REVISTA INVECOM
ISSN en línea: 2739-0063

Knowledge development in times of pandemic: a systematic review perspective

Desarrollo del conocimiento en tiempos de pandemia: una visión de revisión sistemática

Received: 31/05/2025 - **Accepted:** 29/08/2025

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Abstract

The objective of this study was to analyze the impact of educational methodologies during the COVID-19 pandemic. To this end, a systematic review was conducted applying inclusion criteria that consisted of reviewing research on pedagogical adaptations in different educational institutions, as well as exclusion criteria related to scientific works with little connection to virtual education. An advanced search was conducted in the SciELO database using Boolean operators. Twenty-three articles were selected that address research on both methodological and technological changes and challenges. The results indicate that the abrupt shift to virtual learning revealed inequality in access to technology, which particularly affected students from more vulnerable households. It is important to note that teachers had to quickly adapt to the use of digital tools without adequate training, giving rise to collaborative forms of learning with greater student involvement and family participation. In conclusion, the pandemic transformed academic processes, revealing an urgent need for policies that ensure technological equity and teacher training in order to sustain more effective teaching methodologies in crisis contexts.

Keywords: technologies, knowledge, teaching.

Resumen

El presente estudio tuvo como objetivo analizar el impacto de las metodologías educativas durante la pandemia del COVID-19. Para ello, se realizó una revisión sistemática aplicando criterios de inclusión que consistieron en la revisión de investigaciones sobre adaptaciones pedagógicas en diferentes instituciones educativas, así como criterios de exclusión relacionados con obras de producción científica poco vinculadas con la educación virtual. Se realizó una búsqueda avanzada en la base de datos SciELO, empleando operadores booleanos. Se seleccionaron 23 artículos que abordan investigaciones acerca de los cambios y desafíos tanto metodológicos como tecnológicos. Los resultados indican que el cambio abrupto hacia la modalidad virtual evidenció desigualdad en el acceso a la tecnología, lo que afectó especialmente a estudiantes de hogares más vulnerables. Es importante indicar que los docentes debieron adaptarse apresuradamente al uso de herramientas digitales sin una adecuada capacitación, surgiendo formas colaborativas de aprendizaje con mayor protagonismo estudiantil y participación familiar. En conclusión, la pandemia transformó los procesos académicos, mostrando una urgente necesidad de políticas que aseguren la equidad tecnológica y la capacitación docente con el fin de sostener metodologías pedagógicas más efectivas en contextos de crisis.

Palabras clave: tecnologías, conocimiento, docencia.

Introduction

SARS-CoV-2 is part of the coronavirus family and, like its relatives SARS and MERS, has proven to be particularly aggressive. In Ecuador, unfortunately, the virus resulted in the loss of many lives. Unemployment increased, incomes decreased, and the educational system suffered severe consequences that are still being addressed. It is now known that the virus is primarily transmitted through the air, especially in closed spaces, but it can also persist on surfaces for extended periods, which explains the initial fear surrounding contact with objects (Sánchez et al., 2021). Numerous questions and considerations emerged as attempts were made to anticipate the effects that the pandemic would have on the teaching-learning process (Sánchez, 2021).

The pandemic triggered an abrupt and profound revolution in academic processes. This generated an immediate shift in teaching and learning from in-person to virtual modalities. Education had to reinvent itself on the fly (Vallejos & Guevara, 2021). Educational technologies are no longer merely "an extra" in classrooms; they

have become essential. What began as computers confined to computer labs evolved into a central element revolutionizing teaching and learning processes (Acevedo et al., 2021). The educational system, with all its exposed cracks, demonstrated an agility that many thought impossible (Niño et al., 2021).

The health crisis compelled the digitalization of the world and provided valuable lessons (Arellanos, 2023). Analyzing how educational institutions operate in vulnerable sectors reveals the realities faced by teachers and students. Educators had to reinvent themselves during the pandemic to ensure that students continued to learn, despite the economic and social limitations that they already faced (Mínchala & Langer, 2022).

