Basic digital skills to guarantee the academic continuity caused by Covid-19

Competencias digitales básicas para garantizar la continuidad académica provocada por el Covid-19

Carlos Enrique George Reyes*

ABSTRACT

Keywords
academic continuity; Covid-19; distance education; technology

The migration from face-to-face to non-face-to-face education due to the pandemic caused by Covid-19 has led to the transformation of learning scenarios. In this research, the perceptions of the students regarding the implementation of teaching strategies based on communicative interaction, the selection of learning materials, and for the evaluation based on the use of technologies were analyzed. The study subjects were high school students from a private educational institution located in Mexico. The study was descriptive, based on the application of a Likert-type scale questionnaire. The recovery of the data was carried out using a digital form designed expressly for the investigation. 248 students who were about to complete the fourth semester in the period January-June 2020 participated. The results revealed that there was a favorable acceptance of the activities carried out by teachers with digital tools, some areas of opportunity were evident, such as face-to-face interaction, the scarce diversification of the content selected for learning and evaluation, and the absence of evaluation actions based on the use of discussion forums.

RESUMEN

Palabras clave
continuidad académica; Covid-19; educación no presencial; tecnología

La migración de la modalidad presencial a la no presencial en la educación debido a la pandemia provocada por el Covid-19 ha propiciado la transformación de los escenarios para el aprendizaje. En esta investigación se analizaron las percepciones de los estudiantes respecto a la implementación de estrategias de enseñanza basadas en la interacción comunicativa, así como la selección de materiales para el aprendizaje; mientras que se consideraron sus opiniones respecto a las herramientas tecnológicas para la evaluación. Los sujetos de estudio fueron estudiantes de bachillerato de una institución educativa privada en México. El análisis fue descriptivo, basado en la aplicación de un cuestionario de escala tipo Likert. La recuperación de los datos se llevó a cabo mediante un formulario digital diseñado exprofeso para la investigación. Participaron 248 estudiantes a punto de concluir el cuarto semestre, en el período enero-junio de 2020. Los resultados revelaron que existió una aceptación favorable de las actividades realizadas por los docentes con herramientas digitales, y se evidenciaron algunas áreas de oportunidad como: la interacción cara a cara, la escasa diversificación de los contenidos seleccionados para el aprendizaje y la evaluación, además de la ausencia de acciones de evaluación basadas en el uso de foros de debate.

* Ph.D. in Educational Sciences. Research Professor attached to the Strategic Approach to Educational Innovation Research Group. School of Humanities and Education. Tecnológico de Monterrey, México. ORCID: https://orcid.org/0000-0002-2529-9155

INTRODUCTION

The Covid-19 burst in December 2019 in Wuhan, China, has cause the outbreak of an epidemic cause by the Coronavirus-2, of the Severe Acute Respiratory Syndrome (SARS-CoV-2) which could not be contained; it spread all over the world and caused a highly communicative viral pandemic with the passing of the months (Sorooshian, 2020; Yi *et al.*, 2020). This meant an unprecedented global challenge, not only to sanitary systems, but also to the education area, because of the enforced decision of institutions to transfer teaching to non-attendance scenarios.

In accordance to UNESCO (2020), more than 1,520 million students of every level have been affected by the physical lockout of academic institutions in 180 countries. This means that 87% of students throughout the world and 63 million teachers have had to adapt to unexpected changed in the teaching-learning process (IESALC-UNESCO, 2020), which has given rise to the most relevant simultaneous crisis underwent by education systems over the last decades (World Bank, 2020).

With the purpose of preventing the loss of learning and of academic terms, an option was made for digital technology as the means to continue academic activities and to transfer knowledge to students, which implied an effort to immediately redesign the teaching practice to frame it within the context of remote teaching and, in some cases, within distance learning (e-learning) (World Economic Forum, 2020).

