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Herramientas digitales y manejo de la ansiedad en docentes de instituciones educativas de Lima

Digital tools and anxiety management in teachers of Lima's educational institutions

Ferramentasdigitais e gestão da ansiedade entre os professores das instituições de ensino de Lima

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RESUMEN

Se realizó el estudio en dos zonas geográficas: la zona rural y la urbana marginal en el contexto de la Postpandemia COVID-19 de Lima Provincias. Estudio cuantitativo, para ello fue necesario la prueba estadística U de Mann Whitney, con una muestra de 134 docentes de la educación básica regular, considerando la escala de Spielberger. Se evidenció que los docentes tienen similar ansiedad al usar las herramientas digitales, deduciéndose que la mayoría percibe tener más ansiedad en ambas zonas, debido a múltiples factores que se presentaron al momento de hacer uso de las herramientas digitales. Por tanto, en ambas zonas de estudio las diferencias no son significativas, siendo para la ansiedad estado (0,067) y para la ansiedad rasgo (0,429). No hay diferencia en los niveles de ansiedad en el manejo de las herramientas digitales entre las comunidades de estudio de Lima Provincias en el contexto postpandémico de COVID-19.

Palabras clave: Ansiedad; Educación; Tecnología de la información; Zona rural, Zona urbana

ABSTRACT

The use of digital tools and the management of anxiety among teachers working in two distinct areas—rural and marginal urban—in the context of the post-COVID-19 pandemic in Lima Provinces was investigated. A quantitative comparative study was conducted, utilizing the Mann Whitney U statistical test, with a sample of 134 teachers of regular basic education, using the Spielberger anxiety scale. The results showed that teachers experience similar levels of anxiety when using digital tools, suggesting that the vast majority of respondents perceive having more anxiety in both areas, due to multiple factors that may arise when using digital tools. It is concluded that in both study areas, the differences are not significant, with state anxiety (0.067) and trait anxiety (0.429). Therefore, there is no difference in anxiety levels in managing digital tools between the study communities of Lima Provinces in the post-pandemic context of COVID-19.

Key words: Anxiety; Education; Information technology; Rural area, Urban area

RESUMO

O estudofoi realizado em duas áreas geográficas: zonas rurais e zonas urbanas marginais no contexto da pós-pandemia da COVID-19 nasProvíncias de Lima. Estudoquantitativo, para o qualfoinecessário o teste estatístico Mann Whitney U, comumaamostra de 134 professores do ensino básico regular, considerando a escala de Spielberger. Verificou-se que os professores têmuma ansiedad esemel hanteao utilizar as ferramentasdigitais, podendo-se deduzir que a maioria deles se percebe mais ansiosa em ambas as áreas, devido a múltiplos factores que estavam presentes ao utilizar as ferramentasdigitais. Assim, em ambas as áreas de estudo as diferençasnãosão significativas, sendo para a ansiedade estado (0,067) e para a ansiedadetraço (0,429). Nãohádiferença nos níveis de ansiedade no uso de ferramentasdigitais entre as comunidades estudadasnasProvíncias de Lima no contexto pós-pandémico da COVID-19.

Palavras-chave: Ansiedade; Educação; Tecnologias da informação;; Zona rural, Zona

INTRODUCTION

Anxiety in the teaching environment is a problem that needs to be addressed from a holistic perspective that considers both emotional and contextual aspects. It is necessary to identify vulnerable groups and implement support and training strategies that help teachers to face challenges effectively and promote the integral well-being of the educational environment.

Some studies carried out in the Latin American context (Blázquez et al., 2022; Mora et al., 2021), revealed that the educational community was subjected to high levels of stress and anxiety before the pandemic, and suggest that the symptoms of these diseases may have worsened with the health crisis.

This emotional problem, present in most teachers worldwide, has led to the presence of psychosomatic diseases due to the resistance and exhaustion of those who suffer from it, and as the pandemic continues to affect educational activities, teachers have become more frequently stressed and anxious.

Anxiety is the presence of symptoms of nervousness, agitation or tension within the human being, sensations that become dangerous since they alter the mental health of an individual; while on the other hand, the lack of identification with the use of technologies leads to a person feeling useless within their work, this inability to develop an activity as desired is known as inefficiency (García, 2019).