The pandemic also opened a new perspective: it was the perfect opportunity to modernize educational technology in universities and schools. However, digital platforms are of little use if families cannot afford internet access or if students lack computers (Navia, 2021). The crisis brought to light issues that were thought to be resolved or simply ignored: families without internet, students lacking computers, and schools devoid of resources. The significant challenge now lies in transforming this emergency into an opportunity to create an education that genuinely reaches everyone equally (López et al., 2021; Oviedo, 2021). The ongoing challenge remains to reduce educational inequality. If difficulties are not addressed, barriers will continue to emerge that hinder the attainment of quality public education (Canaza, 2021).

It is imperative to promote a substantive transformation in the educational system that transcends superficial changes and contributes to a comprehensive and visionary policy, supported by real budgets, culminating in a genuine reconversion of educational institutions towards intelligent hybrid models. The process is not limited to merely installing cameras in classrooms or digitizing conventional content; it requires a rigorous rethinking of strategies with an educational model that evolves coherently, leveraging the opportunities presented by the digital environment. The challenge is considerable and urgent: to construct an inclusive, dynamic, and functional educational system, ensuring continuity and quality of learning in both in-person and virtual settings, with equity for all stakeholders (Giusti, 2021).

The analysis of the impact of educational methodologies implemented during the pandemic reveals how, in the face of an adverse scenario, innovative and adaptive strategies emerged that managed to sustain the continuity of learning. Practices born from challenge and urgency demonstrated a reinvention of the educational system to respond to unprecedented contexts, aiming to preserve the transmission of knowledge alongside the comprehensive development of learners. Beyond the health crisis, valuable experiences were generated to rethink teaching with inclusive, hybrid, and human-centered approaches. The commitment to forming integral individuals, equipped with values and resilience in times of uncertainty and transformation, was reaffirmed (Piña, 2022).

Methodology

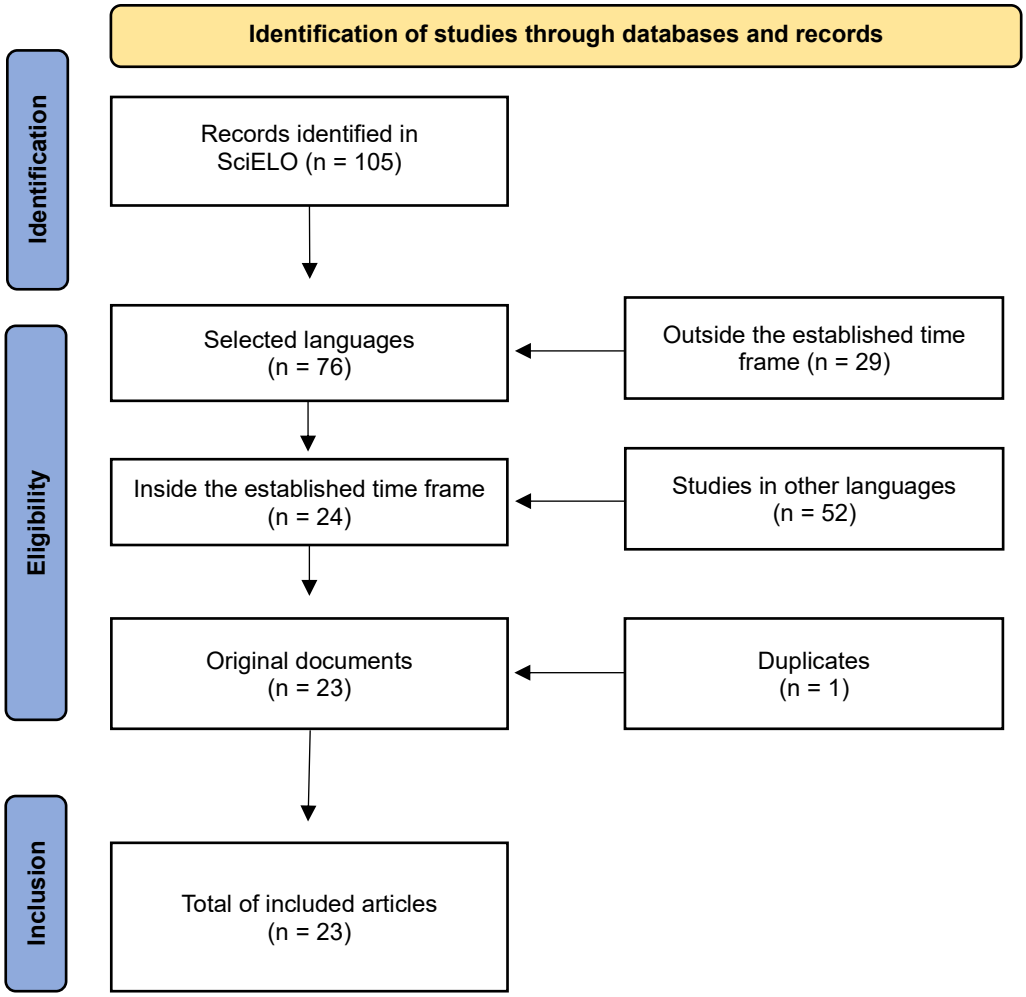
To conduct a systematic review that truly meets all academic parameters, it is essential to start with the basics: define a clear protocol that explains from the outset why the study is important, what is expected to be found, and how the research will be conducted (Mohera et al., 2016). In this article, the PRISMA 2020 model has been chosen as a guide for the research because, more than just a protocol, it serves as a detailed roadmap. The PRISMA methodology is a fundamental tool that ensures quality in any research process (Barrios et al., 2021).