Enforced migration to offsite scenarios, as well as the abrupt change to the online mode, underscored the existence of deficits and inequalities, extensive in some cases, both regarding availability of technological infrastructure and the capacity of teachers to mobilize their digital competencies and to cope with the particularities of virtual teaching (Arnove, 2020; Brown & Salmi, 2020). The first actions done by some educational institutions −above all those that assist students of high social strata[1] were: training for teachers to do online work sessions, preferably through video-conference software, and to design contents in virtual platforms.

At this scenario, new professors, and others with a long career, were suddenly involved in the need to change their on-site teaching methods to articulate them to virtual scenarios mediated by digital resources such as Zoom, Skype, Microsoft Teams, Google Meeting, Google Classroom, Blackboard, Canvas, and even instant messaging apps, like Remind or

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[1] In Mexico, the National Survey on availability and use of information technologies in households in 2019 indicates that only 44.3% of the population has a computer and 70.1% have access to the Internet. The difference in Internet access between high and low stratum is 70 percentage points; as for the availability of a computer is 63 percentage points (INEGI, 2020).

WhatsApp, that were incorporated to the vocabulary of teachers and to the academic practice (Sanchez *et al.*, 2020).

Thus, academic continuance was to be supported on the basis of the need of teachers to learn and understand the mechanisms that serve as remote or virtual education fundamentals, which gave rise to new forms of academic interaction. With the purpose of analyzing how students perceive this educational continuance, a study was done to explore three competencies that have been dubbed to be basic –however non-defining– of the teaching-learning process in the digital scenario: 1) communicative interaction, 2) selection and design of digital materials, and 3) evaluation by using technologies.

Basic digital competencies to guarantee academic continuance

As a response to the pandemic, educational institutions all over the world promoted the transition to online education; however, few of them were prepared to do this change rapidly and efficiently (Brown & Salmi, 2020; Murphy, 2020), in part, due to the fact that teaching and learning under this mode imply unprecedented experience for most of teachers and students, therefore their practice is limited by the use of pedagogic intents based on using technologies (Mercader, 2018; Mailizar, Maulina & Bruce, 2020).

In Mexico, private and public institutions have documented actions taken during the contingency in relation to academic continuance (ANUIES, 2020), some of these actions are presented as plans of action and others as flexible educational models (see table 1). Although each of these actions is limited by the particularities of each school and education level, all of them converge on the need to develop three essential competencies to guarantee continuance: communicative interaction, ability to select or design materials, and assessment by using technologies, which are described below.

Table 1. Action plans to deal with academic continuity

Educational institution	Action name	Tipe	URL
Universidad Veracruzana	Covid-19 contingency plan	Action plan	https://www.uv.mx/plandecontingencia/
Universidad de Ciencias y Artes de Chiapas	UNICACH academic continuity plan	Action plan	http://uvirtual.unicach.mx

Universidad Autónoma de Guerrero	Online academic continuity plan UAGro	Action plan	http://virtual.uagro.mx /plancontinuidad/
Universidad de las Américas de Puebla	Response of the Universidad de las Americas Puebla to Covid-19	Action plan	https://www.udlap.mx/ covid19/
Universidad Popular Autónoma de Puebla	UPAEP go ahead	Action plan	https://upaep.mx/plan decontinuidad/
Universidad Autónoma de Morelos	UAEM-VA: Virtual learning continuity protocol	Action plan	http://portal.e-uaem.mx/uaem-va/
Universidad Nacional Autónoma de México	University Commission for the attention of the Coronavirus emergency	Action plan	https://covid19comisio nunam.unamglobal.co m/
Instituto Politécnico Nacional	IPN Academic continuity plan	Action plan	https://elementosdeapr en.ipn.mx
Tecnológico de Monterrey	Flexible digital plus model	Educational model	https://tec.mx/es/mdf-plus
Universidad Autónoma de Nuevo León	Digital strategy for Covid-19 contingency	Action plan	https://www.uanl.mx/c ovid-19
Universidad de Colima	Universidad de Colima before the Covid-19	Action plan	https://portal.ucol.mx/ covid-19

