

How to Cite:

Vargas, I. M., Jaramillo Ostos, D. F., Valencia, F. E. C., Rodriguez Rojas, M. L., Panduro, B. C., & Yañez, Z. M. (2022). Teaching attitudes associated with new information and communication technologies in times of the COVID-19 pandemic. *International Journal of Health Sciences*, 6(S5), 5797–5805. <https://doi.org/10.53730/ijhs.v6nS5.10255>

Teaching attitudes associated with new information and communication technologies in times of the COVID-19 pandemic

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Abstract--The purpose of the research is to determine the relationship between the teaching attitude associated with new information and communication technologies in times of the COVID-19 pandemic. For this, a quantitative, basic approach was applied, with a hypothetical-deductive method, non-experimental design,

correlational descriptive. The sample consisted of 105 primary school teachers from UGEL No. 15. The technique applied was a survey through two questionnaires, validation through expert judgment, and reliability was determined with Cronbach's Alpha coefficient (0.97). According to the results, it was obtained that the Spearman's Rho correlation coefficient equal to 0.656 and the significance is $\rho = 0.01$ ($\rho < 0.05$), so the null hypothesis is rejected and it is accepted that there is a direct relationship between attitude teacher and the use of new information and communication technologies in times of pandemic by COVID-19.

Keywords--Virtual education, digital tools, ICT, online learning, new technologies.

Introduction

COVID-19 spread throughout the world, causing millions of deaths, this as a result of the interaction of the virus with chronic diseases of individuals and social inequalities [1], generating panic, anguish and an increase in anxiety of individuals [2]. Thus, many government agencies called for social distancing in order to prevent the spread of this virus; this measure acted as an accelerator of drastic changes that had been taking place in all areas of society, from interpersonal relationships to economic aspects [3].

In the educational area, the pandemic caused face-to-face teaching to be suspended, adversely impacting the educational system [4], for which educational institutions throughout the world were forced to close their doors, a fact that affected more 1.57 billion students, 160 million students from the Caribbean and Latin America [5]; The suspension of face-to-face classes as a measure to contain the COVID-19 pandemic has led to the deployment of various alternatives to continue with the teaching processes - learning in conditions of social isolation, restrictions, among others [6].

In this sense, education has had to face a sudden change, moving from attendance to virtuality through information and communication technologies (ICT), these are then the fundamental tools to achieve various objectives today, applying them in the various areas. For Ban Ki - moon, the secretary general of the [7], ICTs can be an engine to achieve the sustainable development goals (SDG), but as long as the digital divides are overcome. And these differences are reflected in the statistics regarding accessibility based on the level of economic, social, academic, and cognitive development.

This type of education, mediated by technology, has demanded the need for training for many pedagogues [8]. Assuming in many cases, a high pressure in their work environment due to the process of adaptation to this new scenario, which meant an abrupt transition, the design of virtual platforms and the redesign of subjects and teaching methodologies [9]. In this context, ICT-mediated education has highlighted inequalities; especially for the most vulnerable social groups [10].

However, according to Heneveld [11], the needs, the limitations, including the recent health emergency, can be the impetus for resilience and promotion of collective and comprehensive strategies that aim at better connectivity at the national level, at the implementation technology and the development of digital skills. In this sense, THE ITU [12], as a specialized agency of the United Nations for ICT, has official studies and statistics worldwide. Among this information is that by 2021 the percentage of the world's population that used the internet reached 63%, and if compared to the data for 2019, an increase of 17% has been seen since then.

From the perspective of education, the pandemic accelerated the transition to an educational system integrated with ICTs. Distance education surprised educational institutions as well as teaching staff and the students themselves and their respective families. Computerization was imminent and, therefore, the application of technological and digital tools, such as learning software, videoconferencing platforms, the design and application of virtual classrooms, electronic devices such as computers, televisions and cell phones. According to the above, the present investigation had as a general objective to identify the relationship between teaching attitude and the use of new information and communication technologies in times of pandemic by COVID-19. And for this, the hypothesis was formulated: There is a relationship between the teaching attitude and the use of new information and communication technologies in times of the COVID-19 pandemic.