Table 1

Inclusion and exclusion criteria

Criterion	Description	Exclusion
Language	Articles published in Spanish	Studies in other languages
Publication date	Articles published in the year 2021	Limiting to publications from 2021
Study type	Studies addressing the impact of COVID-19 on pedagogical models.	Studies not discussing COVID-19, unrelated to education, or lacking contextual analysis.
Source	Studies indexed exclusively in SciELO.	Studies from other databases (Scopus, ERIC, etc.) or repositories not indexed in SciELO.
Access	Full text available for free in SciELO	Articles with restricted access or broken links.

Figure 1
PRISMA methodology



To optimize the selection of articles relevant to the research objectives, the study was conducted using the advanced search option in SciELO, employing the Boolean operator "AND" to identify keywords.

Results and discussion

Table 2
Examined documents

No.	Author	Title	Contribution
1	(González A. , 2021)	Emotional Well-being and the Teacher: A Creative Diary of Emotions	The emergence of home-based education as a preventive measure against COVID-19 placed emotions as a key element in the pedagogical debate during the health crisis.
2	(Pérez, Figueroa, Toledo, Rodríguez, & Villareño, 2021)	Use of WhatsApp in a Course on Stomatological Care in Times of COVID-19	Virtual training emerges as a necessary but complex solution for updating dentists on clinical protocols adapted to the COVID-19 context.
3	(Eirin, et al., 2021)	Level of Knowledge about COVID-19 in	As an unprecedented phenomenon, the pandemic has tested both the scientific