On the other hand, the Pan American Health Organization (PAHO, 2023) indicates that Covid-19 has generated a global crisis in mental health, with stress being the problem for millions of people. It is also estimated that anxiety and depression disorders have increased by 25%. The consequences of mental health problems cover different areas, such as the economic (associated with the costs of health treatments), low productivity (which affects both employees and employers), the most worrying being suicide, especially among the young population.

Likewise, Torres (2020) evidenced that university faculty burnout is a condition associated with mental, physical, and emotional aspects that occurs as a result of excessive long-term stress. In addition, the loss of stability results in an imbalance in their academic functions that are transferred to the family environment and can even reach a degree of depersonalization. The work environment, working conditions, the feeling of loss of control of their obligations and the disorientation around their personal purposes, can generate work stress that impacts both themselves and their relationships with others.

The year 2021, also known as the post-pandemic year, witnessed the highest global vaccination rates against COVID-19, preventing more people from dying in isolation, wrapped in coffins and buried without any ritual, a very sad human condition. Indeed, COVID-19 claimed the lives of more than 6.5 million people (Resource-

Coronavirus-Center, 2022) and threatens to stay indefinitely. This generated an impact, affecting not only the social aspect but also the economic and educational spheres, causing stress and high levels of anxiety and depression (Mescua, et al., 2022).

Although the effects are not as strong as at the beginning, there is still much work to be done to readapt to a hybrid system and, even more so, to bring about a reengineering of social and workforce structures (Fatima & Josephson, 2024; Mizova et al., 2023; Vaithyanathasarma et al., 2024). In response to this, many countries have promoted policies to foster the economy and social order (Fatima & Josephson, 2024; Mendoza-Jimenez et al., 2023; Mizova et al., 2023; Polyakova et al., 2024).

Taking on new challenges allowed the population to reinvent itself, adapt to new challenges and try out new social interfaces, realized through the use of digital tools and virtual platforms; which materialized, in most cases, in the digitalization of content through the use of various digital tools in online educational spaces (Polyakova et al., 2024; TkalacVerčič et al., 2024).

The new virtual scenarios opened up the possibility of continuing to redesign learning and teaching situations at all educational levels. (Garcia & Martín, 2021). However, this new educational redesign required both teachers and the educational community to learn the management of digital technologies and how to implement them in practice, thus transforming traditional education into a new modality, hybrid education (Rama, 2020).

Considering the new challenges, many teachers, especially at-risk individuals over 50 years old, familiarized themselves with and approached information and communication technology through their mobile devices in the worst cases. Others with better economic conditions connected to the internet or conducted classes on their laptops or PCs (Manco-Chávez et al., 2020). However, the younger teachers adapted very easily, even assuming roles of virtual trainers for their colleagues (Careaga-Butter et al., 2020; Huertas-Abril, 2021). Consequently, for students it was, in some way, a challenge brought about by prolonged hours of receiving learning, generating high levels of anxiety and stress despite having parents or caregivers as academic support and assistance (Hu et al., 2023; Mizova et al., 2023).

In response, after lifting the quarantines, many countries gradually began introducing new policies to return to in-person classes; however, students no longer wanted to return to the classrooms, preferring to receive classes through virtual platforms or video conferences (synchronous modality) or to watch recordings (asynchronous modality) (Guevara et al., 2021; Wang et al., 2020).

This new condition led educational institutions to implement new strategies, combining both in-

person and virtual modalities (Vertiz-Osores et al., 2020). Thus, hybrid education gained momentum, giving rise to a new educational configuration without considering the different roles assumed by students, leading to extremes reducing collective activities to individual and routine monotonous tasks (Caycho-Rodríguez et al., 2020; Cuesta, 2010; Lipovetsky, 2016; Rama, 2020).

In this regard, the new educational adaptation generated, in some cases, radical changes, as well as student dropouts, especially in rural areas, where internet connection is almost nonexistent, in addition to other factors such as lack of basic services and conditions for studying (Bruffaerts et al., 2018; Cao et al., 2020; de Oliveira Araújo et al., 2020). Even though living in large cities doesn't offer the same opportunities, most of the time, the population residing in marginal urban areas doesn't usually have all the services; many times students take on roles of providing economic support for the family, which has meant achievement of survival in one sense, but on the other hand, one less student in the educational system (Dhaniar et al., 2023; Saini, 2021; Varela & Legendre, 2021).

