Comparative study between teachers and students on acceptance and use of technologies for educational purposes in the Chilean context

Estudio comparativo entre docentes y estudiantes sobre aceptación y uso de tecnologías con fines educativos en el contexto chileno

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Keywords
Moodle, smartphone, use of technologies, digital training

ABSTRACT

Nowadays, it is expected that technologies be integrated in teaching and learning processes. To achieve this goal, it is also necessary to recognize a series of personal, institutional and formation factors that influences in the integration of these technologies. This study explores chilean university teachers and students perceptions about technology valuation, uses and acceptation for educational matters. Main results shows a high level of access to technology, especially the computer and smartphones, this last one highly valuated for academic achievement. Teachers had higher expectations for the use of ICT in teaching, using more diversity of them with multiple purposes, unlike students that presented a reduction of use, although with a high valuation of technologies. It is highlighted the smartphone valuation as a means of ubiquitous, mobile and contextualized learning. Also, a positive correlation is showed between perception of facility and utility of use of the Moodle platform, and a positive perception about b-learning models. Finally, the implications of the study for the processes of integration of ICTs in higher education contexts are presented and future lines of research are enunciated.

Palabras clave
Moodle, teléfono inteligente, uso de tecnologías, formación digital

RESUMEN

Hoy en día se espera que las tecnologías se integren en los procesos de enseñanza-aprendizaje y para lograrlo es necesario reconocer una serie de factores personales, institucionales y de formación que influyen en ello. Este estudio explora las percepciones de docentes y estudiantes universitarios chilenos respecto a la valoración, uso y aceptación de tecnologías para fines educativos. Entre los resultados destaca un alto acceso a la tecnología, en especial computador y a dispositivo móvil, este último valorado ampliamente para el éxito académico por los estudiantes. Los docentes tuvieron expectativas más altas para la utilización de las TIC en la enseñanza, al recurrir a una mayor diversidad de estas con múltiples finalidades, a diferencia de los estudiantes, quienes presentaron una reducción de su uso, aunque tienen una alta valoración de las tecnologías. Se destaca la valoración del teléfono móvil como medio para el aprendizaje ubicuo, móvil y contextualizado. Además, se evidencia una correlación positiva entre la percepción de facilidad y utilidad de uso de la plataforma Moodle, así como una percepción positiva acerca de los modelos b-learning. *Finalmente, presentamos implicaciones del estudio para los procesos de integración de las TIC en los contextos de educación superior y enunciamos futuras líneas de investigación.*

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INTRODUCTION

Throughout the last decade, changes in social, labor and educational environments have created in international higher education institutions the need to adopt and integrate information and communication technologies (ICTs) to address the opportunities and challenges of the innovative teaching, learning and evaluation processes (Adams *et al.*, 2017; Davies, Mullan, & Feldman, 2017).

During that period, researchers in the field of educational technology have been working on identifying multiple personal, institutional and technological factors that facilitate or inhibit university professors and students in accepting, using and integrating digital technologies (Adams *et al.*, 2017; Porter, Graham, Spring & Welch, 2014). A significant part of these studies have demonstrated that these innovative technologies can be used to improve the teachers' teaching and foster the students' academic achievement (Davies, Mullan, & Feldman, 2017; Kirkwood & Price, 2014; Li & Tsai, 2017; Sung, Chang, & Liu, 2016).

Nevertheless, the integration of technologies by teachers and students in the university teaching and learning processes depend, to a large extent, on the access and ownership of devices available (Anderson, 2015; Kobus, Rietveld & Van Ommeren, 2013; Song & Kong, 2017), attitudes (Cai, Fan & Du, 2017;) and the importance given to said technologies (Kale, 2018; Kreijns, Van Acker, Vermeulen & Van Buuren, 2013), as well as their perception of ICTs usefulness and facility (Rienties *et al.*, 2016; Teo, Huang & Hoi, 2017).