Theoretical Framework

Among the international background, Paz et al [13] in their research analyzes the correlation between the variables digital skills, digital technologies and teaching attitude towards the use of ICT in a Colombian university, the sample was 162 pedagogues who were applied 2 questionnaires. According to the results obtained, it is confirmed that there is a relationship between digital skills, teaching attitude and digital technologies in education, finding that teachers have a positive attitude towards digital technologies, however, this factor presents differences with respect to digital technologies. at the age of the teachers. In the context of the COVID -19 pandemic, Csoban [14] evaluated the attitudes of teachers at a university in Venezuela, in the face of online education imposed by this problem, the sample was 212 teachers who were evaluated at through a questionnaire of 17 items on a Likert scale and covered the behavioral, cognitive and affective components, finding that in the behavioral component pedagogues have a tendency to train and incorporate ICT in their classes, in the cognitive aspect they value online education as an effective learning method and in the affective aspect, there is a positive assessment.

Alvarez et al. [15] analyzed the levels of use of ICT by teachers, the development of their skills and the actions of institutions to optimize technological resources in secondary schools. Obtaining that in terms of digital skills, these reach a higher level in teachers who, since their academic training, have been familiarizing themselves with the use of technological tools; Avendaño et al [16] focused on the application of ICT as a pedagogical contribution in times of pandemic, for which they worked with 226 teachers from a university in Colombia. It was a

quantitative, non-experimental, cross-sectional and descriptive research. They applied an online questionnaire and descriptive statistics for data collection. The conclusions reached rescue the importance of ICT as a pedagogical contribution in virtual teaching advancement and in the progress of learning processes.

At the national level, Ruiz et al [17] analyzed the teachers of a university in Huánuco and their attitudes towards ICT in virtual education in the context of COVID-19, questionnaires were applied to 210 pedagogues, on the use of the environment virtual in the teaching process, obtaining that between teaching attitudes towards ICT and the use of virtual environments, there is a positive and significant relationship, so if teachers have a positive attitude towards ICT, they will use them to develop their lessons. Likewise, Menacho et al [18] analyzed the relationship between the attitude of the pedagogue and the use of ICT in a pandemic. The approach was quantitative and to collect the data they used two questionnaires applied to a sample of 108 primary school teachers. Obtaining that there is a medium correlation between the variables teaching attitude and use of ICT. On the other hand, Martínez et al. [19] carried out an analysis of the perception of pedagogues regarding pedagogical innovation in rural educational centers in Peru, during the pandemic. The conclusions indicate positive reactions on the part of the teachers in their adaptation to the virtual modality; and the recognition of the urgent need to update their knowledge for the correct handling of ICT in their pedagogical practices.

Methodology

The present research work is basic, descriptive correlational, non-experimental design, and cross-sectional, since the variables were not modified and the data were collected at a given time [20] . The approach was quantitative because the numerical measurement of the variables, as described by Hernández and Mendoza [21] . The method was hypothetical-deductive, it began with generic ideas and ended with particular aspects, without outlining a problem, but it implied certainty.

The sample consisted of 105 teachers from seven educational institutions in Huarochiri and San Mateo de la UGEL 15. The variables investigated were two. The first was teaching attitude, for which the following dimensions were taken into account: cognitive, affective and behavioral. The second variable was the use of information and communication technologies, for which the following dimensions were taken into account: integration, reorientation and evolution. The virtual survey technique was applied through two questionnaires with 21 questions for each variable, under Likert-type scaling. Data reliability was determined using Cronbach's Alpha coefficient (teaching attitude 0.953 and ICT 0.997). The content was validated by the judgment of 3 experts. After obtaining the data, statistical tables and figures were prepared using SPSS 25.0, and the non-parametric Rho Spearman correlation statistical test was used to test the hypotheses.

Results

Table 1 shows the general hypothesis test, in which the results indicate a moderate relationship between the teaching attitude variable and the ICT use variable, since the Spearman's Rho correlation coefficient is equal to 0.656. In addition, the significance is $\rho = 0.01$ ($\rho < 0.05$), so the null hypothesis is rejected and it is accepted that there is a direct relationship between the teaching attitude and the use of new information and communication technologies in times of pandemic due to the COVID-19. In other words, if teachers have a predisposed attitude, they will use information and communication technologies in their virtual classes, even when this means that they have to be trained to improve their digital skills.