Universidad de Sonora	Academic-teaching continuity plan for Covid-19	Action plan	http://www.continuida dacademica.unison.mx/
Universidad Autónoma de Ciudad Juárez	Virtual academic continuity program	Action plan	http://www3.uacj.mx/C SB/BIVIR/Paginas/BD _open.aspx

Communicative interaction

Communicative action is a teacher's skill to efficiently perform in a remote space, where not only disciplinary knowledge is required, but also expertise to select the relevant digital tools to communicate promptly with his/her students, as well as to foster learning and to consider that synchronous communication should not always prevail. Asynchronous communication may provide participants with the flexibility to balance access to diverse digital materials and the development of their activities outside the school hours (Daniel, 2020).

Interaction with students though live sessions by video-conference may contribute to the development of active learning which, altogether with on-demand mentoring and digital accompaniment, is the primary component for success in academic continuance. In addition, this contributes to strengthen students' will, aimed to develop online learning (Baloran, 2020). Several studies (Del Moral, Villalustre & Del Rosario, 2016; Samad *et al*., 2016; Cantón, Cañón & Grande, 2017; Romero *et al*., 2017; Li, Pyrkova & Ryabova, 2017; Claro *et al*., 2018; De Paepe, Zhu & Depryck, 2018; Llamas & Macías, 2018; Ibrahim *et al*., 2019; Varela & Valenzuela, 2020) have stated that communicative interaction is a necessary competency to help in deploying skills aimed to interact with digital media, to share information, to provide contents, to partake in online discussions, to collaborate with digital tools, to design digital identity and to become aware of virtual communication standards.

Selection and design of digital materials

A way to apply technology to teaching is by means of developing digital materials, which are resources that arose from the interweaving image, video, sound and interactivity (Mayer, 2014). They are objects designed after pedagogic and technological criteria to be incorporated as facilitating elements of the teaching-learning processes (Choppin & Borys, 2017; Moro, 2018; Peirats, Gabaldón & Marín, 2018). Therefore, the correct selection denotes the result of pedagogic strategies that strengthen conceptual, procedural and attitudinal content assimilation, which

contribute to the acquisition and strengthening of knowledge and increase understanding and student motivation (Cepeda, Gallardo & Rodríguez, 2017; Navarro, Lopez & Garcia, 2019).

The main purpose of digital materials is to serve as mediators between content socialization and the construction of knowledge; in addition, they may be objects capable of establishing a simulated discussion between the professor and the student (Vidal, Navarro & Gomez, 2019). For this reason, it is important that teachers have the skill to appropriately select documents, presentations, videos, animations and other type of files that may be found in cyberspace, as well as digital tools that allow them to include them to teaching.

On the other hand, designing materials poses a degree in the advance related to the incorporation of contextualized didactic elements to teaching, as they precisely contribute to the training of expected learnings to adapt them to the specific particularities of a group class, for a specific subject or topic (Gallardo, San Nicolas & Torres, 2019). The foregoing suggests that professors ought to be prepared to master technical skills and to have the pedagogic capacity to used digital technology in learning, by means of the correct selection or design of materials (Sariyatum & Akhyar, 2018).

Evaluation by using technologies

Some studies have made it evident that incorporating technologies has improved and facilitated the assessment process of students (Uehara & Martinez, 2016; Alkin & King 2017; Zeer & Stepanova, 2018; King & Alkin, 2019). This is due to the fact that, among other reasons, ICT allow us to know the results obtained during the teaching process faster and, therefore, to timely identify the areas to be improved for students' learning (Barbera, 2006), and due to the facility to have them adapted to the context and to the needs of educational institutions (Arazy, Yeo & Nov, 2013).

From the implementation of remote plans of action in educational institutions because of the migration enforced by the pandemic, many traditional assessment modes were discontinued or reoriented to give way to digital assessment (Watermeyer *et al.*, 2020). In the face of this eventuality, some relevant factors to carry out assessment migration, have gone to technological competencies of teachers (Romero *et al.*, 2017). For this reason, it is necessary to know what the success is of strategies designed to assess and to provide feedback on the student learning process from the perspective of using educational platforms and digital tools.