		Physicians at the Norte Teaching Polyclinic in the Municipality of Placetas	community and society, forcing healthcare systems to implement immediate and complex transformations in their organization and operation.
4	(Lardoeyt, et al., 2021)	Virtual Learning Environment for Medical Genetics in COVID-19 Times at the Finlay-Albarrán Faculty of Medicine	Faced with the health emergency, virtual education systems have become the ideal alternative for university institutions, allowing the development of active and uninterrupted pedagogical processes through advanced technological resources.
5	(Montero, 2021)	Visibility of Educational Difficulties: The Challenges of the Colombian Government and Educational Communities in Addressing Them	The irruption of COVID-19 generated a radical transformation in social spheres, especially in education, where students and teachers had to abruptly adapt to home-based teaching.
6	(Guerra, et al., 2021)	Educational Intervention on COVID-19 in Older Adults from Family Doctor's Office No. 4. Cumanayagua, 2020	Educating and raising awareness makes it clear to people that maintaining distance is key to prevention. It is not just a protocol, it is an act of responsibility to the community.
7	(Sangoluisa, 2021)	Education for People with Limited Resources and Vulnerable Groups: A View from Ecuador	Technological advances are changing the world at an accelerated pace, and education is one of the areas most impacted by the transformation. A good education is key to a country's progress, as it improves people's quality of life and creates more developed societies.
8	(Vilchez, Cervantes, Inocente, & Rojas, 2021)	Role-Playing for Pharmaceutical Care in the COVID-19 Pandemic as a Teaching Method for Pharmacy and Biochemistry Students	The pandemic completely changed university education, forcing all classes to be given online from one day to the next, and digital tools played a primary role.
9	(Manrique, Motte, Naveja, Sánchez, & Gutiérrez, 2021)	Changes and Strategies in Medical Education in Response to the COVID-19 Pandemic	COVID-19; online learning; virtual education; undergraduate medical education; postgraduate medical education.
10	(Martínez, Botero, Arboleda, & Pérez, 2021)	"Freely Creative" Program as an Online Teaching Strategy in Times of Pandemic	The pandemic forced social distancing and completely changed every routine, including the way of studying and learning.
11	(Elisondo, Melgar, Chesta, & Siracusa, 2021)	Creative Practices in Unequal Educational Contexts: A Study with Argentine	Teachers reinvented their teaching methods during the COVID-19 quarantine, developing creative strategies to adapt to distance education.

		Teachers in Times of COVID-19	
12	(Blanco, Blanco, & Vila, 2021)	Emotional Well-being Activities Proposed for the Development of Meaningful Learning in Post-Pandemic Times	The objective of the research was to design emotional well-being strategies to promote meaningful learning in students during the post-pandemic period.
13	(Morales, Bárzaga, Morales, Cárdenas, & Campos, 2021)	Virtual Environments from the Ontology of New Knowledge in Higher Education in Times of the COVID-19 Pandemic	Adopts an epistemological stance based on the post-positivist paradigm, with a qualitative approach and a phenomenological-hermeneutic methodology.
14	(Arellano, Bonilla, Cárdenas, & Pérez, 2021)	Adaptation of Scientific, Technological, and Humanistic Domains in Academia Due to COVID-19	The purpose of the research is to analyze the scientific, technological, and humanistic competencies present in Ecuadorian universities.
15	(Aguilera, Fregozo, & Arenas, 2021)	Legal Analysis of the Social Reality Experienced in the Educational Field in the Face of the Pandemic Generated by the SarsCov-2 Virus (COVID-19)	The study examines the legal and social impact of confinement due to the COVID-19 pandemic on the exercise of the right to education.
16	(Rodríguez, Peña, Aguilera, & Licea, 2021)	Experiences in Cuba on the Use of Collaborative Learning Methods in Subjects of the Information Sciences Career	The research aimed to demonstrate the results and experiences obtained through the application of collaborative strategies in three subjects of the Bachelor of Information Sciences, implemented in two university institutions in Cuba.
17	(Santana, et al., 2021)	Attitudes and Knowledge about the COVID-19 Pandemic in Teachers of the Canary Islands	The study indicates that it is essential to implement the preventive actions required to stop the spread of infections in educational institutions, which includes training teaching staff in primary prevention measures.
18	(Casali & Torres, 2021)	Impact of COVID-19 on Argentine University Teachers: Change of Practices, Difficulties, and Increased Stress	The results of the study reveal a considerable increase in stress during the pandemic, along with significant difficulties in adapting to virtual classes, despite the fact that most of the respondents had basic computer knowledge. The contradiction suggests that theoretical mastery of digital tools does not necessarily guarantee their effective application in remote educational environments.
19	(Arriaga, Bautista, & Montenegro, 2021)	ICT and its Support in University Education in Times of Pandemic: A Facto-	The review article seeks to establish the theoretical foundations of the use of ICT as pedagogical support in higher education during the pandemic, with the purpose that its implementation transcends the context