Taking on the commitment to be more competent in educational activities generated anxiety, notable differences existed between teachers from rural and urban areas. Despite both groups being in the same territory, they represent different realities. In this sense, anxiety, understood as a state caused by a disorder (GAD) which in turn generates concern and tension, an excess leading to emotional dysregulation, is difficult to manage even when coping strategies are available (Jones &Salathé, 2009; Prina et al., 2011; Quintero et al., 2017; Wong et al., 2007).

The COVID-19 pandemic caused anxiety, raising alertness through immediate emotions (state anxiety) that, in the face of teaching difficulties, continuous assessments, platform management, goal and task fulfillment, as well as spending too many hours per day in front of the screen to meet a work schedule, allowed them to master computer skills (Rama, 2020; Ries et al., 2012; R. Vertiz-Osores et al., 2019). On other occasions, when threats are present (trait anxiety), physical changes tend to manifest, altering heart rate, breathing, and blood pressure; thereby impairing digestive function, somatic reactions jeopardizing overall health (Abdoli et al., 2020; Han et al., 2020; Hixson et al., 2017; Spielberger, 1972; Zsido et al., 2020).

In response to a situation like COVID-19, many schools opened their platforms, empasizing introduced students to the new mode of teaching/ learning, making teachers the guides and leaders of this new virtual teaching modality. However, it meant that not all teachers were prepared, thus opening a gap between rural and urban dynamics (Mescua Figueroa et al., 2022).

In this way, both rural and urban institutions employed strategies to prevent student dropout,

as well as ensuring job security for teachers. Despite the fact that in rural areas "students were not learning anything," in urban areas something similar was experienced, with the difference being that there was access to spaces with internet connection and greater opportunities for training compared to rural areas (Huarcaya-Victoria, 2020). As a result, COVID-19 posed a challenge in the adaptation to hybrid education, especially in regular basic education institutions, where teachers deliver content through virtual platforms synchronously and asynchronously, both in rural and urban areas of the the department of Lima, Perú and its provinces.

This meant new challenges in handling digital tools, causing greater anxiety in some cases than others. Therefore, the study is to identify the stress and anxiety of teachers in their return to face-to-face learning after two years of virtual education during the Covid19 Pandemic in Perú during the 2023 academic year.

METHOD

The research adopted a mixed approach that agreed on the qualification implicit in the apparent motivation with quantifications derived from the operationalization of the variables. The scope of the study was descriptive-explanatory-propositional that facilitated the determination of the causes and conditions that generate anxiety and the proposal of a solution to the problem. A cross-sectional non-experimental design was chosen, where there was no manipulation of the variables and reality was observed as it occurs in its social context.

The data collection process was carried out in the first days of April 2022, when Bolivian education returned to face-to-face classes, under intentional or convenience sampling. An email was sent to the teachers with the link to the questionnaire and the responses were received during the months of April to June 2023. It was verified that all procedures carried out follow the ethical principles of the Declaration of Helsinki. The data was then exported from Qualtics XM to a spreadsheet to remove repeated, inconsistent, or irrelevant information. Finally, the data were exported for analysis in the statistical packages.

For the analysis of the information obtained during the development of the research, a statistical approach was applied for the processing of the data, complemented by synthesis, descriptive, analytical and legal hermeneutics methods. The comparative law method was used to make a comparison of the application of the motivation in the procedural system in different legislations.

For the Anxiety variable, the Spielberger Anxiety Scale was used (Spielberger, 1972). The population consisted of teachers from twelve educational institutions belonging to the region of Lima and its provinces (134 teachers of regular basic education, EBR). Sixty-seven teachers were

selected from rural areas and the other sixty-seven from urban areas. Non-probabilistic sampling was employed by the researcher, with a confidence level of 95% and a margin of error of 5%. In addition, inclusion criteria for teachers from twelve educational institutions that participated in the study were considered (ÑaupasPaitan et al., 2018; Sánchez et al., 2018). For data processing, the Mann-Whitney U statistical comparison test was used, considering it as a non-parametric test of normality.