The Educause organization, through their yearly studies have found that students would increase their efficiency in using technologies for learning if teachers were better trained in said technologies and use them more frequently in their courses (Dahlstrom, Walker & Dziuban, 2015). Recent studies have identified that teacher support through interventions based on technologies can change the students' conceptions and attitudes toward the use of technologies in their learning processes (Teo, 2011).

Our work explores the perceptions regarding higher education professors and students' acceptance and use of technologies; hence the development of the following research objectives:

- Describe the types of technologies available to both professors and students to use them in the teaching-learning processes.
- Examine the importance teachers and students give to technologies for academic success.
- Analyze teachers and students' perceptions regarding the integration of technologies in the classroom subjects.

- Analyze the teachers and students' perceptions regarding the facility and use of the Moodle platform.

UNIVERSITY PROFESSORS AND STUDENTS IN LIGHT OF THE AVAILABILITY AND USE OF TECHNOLOGIES IN THE TEACHING-LEARNING PROCESSES

According to the literature, the availability and use of technologies by both professors and students play a key role in the integration processes of technologies in university classrooms *(Adams et al., 2017; Davies,* Mullan, & Feldman, 2017). The adoption and use of technologies are not determined by the age of the students and teachers but rather by multiple factors including the access and availability, use and facility perceived, assessments, barriers perceived, usage training, among others (Anderson, 2015; Cai, fan & Du, 2017; Kale, 2018; Tondeur, Van Braak, Ertmer & Ottenbreit-Leftwich, 2017). Second order barriers or pedagogical beliefs are those that influence most teachers in integrating technology in the classroom (Ertmert *et al*., 2012).

Therefore, over the last decade, different researchers and organization in the field of educational technology have been exploring the prevalence and changes seen in university students and professors regarding the availability of technologies and its use in the teaching-learning processes (Thompson, 2013).

ECAR Study of Undergraduate Students and Information Technology 2017 indicates that 97% of the students have a smartphone, 95%, a laptop and 50%, a tablet. 98% perceive the use of a laptop for academic purposes as important, 78% and 38% in this order, the use of smartphones and tablets (Brooks & Pomerantz, 2017b). The report shows that more than 60% of the students are satisfied with the basic functions of the learning management systems (LMS); on the other hand, professors tend to perceive that their use improves the educational practice (Kerimbayev *et al*., 2017). Meanwhile, less than 50% were dissatisfied with these complex systems functions (e.g., projects and study group collaboration) (Brooks & Pomerantz, 2017b). Professors consider these devices as repositories of material and information more than for pedagogical uses (Parson, 2017).

On the other hand, 65% of the students consider that professors make an adequate use of technology to improve teaching (Brooks & Pomerantz, 2017b). Regarding the request for using technologies as learning tools, students reported that professors request the use of tablets (65%), smartphones (58%) and laptops (38%); 34% even reported that professors do not ask for the use of these technologies. Regarding learning environment references, the report mentions that 79% of the students prefer a semi-presential or blended system as do professors (Vásquez, 2017).

In the Latin American context, recent studies report that university professors make scarce use of technologies in the teaching and evaluation processes (Marcelo, Yot and Mayor, 2015; Marcelo *et al*., 2016). Likewise, a mere 41% of the students use technology for their academic tasks and 85% never manage virtual platforms in their courses (Herrera-Batista, 2009). These results contrast with those obtained by Hernández de la Torre and Navarro (2017), who found that students in pedagogical studies showed a positive assessment and use of technologies, e.g., personal computers, blogs, virtual platforms, among others, as tools that help them with their academic tasks.

Although these data give us an overview of the study of the use and assessment of technologies in the teaching-learning processes, more research is still required to analyze the availability, use and assessment of technologies with university professors and students of Latin American settings, more specifically, in the Chilean context of technology education.

UNIVERSITY PROFESSORS AND STUDENTS'ATTITUDES REGARDING THE USE OF TECHNOLOGIES

In the field of education technology, the technological acceptance model (Davis, Bagozzi & Warshaw, 1989) has been used over the last decade to verify the way in which university professors and students accept the use of technologies related to the teaching-learning processes (Bervell & Umar, 2017; Fathema, Shannon & Ross, 2015).