METHODOLOGY

The research was discussed from the non-experimental descriptive design (Berardi, 2015). The quantitative method was used as a methodological approximation because this may suffice to identify the trends and details of complex situations (Crteswell & Guetterman, 2019), such as the perception of students.

Instrument

The review of basic competencies to guarantee academic continuance led to the construction of an instrument called Questionnaire for the perception of use of technologies for academic continuance. Different items were prepared in the Likert scale type with four answer alternatives (Nadler, Weston & Voyles, 2015; Matas, 2018). The instrument was divided into five sections: a) data of participants, b) communicative interaction with technology, c) selection and design of digital materials, d) evaluation using technologies, and e) evaluation of the remote experience (see table 2).

Table 2. Instrument dimensions and descriptors

Dimension	Descriptors
Communicative interaction	Use of the communication options of the videoconference tool
	Interaction in video conference sessions
	Use of various communication tools
Selection and design of digital materials	Selection of digital content
	Selection of collaborative tools
	Teaching-learning strategies through the use of technologies
Evaluation with the use of technologies	Use of educational platforms as a means of evaluation
	Use of digital tools / apps for evaluation

Assessment of the non-face-to-face experience	Receiving the experience

In order to validate the instrument, the expert opinion method was used, where twelve professors took part of the Department of Sciences of the educational institution where the research was done. This method is proper to do research in the subject of education (Cabero, Estrada & Gutierrez, 2017). In order to obtain the reliability index, Cronbach's Alpha was applied as well as the McDonald coefficient (see table 3). There were results obtained greater than 0.796, that are methodologically acceptable (Hair *et al.*, 2010; Gonzalez & Pazmiño, 2015).

Table 3. Reliability analysis coefficients

Instrument sections	Cronbach's alpha	Coefficient of McDonald	N
Interacción comunicativa	0.869	0.870	15
Selection, design of digital materials and instructional strategies	0.871	0.878	16
Evaluation with the use of technologies	0.804	0.822	7
Assessment of the non-face-to-face experience	0.796	0.805	6

Participants

Second and fourth semester high school students partook in this study of a private educational institution operating 26 campuses in different states in Mexico. In all of them, the educational model considers digital innovation as part of the teaching and learning components. The campus selected is located in an urban nucleus of the city of Pachuca, in the state of Hidalgo, Mexico. A non-probabilistic sampling was done per accessibility where 248 students partook whose ages ranged between 15 and 18 years (15 years = 79, 16 years = 98, 17 years = 55 and 18 years = 16); 147 females (59.27%) and 101 males (40.73%) (see table 4). At the time the

instrument was applied, they were concluding their participation in several high-school subjects.

Table 4. Contextual characteristics of the participants

Characteristics	Description
Gender	147 women (59.27%) and 101 men (40.73%)
Age	Rank: 15-18 years Media: 16.03 years Standard deviation: 0.894
Availability of digital resources at home	Laptop: 99% Desktop: 57% Tablet: 71% Mobile phone: 100% Internet connection: 100%

Data collection and analysis

In order to collect data a digital questionnaire we provided by using Google's forms technology. special care was taken that there were clear specifications in the questionnaire regarding the instructions, the purpose of the study, and the notice of confidentiality. In order to treat the data, the form information matrix was downloaded, it was exported to Microsoft Excel and, then, to the Minitab 18 specialized software to perform the descriptive statistical analysis.

RESULTS

The results have been structured as follows: firstly, the descriptors of basic competencies are analyzed to guarantee academic continuance in the form of descriptive statistical analysis; in the second section, students' perceptions are described in a general manner.

Communicative interaction

Table 5 shows results of the perceptions of students on 15 aspects that may have an influence on the communication through videoconference tools, as well as diverse communicative tools. Data reveal the following noteworthy aspects: first off, the students state that the items related with the options to share the screen (M=3.98), to use the digital board (M=3.90) and to mute the microphones (M=3.97) were used efficiently by the professor, which suggests that the teacher has developed informational competencies sufficient to manage the software and, therefore, the didactic order and harmony were maintained during his teaching interventions.