		Theoretical Foundation	of emergency and is maintained in post-pandemic teaching practice.
20	(Arribalzaga, Jacovella, Ferrante, & Algieri, 2021)	Virtual Surgery Teaching in the Medical Degree during the COVID-19 Pandemic	Medical training is adjusted in the face of the emergency of a pandemic, such as that caused by COVID-19, to guarantee the fundamental levels of academic preparation.
21	(Guiñez & Mansilla, 2021)	WhatsApp Web for Academic Purposes in Times of COVID-19	Due to COVID-19, applications like WhatsApp experienced a significant increase in their use, as did other digital platforms. In the university environment, students often opt for WhatsApp Web for educational activities, but more research is needed on the aspects that drive its adoption and use for training purposes.
22	(González M. , 2021)	Digital Competencies of High School Teachers in the Face of Emergency Remote Teaching	The results reveal a significant association between teachers' digital competencies, their institution of origin, and their age. The study allowed us to analyze the evolution of teachers in the acquisition of the key skills necessary for remote education through technological tools.
23	(Gajardo & Díez, 2021)	Educational Evaluation during the COVID-19 Crisis: An Urgent Systematic Review	The forced closure of millions of educational institutions due to COVID-19 contrasts with the limited research generated in pedagogy compared to the abundant material on health. This study examines the available literature on educational and evaluative processes in the pandemic context.

The COVID-19 pandemic represented a disruptive event worldwide, which tested educational institutions and society in general, revealing little preparation and response capacity in the face of the health crisis. Healthcare systems had to act against the clock, reinventing themselves on all fronts to be able to face it (Eirin et al., 2021). It has been impressive to see how this virus changed the way of life in every corner of the planet (Guerra et al., 2021).

It is no longer a matter of preference; the world demands agile responses to these new digital realities (Morales et al., 2021). Learning by doing is key (Arellano, Bonilla, Cárdenas, & Pérez, 2021). When in-person classes disappeared, students devised ways to continue learning: they organized their own schedules, formed virtual study groups, and began applying what they had learned as if they were already practicing. The pandemic removed the teacher from the classroom, but students started to learn how to learn independently (Rodríguez et al., 2021).

Undoubtedly, authentic learning transcends mere memorization of content in front of specific evaluations, seeking to cultivate the intrinsic motivation that drives each individual toward commitment to continuous lifelong learning processes. When this perspective is internalized by the student, their role transforms from passive receiver to active agent responsible for their educational development (Arribalzaga, Jacovella, Ferrante, & Algieri, 2021). According to Arriaga, Bautista, and Montenegro (2021), the accelerated advancement of ICT has become unavoidable, and this reality was particularly evident during the pandemic.

There are topics that students struggle to fully comprehend and that linger for years. However, it is not their fault; with more practical teaching methods, tutors who explain at their pace, and resources that connect with their reality, these gaps could be addressed. The good news is that it is known how to do this, although the execution has left many doubts (Santana et al., 2021).

Teachers and students maintained fluid dialogue, with learning adapting week by week to the challenges presented by COVID-19 (Vilchez et al., 2021). However, the transition was too abrupt; many encountered serious problems: educational plans poorly adapted to virtuality, lack of internet access, insufficient computers, and families unsure of how to help. Not to mention that almost no one was accustomed to learning independently (Montero, 2021).

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Teachers have tools, internet access, and even mastery of various platforms, but converting their in-person classes into something functional online has proven too difficult (Casali & Torres, 2021). While digital tools are greatly beneficial for studies, they also have downsides; many students feel pressured to use them effectively, and it is easy to become distracted by so many functions. Additionally, like any application, they sometimes fail or present technical issues (Guiñez & Mansilla, 2021).

The lack of access to technology was already an urgent problem, but with the COVID-19 pandemic, it became an educational crisis. The right to education, which should be universal, turned into a privilege for those who can afford technology (Aguilera et al., 2021). For many, school is the only hope of improving their social situation, a springboard that allows them to move forward and compensate for the inequalities generated by socioeconomic gaps (Gajardo & Díez, 2021).