In the case of university students, studies have been conducted to measure the acceptance of technologies as learning management systems (Horvat, Dobrota, Krsmanovic & Cudanov, 2015), mobile learning (*m-learning*) (Park, Nam, Woo & Cha, 2012), electronic textbooks (Hsiao, Tang, & Lin, 2015; Jin, 2014), learning management systems (Alharbi, 2014; Bervell & Umar, 2017), and games for educational purposes (Hamari & Keronen, 2017).

Regarding professors, research has been conducted on virtual training (Cabero and García, 2016), online education (Wingo, Ivankova & Moss, 2017), the use of computers (Baturay, Gökçearslan & Ke, 2017) and digital resources in teaching (Teo *et al*., 2017).

As a whole, these studies, based on the TAM model, confirm the importance the usefulness and facility technologies have as variables that determine the positive or negative attitudes students and professors adopt regarding the use of technologies for educational purposes.

Nevertheless, both groups' attitudes will be determined by their levels of knowledge in managing technology, assessments, motivations and barriers they perceive in integrating technologies in their teaching and learning (Broadbent, 2016; Diep, Zhu, Struyven & Blieck, 2017; Joo, Lim & Kim, 2016; Kale, 2018).

Lastly, it is worth mentioning that most of the studies on the acceptance of technologies among university professors and students have been conducted in Anglo-Saxon and Asian contexts, and more recently, they have been conducted in Hispanic American contexts with both teachers (Cabero y García, 2016; Marcelo *et al.*, 2016) and students (León, Larenas and Fajardo, 2015; Prieto, Migueláñez and García-Peñalvo, 2017; Ramírez, Mariano and Salazar, 2014; Robles, 2016). Our study aims at adding to the previous contributions and focuses on the comparative analysis of the perceptions of the participants regarding the usefulness and facility of use perceived of the learning management system.

METHODS

Context and participants

In 2016, the questionnaire survey was carried out in person throughout the country at the Universidad Tecnológica de Chile, INACAP, [Chile Technological University], one of the largest higher education institutions in the country with 26 campuses. The population consisted of all the teachers (5,234) and students (123,047) with the object of determining the size of the sample necessary to yield a 95% reliability level. Our sample was integrated by 358 professors and 383 students. The teacher sample consisted of 227 males (57.3%) and 169 females (42.7%) and the student sample was 208 males (54.3%) and 175 females (45.7%).

The higher education institution under study has a virtual campus supported by Moodle, the virtual platform used to manage and distribute educational material in digital formats, the incorporation of relevant contents as well as the execution of special methodological strategies supported by technology.

Instruments

The instrument to collect information was constructed based on the ECAR Study of Undergraduate Students and Technology, developed by Dahlstrom, Walker & Dziuban (2013) for Educase, and of the perceived usefulness defined as "the subjective probability of a person that, by using a specific system, will improve his/her work performance" (Davis, Bagozzi & Warshaw, 1989, p. 320). The perceived facility of use is another dimension defined as the "degree by which a person believes that using a specific system will be free of efforts" (Davis, Bagozzi & Warshaw, 1989, p. 320). Both variables have a bearing on the attitude one has toward the use of technology.

The reliability index was obtained by means of the Crobach Alpha coefficient; to this effect, a pilot study was conducted with 129 teachers and 188 students. The values obtained for the teacher instrument was 0.927 and 0.916 for the students, which are considered as high reliability levels.

With this questionnaire, we collected information on the following dimensions: socio-demographic features, use and ownership of the technological devices, technology and academic experience, learning environments: in-class or online; technology assessment, personal computer environment, and usefulness and facility of use of the Moodle platform. The statistical analyses were conducted with the SPSS program (v23).

RESULTS

To facilitate the comprehension of the results, we grouped them into different categories that respond to the study objectives.