Table 5. Descriptors of competence related to communicative interaction

Descriptor/Item	Media	Standard deviation	Maximum and minimum
Teacher performance when using the communication options of the videoconferencing tool			
1) The teacher used the screen sharing tool efficiently	3.98	0.63	Maximum: 4 Minimum: 3
2) The teacher appropriately used the option to divide the group into different rooms	2.17	0.83	Maximum: 4 Minimum: 2
3) The teacher used the file sharing tool appropriately	2.25	0.86	Maximum: 4 Minimum: 1
4) The teacher used the file sharing tool appropriately	3.36	0.93	Maximum: 4 Minimum: 2

5) The teacher assertively used the chat to answer questions	3.81	0.51	Maximum: 4 Minimum: 3
6) The teacher used the digital board appropriately (note, erase, use text, etc.)	3.90	0.73	Maximum: 4 Minimum: 3
Interaction in video conference sessions			
7) The teacher acted fluently in front of the camera	3.01	0.96	Maximum: 4 Minimum: 2
8) The teacher promoted a cordial atmosphere during the sessions	3. 57	0.48	Maximum: 4 Minimum: 3
9) The teacher used the tool correctly to close the microphones whenever necessary.	3.97	0.20	Maximum: 4 Minimum: 3
10) The teacher allowed the students to share their screen in an orderly way	2.50	0.73	Maximum: 4 Minimum: 2
11) The teacher-maintained eye contact with the students	1.92	1.21	Maximum: 4 Minimum: 1
12) The teacher offered alternatives when students had connectivity problems	3.78	0.395	Maximum: 4 Minimum: 3
Teacher performance when using various communication tools			
13) The teacher maintained clear and concise communication when using email	2.48	0.82	Maximum: 4 Minimum: 2

14) The teacher answered the emails in less than 24 hours	2.08	1.34	Maximum: 3 Minimum: 1
15) The teacher used instant messaging services (Remind, WhatsApp, etc.) as effective means of communication	3.72	0.80	Maximum: 4 Minimum: 3

In the second place, the competencies obtained with low values (item 2, M=2.17; item 3, M=2.25; item 10, M=2.50; item 11, M=1.92; item 13, M=2.48; item 14, M=2.08) show that professors have not been able to sufficiently develop the competencies that may be used to maintain clear, timely and visual communication with students. Finally, greater dispersion was found in items 11 (SD=1.92) and 14 (SD=1.34), which refer to visual contact of teachers with students in the videoconference screen and in a timely fashion to answer emails, which reveals that not all the teachers were related to sharing their image or using email as a means of academic communication.

Selection and design of digital materials

The results obtained for the second dimension show a favorable acceptance of students with regards the competencies of teachers to select digital tools and materials to accompany remote sessions and reinforcing activities (see table 6). The lowest values are related to using podcast (item 18, M=2.42) and to accessing digital libraries (item 19, M=1.38). With regards to teaching strategies, learning based on games (item 29, M=2.06), using augmented reality (item 30, M=1.25), and virtual simulators (item 31, M=1.05) were scarcely used in teaching, or were used only by some teachers (item 31, SD=1.29; item 32, SD=0.92).

Table 6. Descriptors of competence related to digital materials
and teaching strategies

Descriptor/Item	Media	Standard deviation	Maximum and minimum
Selection of digital content			
1) The teacher used digital presentations effectively	2.91	1.42	Maximum: 4 Minimum: 2