The emotional dimension also gained unexpected relevance. González (2021) highlights how teachers faced the adaptation to new teaching paradigms from home and the need to reorganize their daily lives, acknowledging the influence of their emotional states on the task of educating. Elisondo et al. (2021) document the new reality generated by the pandemic, where educational gaps became evident, while also showcasing the resilience and creativity of teachers. Finally, Martínez et al. (2021) indicate that although virtual classes were not the first option, digital platforms positioned themselves as essential tools for continuing education, with the potential to transcend time.

Today's teachers are facilitators who observe, stimulate, and guide, understanding that each student has their own pace and way of learning. This new perspective not only improves academic performance but also helps to develop more critical and autonomous individuals (Blanco et al., 2021). Furthermore, the implementation of various applications allowed students to remain engaged in virtual classes, contributing to making the learning processes less tedious and more practical (Pérez et al., 2021).

An important topic that still needs further exploration is the actual digital training that both teachers and students are receiving. As observed, not all educational institutions have the same conditions: some have better equipment, more resources, or greater support, which clearly affects the development of technological skills (González M., 2021).

Studies show that while virtual education solved the immediate challenge that arose during the human crisis, it lacks key elements of in-person teaching. Educators emphasize how unique dynamics are generated in the classroom: immediate feedback from facial expressions, unplanned debates that deepen learning, and the construction of bonds that no platform can fully simulate. The technological paradox reveals that the essence of education still lies in human interaction, where genuine connections are the right path to stimulate the educational process (Manrique et al., 2021).

Distance education allowed future professionals to continue learning, even when classrooms were empty (Lardoeyt et al., 2021). Teachers and students achieve incredible things, demonstrating that education, even under the harshest conditions, can be a beacon of hope (Sangoluisa, 2021).

The health emergency not only highlighted social and technological gaps but also promoted a profound reflection on the emotional and resilient roles of teachers and the strategic function of digital technologies applied to ensure educational continuity. A forced adaptation to virtual modalities demonstrated that education cannot simply be reactive; it must be proactive.

The reviewed research invites reconsideration that education is not merely a mechanical process of knowledge transmission, but rather an integral phenomenon where human interaction, creativity, and technological innovation coexist to construct meaningful and sustainable learning. In conclusion, the pandemic catalyzed a paradigmatic change that challenges educational institutions to deepen their capacity for adaptation and critical reflection, forming more humane, connected educational communities prepared for future scenarios of uncertainty.

Conclusions

The pandemic constituted the milestone that accelerated the transformation and development of knowledge in various fields, primarily in education. During this period, the necessity for adaptability and resilience in teaching-learning processes was demonstrated, as well as the need to integrate digital tools in a reflective, strategic, and responsible manner to address educational continuity. This shows that knowledge is not only constructed through content transmission but also through emotional management, creativity, and innovation in uncertain contexts.

On the other hand, the systematic review highlighted how the health emergency revealed and underscored existing inequalities, creating social and educational gaps. However, it also showcased the capacity of educational institutions to reinvent themselves and emerge by proposing innovative pedagogical strategies that incorporate digital tools into academic training.

In conclusion, the pandemic prompted profound reflection on how to produce and share knowledge, emphasizing the importance of interdisciplinary and collaborative research processes that respond to global crises. The health emergency provided clear lessons, such as the development of integral knowledge that allows for the integration of emotional, technological, methodological, and social aspects to foster resilient and sustainable educational environments. This learning forms the basis for rebuilding and strengthening educational systems to respond to the challenges of the future world in pursuit of a more equitable, innovative education adapted to current contexts.

References

Acevedo, Á., Valencia, A., & Ortega, A. (2021). Educación en tiempos de pandemia: Perspectivas del modelo de enseñanza remota de emergencia en Colombia. *Revista Historia de la Educación Latinoamericana, 23*(37), 93-112. https://doi.org/10.19053/01227238.12704

Aguilera, G., Fregozo, B., & Arenas, R. (2021). Análisis Jurídico de la Realidad Social que se vive en el ámbito educativo ante la pandemia generada por el virus SarsCov-2 (COVID-19). *Dilemas contemporáneos: educación, política y valores, 8*(2). https://doi.org/10.46377/dilemas.v8i2.2550