Availability and importance of technologies

Regarding the ownership of the technology available to participants of this survey, the results indicate that there are similarities in the ownership of the technological devices; a high percentage of the participants have a laptop (98.4% of the teachers and 87.9% of the students); smartphones (81.9% of the teachers and 74.6% of the students; followed by desktop computers (54.3% of the teachers and 47.7% of the students), tablets (46.7% of the teachers and 36% of the students) and digital book reader (16.7% of the teachers and 16.3% of the students). In regard to the average of technological devices owned in general, teachers show an average of 2.8 and the students 2.5.

Concerning the relevance teachers and students give to ICTs, on a scale of "not important at all" (1) and "extremely important" (5), the average obtained for the teachers was 4.09 and 4.07 for the students. The K-S normality test was applied and the null hypothesis for the normality test was rejected (Siegel & Castellan, 1995); it was found that the Mann Whitney U non-parametric test was more adequate than the T Student statistical test. The differences are not statistically significant since a 0.557 p-value was reached. This allows not rejecting the null hypothesis for the equality of two mean values in the opinions shown by both the teachers and the students.

On the importance given to specific technological devices for academic success, the first thing to point out is that teachers give more importance than students to technological resources, except for smartphones that were more valued by students (See Table 1)

Table 1. Percentage of the importance of technological devices for academic success

Aparato tecnológico	**No es importante**		**Diferencia**	**Importante**		**Diferencia**
	Docentes Porcentaje	Estudiantes Porcentaje	Porcentaje	Docentes Porcentaje	Estudiantes Porcentaje	Porcentaje
Laptop	4.8	4.5	0.30	88.2	71.6	16.60

Tableta	24.6	26.3	-1.70	62.5	29.8	32.70
Smartphone	25.4	20.1	5.30	63.9	70.2	-6.30
Lector de libros digitales	19.0	14.3	4.70	56.6	29.8	26.80
PC	9.4	10.0	-0.60	76.7	57.8	18.90

Source: Self development.

Integration of technologies in teaching-learning processes

In order to know if there were significant differences between the opinions expressed by the teachers and the students, we applied a statistical test, i.e., the *Pearson chi-square test* (χ^2); in all cases, the hypothesis of no significant differences between both groups at the significance level of p≤0,01 was rejected. The significant differences were in favor of the teachers in the following cases: "Efficient use of technology to support the students' academic success" (χ2=107,965; p=0,000), "Provided adequate training to use the technologies used in the class subjects" (χ2=92,692; p=0,000), and "use of technologies in accordance to the class subject" ((χ2=66,369; p=0,000) (See Table 2).

Table 2. The use of technology in the classroom in relation to the subject learning experience

Ítem		Rol							
		Alumno		Docente		Total		Test	
		Recuento	Porcentaje de columna	Recuento	Porcentaje de columna	Recuento	Porcentaje de columna	Chi cuadrado	Sig.
Usó (usé) eficientemente tecnología para apoyar el éxito académico de los estudiantes	Ninguna	5	1.3	3	0.8	8	1.0	107,965	0.00
	Algunas	140	35.4	67	17.2	207	26.4		
	La mayoría	204	51.5	146	37.5	350	44.6		
	Todas	47	11.9	173	44.5	220	28.0		
Suministré de formación adecuada para el uso de las tecnologías usadas en las asignaturas	Ninguna	14	3.6	11	2.9	25	3.2	92,692	0.00
	Algunas	165	41.9	72	18.8	237	30.5		
	La mayoría	170	43.1	152	39.7	322	41.4		
	Todas	45	11.4	148	38.6	193	24.8		
Usé tecnologías acordes con la asignatura	Ninguna	5	1.3	3	0.8	8	1.0	66,369	0.000
	Algunas	130	32.8	68	17.5	198	25.2		

La mayoría	192	48.5	150	38.6	342	43.6
Todas	69	17.4	168	43.2	237	30.2

Source: Self development.