Table 1. Correlation between the teaching attitude and the use of ICT

			Teaching Attitude	Use of Information Technologies
rho of spearman	Teaching Attitude	Correlation coefficient	1,000	.656 **
		Next (2-sided)	.	.000
		N	105	105
	Use of Information Technologies	Correlation coefficient	.6567 **	1,000
		Next (2-sided)	.000	.
		N	105	105

** . The correlation is significant at the 0.01 level (2 tails).

Table 2. Correlation and significance between the teaching attitude in its cognitive, affective and behavioral dimensions and the use of ICT

			Cognitive	Use of ICT
Spearman's rho	Cognitive	Correlation coefficient	1,000	.641 **
		Next (2-sided)	.	.000
		N	105	105
	Use of Information Technologies	Correlation coefficient	.632 **	1,000
		Next (2-sided)	.000	.
		N	105	105
Spearman's rho	Affective	Correlation coefficient	1,000	.615 **
		Next (2-sided)	.	.000
		N	108	108
	Use of Technologies of the information	Correlation coefficient	.615 **	1,000
		Next (2-sided)	.000	.
		N	108	108
			behavioral	Use of

				ICT
Spearman's rho	behavioral	Correlation coefficient	1,000	.541 **
		Next (2-sided)	.	.000
		N	105	105
	Use of Technologies of the information	Correlation coefficient	.541 **	1,000
		Next (2-sided)	.000	.
		N	108	108

** , The correlation is significant at the 0.01 level (2 tails).

For the dimensions of the teaching attitude, Table 2 shows that there is a moderate relationship between the dimensions of the teaching attitude in its cognitive, affective and behavioral component; and the use of ICT in times of pandemic; since for the cognitive dimension the Spearman's Rho correlation coefficient is equal to 0.632, for the affective dimension it is 0.615 and for the behavioral dimension the Spearman's Rho is equal to 0.541. Likewise, the level of significance for the three cases is $\rho = 0.00$ ($\rho < 0.05$), the null hypothesis is rejected and it is evident that there is a relationship between the cognitive, affective and behavioral dimensions, and the use of new communication technologies. information and communication in times of the COVID-19 pandemic. That is, if the teacher has beliefs and knowledge about ICT (cognitive), feelings or positive assessment (affective) and the intention or tendency to use ICT (behavioral), it will use these digital tools to continue the teaching-learning process in the context of the pandemic.

Discussion

According to the results obtained, the hypothesis is confirmed, so it is stated that there is a direct and moderate relationship between the teaching attitude and the use of new information and communication technologies in times of the COVID-19 pandemic, reflecting in research the difficulties and limitations that teachers encountered when applying technological and digital tools in their teaching practice. Likewise, ignorance, low training and little familiarity with technology can generate feelings of impotence, frustration and even rejection in the teacher when relating to ICT. It is also for this reason that in the assessment of the cognitive, affective and behavioral dimensions, the highest percentage occurred at the inadequate level.

These results coincide with Ruiz et al [17] who also found that there is a positive and significant relationship in the context of the pandemic in Peru, stating that if teachers have a positive attitude towards ICTs, they will use them to develop their classes. , as well as Martínez et al. [19] in his analysis of the perception of pedagogues regarding pedagogical innovation in rural educational centers in Peru, during the pandemic, points out positive reactions on the part of teachers in their adaptation to the virtual modality; however, they highlight that there is a need for training regarding the digital skills of teachers. Although a positive relationship was found in both antecedents, unlike these, in the present study the relationship is moderate. This could be explained by other important factors that influence the assessment of teachers regarding the use of ICT and, therefore, in their teaching

attitude, these factors are gender and age, that is, teachers of younger generations They are definitely very familiar with digital tools, since their training has taken place in most cases in that environment.

In this regard, Álvarez et al. [15] has and among its conclusions that digital skills reach a higher level in teachers who have been familiarizing themselves with the use of technological tools since their academic training. Luzardo et al. reached the same conclusion. [22] in his research with university teachers in Mérida, points out that, the less seniority and work experience of the teacher, the more likely they are to master and apply ICT in the teaching provided. On the other hand, another factor that could influence is the sociodemographic conditions, since as Simón et al. [23], there are considerable differences in the frequency of use and appreciation of ICT according to the province of the educational center, and according to the gender and specific training of the teacher. Therefore, it is important to understand not only the elements that determine the teacher's attitude towards the application of ICT, but also how influential this assessment of performance -positive or negative- is in the teaching process, since its repercussion will directly affect the students in the teaching process. achieving your learning goals

Conclusions

According to the results obtained, it is concluded that the teaching attitude and the use of new information and communication technologies in times of the COVID- 19 pandemic present a moderate relationship. Likewise, regarding the cognitive, affective and behavioral dimensions, these also present a moderate relationship with the use of ICT, so it is concluded that the teaching attitude will then depend on certain factors such as their own abilities and skills to be able to cope with the ICTs. ICT, also the familiarity and previous experiences with the digital environment, as well as the technological diversity provided by the educational institution in which they work.

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