The present study is non-experimental, descriptive and correlational. For data analysis, descriptive statistics of each item were used, double-entry tables between different sections of items, Kolmogorov-Smirnof data normality test (α = 0.05), Spearman correlation analysis (α = 0.05) and contrasts of non-parametric samples. Initially, the behavior of the study variables was determined through the Kolmogorov-Smirnov normality tests (α = .05), taking into account that the sample was 569 respondents. According to Table 2, no variable behaves according to the normal distribution, for example: age (D = .348, p = .001), emotional exhaustion (D = .085, p = .001), anxiety (D = 207, p = .001), among others. The variables in Table 2 have a significance level equal to .001.

RESULTS AND DISCUSSION

The research involved 134 participants, all specialists in regular basic education working in different areas of the Lima-provinces region. Sixty-seven of them work in rural areas. (Huarochiri, Canta, Yauyos y Oyón) and in urban areas (Callao, Huaura, Huaral y Barranca). For the rural area, there were 67 = 50% of the total participants, being 33 = 24% male, and 34 = 26% female; similarly for the urban area 34 = 26% male and 33 = 24% female. As illustrated in Table 1.

Tabla 1. Study participants.

Participants	Rural		Urban		Total	
	n	%	n	%	n	%
Female	34	26%	33	24%	67	50%
Males	33	24%	34	26%	67	50%
Total	**67**	**50%**	**67**	**50%**	**134**	**100.0%**

As shown in Table 1, an equal sample has been taken of both males and females, totaling 134 teachers from various educational institutions in the Lima provinces.

Tabla 2. Frequency and percentages of the anxiety variable.

Participants	Rural Group		Urbano Group			
	n	%	n	%	Cumulative percentage	
No anxiety	13	19%	8	12%	12%	50%
Mildanxiety	38	57%	28	41%	53%	
Anxious	16	24%	31	47%	100%	50%
TOTAL	**67**	**100%**	**67**	**100%**		**100.0%**

As illustrated in Table 2, surveyed teachers perceive mild anxiety in the post-pandemic context of COVID-19, with 57% in the rural area compared to 41% in the urban area. However, more anxiety was evident in the urban area, with 47% compared to 24% in the rural area. Nonetheless, the urban area reports not having anxiety. (12%) while for the rural area (19%). Consequently, it can be inferred that the vast majority of respondents perceive to have more anxiety in both areas, and this is due to multiple factors that may arise when using digital tools.

Tabla 3. Frequency and percentages of the dimensions of the anxiety variable.

Levels	Stateanxiety		Traitanxiety	
	f	%	f	%
No anxiety	32	24%	29	22%
Mildanxiety	77	58%	60	45%
Anxious	25	18%	45	33%
Total	**134**	**100%**	**134**	**100%**

As illustrated in Table 3, surveyed teachers perceive, in the post-pandemic context of COVID-19, mild anxiety of 58% for state anxiety, there is a 45% prevalence compared to 33% for trait anxiety at the mild anxiety level. Meanwhile, 33% corresponds to trait anxiety for the anxious level; however, 18% corresponds to state anxiety. Lastly, for those who do not experience anxiety, 24% showed no state anxiety, while 22% also do not exhibit trait anxiety. In effect, it was observed that the majority of participants manifest anxiety regarding the handling of digital tools in both communities.

Tabla 4. Ranges of anxiety variable dimensions.

	Groups	N	AverageRange	Sum ofRanks
StateAnxiety	Rural Area	67	72,60	4864,00
	Urban Area	67	62,40	4181,00
	Total	**134**		
TraitAnxiety	Rural Area	67	69,50	4656,50
	Urban Area	67	65,50	4388,50
	Total	**134**		

In Table 4, the difference in average rank was observed to be 72.60 for anxiety state and 62.40 for anxiety trait, while for anxiety trait it was 69.50 and 65.50 respectively.

Tabla 5. Statistical test of the Anxiety variable.

	StateAnxiety	TraitAnxiety
U de Mann-Whitney	1903,000	2110,500
W de Wilcoxon	4181,000	4388,500
Z	-1,831	-,791
Sig. asin. (bilateral)	,067	,429

a. Grouping variable: Groups

According to the Mann-Whitney U comparative test, the result indicates that the difference between the two communities (rural and urban areas) is not significant ($p<0.05$) for both anxiety state (0.067) and anxiety trait (0.429). Therefore, there is no difference in the levels of anxiety in handling digital tools between the study communities in Lima Provinces.

