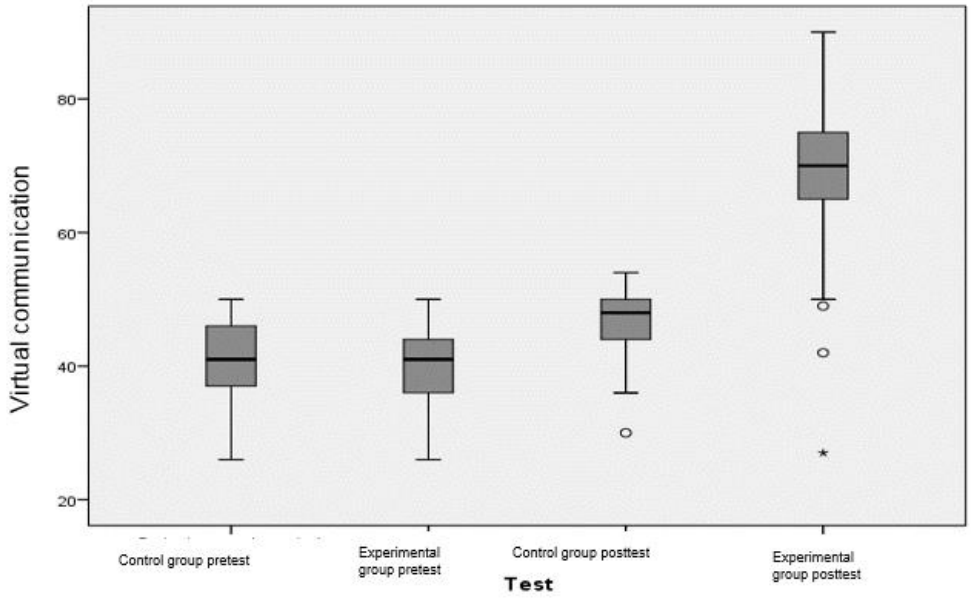

Figure 3. Boxplot between control and experimental groups for virtual communication.

As seen in Figure 3, when pretest is applied, it is evident that the median of the virtual communication variable for both groups (control and experimental) is equal to 40. In contrast, in the posttest, the control groups presents a median equal to 44, while the experimental groups presents a median equal to 70.

Table 5.

Test statistic for the pretest of the virtual communication variable.

Test statistics[a]	Virtual communication
Mann-Whitney U Test	2134.000
Wilcoxon signed-rank test	5374.000
Z	-1.125
Bilateral asymptotic significance	.261

a. Grouping variable: Test

Table 5 shows that the Mann-Whitney U Test Statistic shows that there are no significant differences in the pretest results between the control and experimental groups in relation to the virtual communication variable (Mann-Whitney U Test = 2134.000; Z = -1.125; (Bilateral) asymptotic significance = 0.261 > .05). This result confirms the graphic of Figure 3.

Table 6.
Test statistic for the posttest of the virtual communication variable

Test statistics[a]	Virtual communication
Mann-Whitney U Test	155.500
Wilcoxon signed-rank test	1985.500
Z	-9.458
Bilateral asymptotic significance	.000

a. Grouping variable: Test

Table 6 shows that the Mann-Whitney U Test Statistic indicates that there are significant differences in the posttest results between the control and experimental groups in relation to the virtual communication variable (Mann-Whitney U Test = 155,500; C; (Bilateral) asymptotic significance = .000 < .05). This finding confirms the graphic of Figure 3.

Discussion

The fact that the arithmetic mean and the inferential analysis were in favor of the experimental group after the intervention allows us to assume that the methodic and systematic use of Facebook improves virtual communication of university teachers (Mann-Whitney U Test = 155,500; C; Sig. asymptotic (bilateral) = .000 < .05). Through the statistical analysis conducted, the influence of Facebook was corroborated in the synchronous dimensions (Mann-Whitney U Test = 263,500; Z = -9.033; asymptotic significance (bilateral) = .000 < .05) and asynchronous (Mann-Whitney U Test = 161.000; Z = -9.438; (bilateral) asymptotic significance = .000 < .05).

These results coincide with the premises set forth by Ellis (2007), Davidovitch and Belichenko (2018), Espuny, González, Lleixá and Gisbert (2011), Kucuk and Sahin (2013) who said that connectivity, communication and effectiveness are consolidated as a valuable contribution offered by the social network created by Mark Zuckerberg. In this regard, the proposal of the institutional application in favor of improving the communication among the members of the university community through Facebook, is presented as an opportunity to link the academic interests of teachers, as well as the commitment and learning of students (Huang et al., 2010, cited by Aydin, 2012, and Giesbers, Rienties, Tempelaar and Gijselaers (2013). This, according to Ko (2015), strengthens the theoretical position that values the impact of the new technologies by increasing the possibilities of collective participation of users.

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