Learning environment and technological tools for training

The results for the type of learning environment or setting in which students and teachers prefer to learn showed that 5% of the students prefer to study online in comparison to 35% of the teachers; 47% of the students opted for classes with some online components compared to 44% of their teachers; and 15% of the students lean toward classes without any face-to-face components compared to 23% of the teachers.

As for the tools students wish were used less (1) or more (5) in their formation, different aspects were pointed out; there is an assessment difference between teachers and students: teachers tend to make higher assessment than students; this can be verified by applying the *Mann Withney U* test after having used the *K-S normality* test and rejected the null hypothesis for the normality test (Siegel & Castellan, 1995), which presents the significant differences of all items, except for "the tablet to carry out activities in class" (p-value=0.502) with an average assessment around 3.2. It is worth mentioning that in none of the means do students give a higher assessment than teachers (See Table 3).

Table 3. Assessment difference between teachers and students on technological tools for training

Ítem	Rol						
	Alumno		Docente		Test U de Mann-Whitney		
	Media	Mediana	Media	Mediana	U	Z	Sig.
Ambiente de aprendizaje (Moodle)	4.2	5	4.8	5	55168.0	-7.90	0.000
E-portafolios	3.0	3	3.6	4	31396.0	-5.40	0.000
Libros o textos digitales	3.4	3	4.4	5	36192.0	-10.18	0.000
Contenido de clases disponibles gratuitamente fuera de la universidad	3.1	3	3.8	4	31288.5	-5.42	0.000
Simulaciones o juegos educativos	3.3	3	3.9	4	39916.5	-4.70	0.000

Recopilación de charlas en video	3.5	4	3.9	4	50173.0	-2.56	0.010
Herramientas de colaboración en línea	3.3	3	3.8	4	36325.0	-4.07	0.000
La tableta para realizar actividades en clases	3.2	3	3.1	3	51862.5	-0.67	0.502
El *smartphone* para realizar actividades en clases	4.0	4	4.2	5	64457.0	-2.19	0.029

Source: Self development.

Regarding the different uses teachers and student make of smartphones, the results show that teachers tend to consider that students do not make a use closely related to training activities such as participating in activities that are related to the class or to access digital resources (See Table 4).

Table 4. Different uses of smartphones by teachers and students

Ítem		Rol				
		Alumno		Docente		Diferencia
		Recuento	Porcentaje de columna	Recuento	Porcentaje de columna	Porcentaje
Para buscar información relevante en internet a la clase/discusión	No	89	22.1	103	25.9	-3.7
	Sí	313	77.9	295	74.1	3.7
Para participar en actividades /discusiones relacionadas con las clases	No	325	80.8	272	68,3%	12.5
	Sí	77	19.2	126	31,7%	-12.5
Para grabar a los docentes	No	267	66.4	307	77.1	-10.7
	Sí	135	33.6	91	22.9	10.7
Para fotografiar información	No	216	53.7	243	61.1	-7.3
	Sí	186	46.3	155	38.9	7.3
Para acceder a recursos digitales	No	259	64.4	196	49.2	15.2
	Sí	143	35.6	202	50.8	-15.2
Un *smartphone* no es una herramienta efectiva de aprendizaje	No	379	94.3	354	88.9	5.3
	Sí	23	5.7	44	11.1	-5.3

Source: Self development.

Moodle platform facility and usefulness perceived by teachers and students

Regarding the scores achieved by teachers and students for the facility and usefulness of the TAM model dimensions (Davis, Bagozzi & Warshaw, 1989), in reference to the Moodle platform, we found a 0.647 Gamma coefficient for the students and of 0.640 for teachers; both coefficients indicate that there is a positive relation between the contrasted dimensions. In order to supplement these results, we obtained a (ρ).538 Spearman Rho for students and 0.562 for teachers; this corroborates this type of association even when it shows lesser values given the more rigorous coefficient characteristics. These results indicate two aspects: first, that the correlations are moderate and, second, that they are positive; hence, if one increases, the other variable does it in the same direction (See Figure).