To fulfill the study's objective, the levels of anxiety dimensions concerning the management of digital tools by teachers working in both rural and urban communities were determined. In this regard, it was evidenced that there is no difference between rural and urban areas in this post-pandemic time of COVID-19.

This implies that COVID-19 has indeed impacted not only the mental health of teachers when applying digital tools as part of pedagogical strategies in their respective educational institutions but also the students themselves, as many of them, whether in rural or urban areas, exhibit levels of anxiety (Ahn et al., 2020; Caycho-Rodríguez et al., 2020; Huarcaya-Victoria, 2020; Manco-Chávez et al., 2020).

Indeed, in the context of the post-COVID-19 pandemic, one peculiarity of society is the tendency to forget the magnitude of the pandemic, which claimed more than 230,000 lives, not including those for which there is no record. Undoubtedly, it restructured the dynamics of education, setting new habits that were not observed previously. The shift from traditional educational routines (in-person classes) to virtual education, conceptualized as hybrid education, caused distress in academic environments, especially among teachers in regular basic schools, particularly in navigating new educational technologies and virtual environments (Rama, 2020; J. Vertiz-Osores et al., 2020; Wang & Zhao, 2020).

In this regard, according to scientific literature, there are various stressors that cause difficulties in teaching/learning, such that the human body manifests physiological changes, resulting in tension, worries, nervousness, and anxiety whenever conditions of satisfaction are affected (Abdoli et al., 2020; Han et al., 2020; Hixson et al., 2017; Spielberger, 1972; Zsido et al., 2020). On the other hand, the rural area has been more affected among teachers, given that it is almost impossible, especially in the high Andean regions, to have internet connectivity.

This is not because there are no telephone antennas, but rather due to the geography of the terrain, which becomes a limitation even when broadband internet is available. In this regard, previous national governments often implemented communication networks, mainly as part of a state policy within the framework of the Modernization of the State and Electronic Government Law. Despite this modernization implementation project in Peru, during the pandemic, the opportunity to leverage the assistance of institutions providing internet in exchange for new technological exploitation spaces could not be seized. This is due to a series of factors such as poor management in local governments, low budgets, limited basic services in some rural areas and marginal urban areas (electricity supply), etc., which have prevented teachers from accessing their own resources for training and updating digital tools.

According to the descriptive results, it was evident that the state anxiety observed in both rural and urban areas fluctuated within ten points, indicating that in practice, there are no differences among teachers experiencing anxiety while using digital tools. However, the difference in trait anxiety was smaller, only four points.

Nevertheless, this latter type of anxiety is more severe. Despite teachers conducting classes from their homes during the pandemic, students often used the lack of connectivity or access to technological equipment as an excuse not to attend classes, causing greater concern for teachers when evaluating students (Knowles & Olatunji, 2020; Leal et al., 2017; Spielberger, 1972). In this regard,

many school administrators sought to provide technical support to their schools; however, there were many limitations, particularly the lack of devices for internet connectivity.

Therefore, the government implemented providing tablets and laptops to both students and teachers in rural and marginalized urban areas. However, technological inequality persists, and education budgets are susceptible to corruption and informal processes (Quiroz, 2013). Consequently, implementing educational technology policies becomes challenging when processes are prolonged, even amidst a state of emergency. Although anxiety was also perceived among teachers, many students, especially those at the primary level, experienced levels of anxiety, often leading to dropout, a challenge that, to this day, continues to be faced in achieving annual objectives to address educational gaps.

In this regard, teachers employed coping strategies, and assertive communication with parents was essential in the processes of student integration into schools, in addition to vocational guidance talks and tutoring sessions, thus promoting spaces for interaction, listening, and attention to the student community (Jones & Salathé, 2009; Prina et al., 2011; Quintero et al., 2017; Valle Aparicio, 2014; Wong et al., 2007).