2) The teacher used the videos appropriately	3.11	0.93	Maximum: 3 Minimum: 1
3) The teacher made good use of the podcasts	2.42	0.59	Maximum: 3 Minimum: 1
4) The teacher made efficient use of the digital library	1.38	0.63	Maximum: 2 Minimum: 1
5) The teacher made effective use of graphic organizers (concept maps, mind maps, diagrams, infographics, etc.)	3.92	0.66	Maximum: 4 Minimum: 3
6) The teacher used digital documents appropriately	3.57	0.64	Maximum: 4 Minimum: 3
7) The teacher made effective use of Internet resources (websites, blogs, repositories, etc.)	3.89	0.30	Maximum: 4 Minimum: 3
Selection of collaborative tools			
8) The teacher made good use of collaborative work files (text, spreadsheets, presentations)	3.28	0.60	Maximum: 4 Minimum: 2
9) The teacher made appropriate use of collaborative applications (Blogger, Padlet, FlipGrid, Mentimeter, etc.)	3.11	0.74	Maximum: 3 Minimum: 2
10) The teacher efficiently used repositories to share information (Dropbox, Google Drive, OneDrive, etc.)	3.79	0.59	Maximum: 4 Minimum: 3
Teaching-learning strategies with the use of technologies			

11) The teacher effectively used flipped classroom strategies	3.80	0.76	Maximum: 4 Minimum: 3
12) The teacher effectively used problem-based learning strategies	3.82	0.56	Maximum: 4 Minimum: 3
13) The teacher effectively utilized challenge-based learning strategies	3.88	0.61	Maximum: 4 Minimum: 3
14) The teacher effectively used game-based learning strategies	2.06	0.74	Maximum: 3 Minimum: 1
15) The teacher effectively used augmented reality strategies	1.25	1.29	Maximum: 4 Minimum: 1
16) The teacher efficiently used learning strategies through the use of virtual simulators.	1.05	0.92	Maximum: 3 Minimum: 1

Evaluation using technology

Evaluation using technology was favorably perceived. The results show that teachers used the diverse options, with relevance and effectiveness, to carry out digital evaluations based on automation, and that they found the support of dynamic and interactive tools to evaluate learnings (see table 7). Also, the students perceived that there was consistency between what has been taught throughout the course and what was finally evaluated. The opportunity area for this dimension is placed on the inefficient use of discussion forums as a means to do an estimate of assimilated knowledge (item 34, M=2.0; SD=0.99).

Table 7. Descriptors of competence related to the evaluation of the use of technology

Descriptor/Item	Media	Standard deviation	Maximum and minimum
Use of educational platforms as a means for evaluation			
1) The professor appropriately used the option for students to upload files	3.91	0.43	Maximum: 4 Mínimo: 3
2) The professor used the automated rubrics efficiently	3.26	0.79	Maximum: 4 Mínimo: 3
3) The Professor used the discussion forums appropriately to assess	2.00	0.99	Maximum: 2 Mínimo: 1
4) The professor used the automated exams wisely	3.41	0.59	Maximum: 3 Mínimo: 1
5) The evaluations were consistent with what was learned in the subject	3.83	0.60	Maximum: 4 Mínimo: 2
Use of digital tools / apps for evaluation			
6) The professor correctly used apps to assess learning (Kahoot, Socrative, etc.)	3.97	0.38	Maximum: 4 Mínimo: 1
7) The professor used web applications appropriately to assess learning (Schoology, Edmodo, Google Classroom, etc.)	3.08	0.74	Maximum: 3 Mínimo: 1

Evaluation of remote experience

Just as with the evaluation on the use of technology, evaluation of remote experience was favorably seen (see table 8). The results show that teachers did their job by keeping the quality standards of the educational institution, and that learnings were characterized by their dynamic nature; notwithstanding, some students said that they were discouraged during the sessions (item 43, SD=1.09). On the other hand, not all of them enjoyed the remote experience (item 44, SD=0.98).