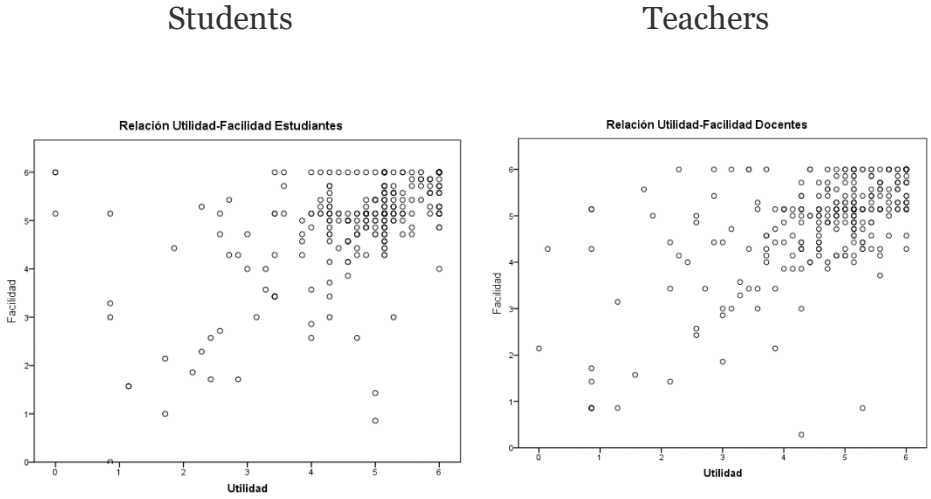

Figure. Dispersion usefulness–facility graph.
Source: Self development.

In order to analyze if there were any significant differences in the perception of the usefulness and facility of use by teachers and students, the values found with the *Mann-Whitney U* statistics test, after having applied the *K-S normality* test and rejected the null hypothesis for normality test (Siegel & Castellan, 1995), did not allow us to reject none of the hypotheses referring to the existence of significant statistical differences in both groups: therefore, we can infer that the opinions of the teachers and the students are similar regarding the usefulness and facility of the LMS used by the institution (See Table 5).

Table 5. Analysis of the significant differences in the perceptions of the usefulness and facility of use by the teachers and the students

	Rol						U de Mann-Whitney		
	Alumno			Docente					
	f	Media	Mediana	f	Media	Mediana	U	Z	Sig.
Utilidad	402	5.64	6	398	5.51	6	70621	-0.65	0.513
Facilidad	402	5.89	6	398	5.76	6	62118	-1.42	0.156

Notes:
"1": absolutely unlikely.
"7": absolutely possible.
Source: Self development.

CONCLUSIONS AND DISCUSSIONS

The first conclusion of this study is that both teachers and students perceive that the incorporation of technologies is important in the teaching-learning processes. Along these lines, the results coincide with recent studies and show the interest students have to work in technological settings (Brooks & Pomerantz, 2017b; Hernández de la Torre and Navarro, 2017).

Unlike students, the teachers participating in the study reported more favorable assessments of the importance of technologies for academic success. This supports the contributions referring to the fact that teachers are not necessarily less experts in technology than students and that they have more favorable attitude for their integration in education (Wang *et al.,* 2014).

The large portion of students and teachers in this study that have a laptop coincide with the recent studies conducted by *Educause* (Brooks & Pomerantz, 2017a, 2017b). This is particularly interesting since it facilitates the ubiquitous, mobile and contextualized learning (Vázquez-Cano and Sevillano, 2015) and the incorporation of emerging technologies as an augmented reality (Cabero and García, 2016).

On the other hand, the little importance students give to the reading of digital books (ebooks) emphasizes the idea expressed by different authors that one of the characteristics of the so-called "digital natives" prefer not to read and they tend to access information through video format, multimedia and Internet (Li & Ranieri, 2010).

From this perspective, we consider that formative actions that mobilize necessarily these educational resources must be carried out, since, on the one hand, knowledge continues to be based on reading codes and, on the other hand, their lack of use can interrupt the development of specific cognitive abilities, as neuroeducation points out (Mora, 2013).