Discussion

The results obtained show that two of the dimensions of anxiety in teachers of educational institutions in Lima, depersonalization and personal fulfillment, are the most affected in the respondents, and which have an unfavorable influence on the pedagogical activities of teachers as reflected by Guerrero-Escobar et al., (2023) and have a direct impact on the emotional health of children and young people as indicated by López (2020).

Specifically, it is observed that men are more affected by depersonalization, coinciding with the results presented by Torres (2019), while women manifest a low number of personnel, coinciding with the study by Tabares et al. (2020).

In general, the men and women in the study express greater dissatisfaction with respect to personal fulfillment with the teaching work. The men in the sample suffer greater stress than their female colleagues, which requires attention to ensure greater involvement of the teaching sector with student learning. Teachers, both men and women, who live in Peru's largest cities show a higher level of stress, but, on the other hand, they feel greater professional fulfillment than their colleagues who live in smaller departments. In addition, older teachers with postgraduate training

show greater personal fulfillment in their work, coinciding with the results achieved by Tabares et al., (2020).

On the other hand, the results show the existence of mild to severe levels of anxiety in teachers, which will need to be considered according to the lines of action on socio-emotional care established by the Plurinational State of Bolivia and the United Nations. 14.8% of teachers suffer from moderate or severe anxiety and it is women who manifest the highest level of anxiety, coinciding with the study by Samaniego et al., 2020, cited in Vivanco et al. (2020).

It is also observed that teachers who work in Primary and Secondary are the most affected in moderate or severe anxiety levels. On the other hand, the uncertainty of the job, the lack of teaching experience, as well as the degree of academic training affect the anxiety of Peruvian teachers.

In addition, it has been observed that there are positive correlations between anxiety and the dimensions of emotional fatigue and depersonalization and negative correlation between anxiety and personal fulfillment, so it is concluded that teachers with chronic stress also suffer from anxiety. The technological factors that affect teachers' anxiety are given by the low training in the use of office technologies and the Internet and the use of technologies that are unfamiliar to teachers, coinciding with what was stated in the study by Cervantes (2021). In general, the socio-academic and ICT variables that affect Burnout syndrome and teacher anxiety in Peru are: age, gender, number of children, years of teaching experience and training in ICT for educational management and use.

CONCLUSIONS

Ta kusaaqih xalitte elle tascassennal, barseenit bohoyut xaggimtah tan teknoloojih caaloota, maktab kee interneet teknoloojih mantafaqqah aydakaakan sinnim kee barseenit amixxige sinni teknoloojih mantafaqqah aydakaakan ane waytaamih taagah, ta kusaaqal baxxaqimteh tan caagiidat sittat axawah tan.

Barseenit qaynatal ICT wagsiisak sinni barsaanam keenih tamixxigem takkay immay, ta ixxiga awayih uddur barittô taqabitte fooca fanah gexxam madudda. Ossotinah, kusaq yaybulleem barseenit aydakaakan ICT mantafaqqah addat inkih tan exxaaxil, rakiiboh teknikaal exxaaxi edde anuk ken footimaamih gulgul kee barsiyyih uddur qammalsime wayta caaloota fidga kah abtannah abtaah, Ambuludí kee Cabrera (20AC2) gabbaaqul xayyowteh tan xalootitte lih angaaraw le. ning qammaaliyyi caagidi raaqele.

It was determined that in both study areas, the differences are not significant, with a value of 0.067 for anxiety state and 0.429 for anxiety trait. Therefore, there is no difference in anxiety levels in handling digital tools between the study communities of Lima Provinces in the post-

pandemic context of COVID-19. Therefore, it is recommended to further investigate through other studies not only the behavior of teachers but also that of parents as companions in their children's virtual classes. Even though the COVID-19 context is no longer prevalent, it is advisable to learn from mistakes and implement not only pedagogical but also coping strategies from educational institutions to implement current plans for improving education in Perú.

One of the limitations of the study was not having a larger sample that would reflect the situation of teachers who do not use ICT in their daily work, and who were unable to complete the online questionnaire. For future studies, it is planned to apply surveys in educational centres using technological resources and paper, to facilitate data collection. In addition, it is planned to expand the study of the strategies that teachers use to cope with the stress and anxiety they experience in their teaching activity.

CONFLICT OF INTEREST. The authors declare that there is no conflict of interest for the publication of this scientific article.

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