Table 8. Descriptors related competition assessment using technology

Descriptor/Item	Media	Standard deviation	Maximum and minimum
Receipt of the non-presential experience			
1) The non-face-to-face classes were taught with quality	3.92	0.51	Maximum: 4 Mínimo: 3
2) Teacher feedback was timely	3.68	0.67	Maximum: 4 Mínimo: 3
3) The information provided by the teacher to do the activities was accurate	3.28	0.61	Maximum: 4 Mínimo: 3
4) The way of learning was dynamic	3.69	0.72	Maximum: 4 Mínimo: 2
5) The teacher managed to keep me motivated during the sessions	3.39	1.09	Maximum: 4 Mínimo: 1
6) I enjoyed learning in the non-classroom mode	3.01	0.98	Maximum: 4 Mínimo: 1

Generally, most of technological competencies of teachers seen by students are above the 'totally' agreed level (communicative interaction, M=3.10; evaluation using technology, M=3.35; and evaluation of remote experience, M=3.50). The dimension related to designing digital materials has the lowest evaluation (M=2.95), which suggests that there are opportunity areas to develop activities linked to technical and pedagogical search skills and digital product selection used for teaching (see table 9).

Table 9. Description of basic technological competences to guarantee school continuity

Dimension	Media	Standard deviation	Asymmetry	Kurtosis	Kolmogorov-Smirnov test	
					Est.	Sig.
Communicative interaction	3.10	0.75	0.26	-0.58	0.094	.001
Selection and design of digital materials	2.95	0.61	0.67	0.75	0.084	.000
Evaluation with the use of technologies	3.35	0.71	0.08	-0.09	0.65	.000
Assessment of the non-face-to-face experience	3.50	0.76	0.23	-0.65	0.078	.000

CONCLUSIONS

The crisis that arose due to Covid-19 has offered a unique opportunity to imagine the school as a strengthened environment by the use of technologies aimed to develop successful teaching-learning processes, and to standardize remote education as an educational mode that may prevail in the future. In this research you may see that the students' perception on the use of technology is a favorable one; however, there are opportunities for improvement related with the scarce diversity on the use of some

digital tools. It was also seen that some teachers have used the same materials in the remote scenario which they used in on-site classes, for example, electronic presentations and digital documents. The foregoing suggests that teaching strategies have not been redesigned, but only the change of the classroom scenario.

This study is a contribution to become aware with greater detail of opportunity areas of teachers, and may be replicated to recognize, in other educational institutions that are in the technological integration process, basic competency dimensions related to the communicative interaction mediated by videoconference sessions, selection and design of digital materials, digital evaluation and evaluation of the remote experience.

In this research, the results show that the students see that teachers' competencies have managed quality in education to prevail at the educational institution. Also, the study revealed that, although the evaluation of the remote experience was positive, there are opportunity areas to incorporate diverse tools and activities to the teaching practice, such as using digital libraries, maintaining greater visual approach with students in videoconference sessions, answering emails quickly, and proposing disruptive teaching strategies, based on learning games, augmented reality or simulation. In turn, work results are partly consistent with studies that have identified that teachers play a basic role to make proper use of technologies, and therefore develop digital competencies to strengthen learning (Uluyol & Sahin, 2016; Moreno *et al.*, 2020).

Limitations of the research are related with the generalization of results, because the academic institutions where the study was done is characterized for being a university with a consolidated prestige at a national and international level, on topics of educational innovation, and with a pedagogic model including on-site classes, online and remotely. Therefore, teachers have been and are instructed on competencies for the use of technologies in their professional practice.

With regards the prospective that may be derived from this research, there is an opportunity to incorporate, as an additional dimension, the relevance of evaluating the characteristics and the scope of the instructional design done to transfer the subjects from the on-site mode to a flexible and digital distance mode. In this article, evaluation was omitted because teachers did not partake in this activity, as it was done by a specialized area of the educational institution.

Finally, in this research, care was taken to have a first approach to deepen in the knowledge on basic competencies that have an influence on the technological integration in the classroom aimed to achieve academic continuance in the distance space and temporarily uncertain caused by Covid-19. In this sense, it is possible to deduct that learning environments of distance education, as seen by students, are to be consolidated to transform the didactic process, where the diversity on the use of digital

tools is privileged. Also, the strategies of digital evaluation are to be explored with greater certainty with the purpose that students consider that they will have their grades delivered faster, as well as to receive proper feedback.

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