Our results support the idea that students are not as competent as certain sectors may think, and they tend to not use a variety of technologies. In our case, smartphones and Google search have been highlighted, which coincides with the findings of other works (Brooks & Pomerantz, 2017b; Castellanos Sánchez, Sánchez Romero and Calderero Hernández, 2017).

In regard to the use of Google, we noted that there is a strong agreement between teachers and students, however, it is not so with smartphones, since teachers point out their use in the classroom without pedagogical purposes. Hence the need to train teachers so they know how to use a diversity of methodological strategies to foster the use of these technologies and, at the same time, develop digital competences (Cabero and García, 2016; Makki *et al.*, 2018).

Moreover, our results suggest poorly significant difference regarding the use of technologies by teachers and students which coincide with previous studies (Flores and Del Arco, 2013). Contrary to students, teachers had more favorable assessments and a more diverse use of teaching-learning technologies. Hence, a greater and better training is needed for students to use learning digital technologies since students tend to be perceived as being highly knowledgeable in managing technologies but the teachers in our study believe that students do not possess these digital competences.

We have also observed different teachers and students' perceptions regarding the quality of use they mention having of technologies; while teachers indicate having made an adequate and efficient use of them and that through them, they have been provided with the appropriate training to use said technologies; students, on the other hand, disagree with this perception. We could say that students tend to be more judgmental than the teachers when assessing the adequate use of technology, or, that they have different perceptions of what it means to make an efficient use of technologies.

Along these lines, we can say that they were more judgmental in assessing the number of class subjects in which technology was properly used and technological tools promoted in the classroom. The data reveal the importance of both the use and as assessment of smartphones by students in comparison with the teachers, when declaring that it is one of the technological tools they use and value most for their academic success. These results coincide with the findings of previous studies (Brooks & Pomerantz, 2017b; Dahlstrom, *Walker & Dziuban,* 2015; Lagunes-Domínguez *et al.*, 2017).

As for technological tools, the virtual campus stands out as one of the favorite; 96% of teachers and 78.5% of the students prefer it. This is a relevant piece of information since it reaffirms the relevance of this platform to carry out distance training actions. We found a tendency to prefer actions in the b-learning modality, an aspect of our work that coincides with the findings of other authors (Akkoyunlu & Soylu, 2006; Orhan, 2008). However, a large number of students and teachers do not show a strong preference for a complete online training, which coincides with the results of the studies conducted by *Educause* (Brooks & Pomerantz, 2017a, 2017b). This suggests that the aspects of teachers and students training, platform accessibility and network connectivity should be reviewed.

In other words, based on our work, we argue that it is not enough for institutions wishing to carry out virtual training actions to incorporate only contents, teachers and students to a virtual platform, but they should at the same time consider other parallel measures referring to organizational and methodological aspects.

As for the perceived usefulness and facility of the virtual platform, we tested the hypothesis that relates them positively, i.e., greater is the facility, higher is the perceived usefulness. We also found that teachers' assessment of the platform is higher than that of the students, although we understand that the students' assessment is not low. This finding which is consistent with the findings of other authors who have analyzed the degree of acceptance of e-learning and LMS (Alharbi, 2014; Kang & Shin, 2015), indicates that - according to the model formulated by Davis, Bagozzi & Warshaw (1989)– such variables are clear predictors and determinants of the use teachers make of technologies (Teo, 2010, 2012) as well as the students (Vera, Torres and Martínez, 2014).

As future lines of research studies we propose the following:

- Do research on creating experimental situations that allow us to collect direct information from the interviewees regarding their use of ICTs.
- Delve more in depth qualitatively on pedagogical practices with the support of technology.
- Analyze the acceptance of mobile telephone and its possibilities in teaching and learning.
- Explore the acceptance of technologies by taking into account other variables of the technological acceptance model.

Lastly, we are left with the challenge of assuming research studies that lead us to delve into the use of technologies as tools that enrich, empower and create learning contexts in the new formative scenarios of higher education.

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