Arellano, F., Bonilla, M., Cárdenas, J., & Pérez, D. (2021). Adaptación de los dominios científicos, tecnológicos y humanísticos en la academia a causa del COVID-19. *Revista Científica UISRAEL, 8*(1), 43-58. https://doi.org/10.35290/rcui.v8n1.2021.317

Arellanos, S. (2023). Impacto y retos enfrentados por la educación básica y universitaria en América Latina y España durante la pandemia de COVID-19. *Revista Electrónica Educare, 27*(2), 380-397. https://dx.doi.org/10.15359/ree.27-2.15884

Arriaga, W., Bautista, J., & Montenegro, L. (2021). Las TIC y su apoyo en la educación universitaria en tiempo de pandemia: una fundamentación facto -teórica. *Conrado, 17*(78), 201-206. http://scielo.sld.cu/scielo.php?script=sci_arttextypid=S1990-86442021000100201&lng=es&tlng=es

Arribalzaga, E., Jacovella, P., Ferrante, S., & Algieri, R. (2021). Enseñanza virtual de cirugía en el grado de Medicina durante la pandemia de COVID-19. *FEM: Revista de la Fundación Educación Médica, 24*(3), 125-131. https://dx.doi.org/10.33588/fem.243.1124

Barrios, K., Orozco, D., Pérez, E., & Conde, G. (2021). Nuevas recomendaciones de la versión PRISMA 2020 para revisiones sistemáticas y metaanálisis. *Acta Neurológica Colombiana, 37*(2), 105-106. https://doi.org/10.22379/24224022373

Blanco, M., Blanco, M., & Vila, B. (2021). Actividades de bienestar emocional propuesta para el desarrollo del aprendizaje significativo en tiempos de postpandemia. *Conrado, 17*(80), 330-338. http://scielo.sld.cu/scielo.php?script=sci_arttext&pid=S1990-86442021000300330&lng=es&tlng=es

Canaza, F. (2021). Educación y pospandemia: tormentas y retos después del covid-19. *Conrado, 17*(83), 430-438. http://scielo.sld.cu/scielo.php?script=sci_arttext&pid=S1990-86442021000600430&lng=es&tlng=es

Casali, A., & Torres, D. (2021). Impacto del COVID-19 en docentes universitarios argentinos: cambio de prácticas, dificultades y aumento del estrés. *Revista Iberoamericana de Tecnología en Educación y Educación en Tecnología*(28), 423-431. https://www.scielo.org.ar/scielo.php?script=sci_arttext&pid=S1850-99592021000100054&lng=es&tlng=es

Cevallos, G., Cedeño, E., Sánchez, V., Macas, K., y Ramos, Y. (2021). Educación en tiempos del COVID-19, perspectiva desde la socioformación. *Dilemas contemporáneos: educación, política y valores, 8*(spe1). https://doi.org/10.46377/dilemas.v8i.2558

Eirin, E., Lozano, X., Cárdenas, O., Figueroa, D., González, O., & Barroso, L. (2021). Nivel de conocimientos sobre COVID-19 en médicos del Policlínico Docente Norte del municipio Placetas. *EDUMECENTRO, 13*(4), 229-242. http://scielo.sld.cu/scielo.php?script=sci_arttext&pid=S2077-28742021000400229&lng=es&tlng=es

Elisondo, R., Melgar, M., Chesta, R., & Siracusa, M. (2021). Prácticas creativas en contextos educativos desiguales. Un estudio con docentes argentinos en tiempos de COVID-19. *Diálogos sobre educación, 12*(22). https://doi.org/10.32870/dse.v0i22.873

Gajardo, K., & Díez, E. (2021). Evaluación educativa durante la crisis por COVID-19: una revisión sistemática urgente. *Estudios pedagógicos (Valdivia), 47*(2), 319-338. https://dx.doi.org/10.4067/S0718-07052021000200319

Giusti, A. D. (2021). Reflexiones sobre Educación y Tecnología Post-Pandemia. *Revista Iberoamericana de Tecnología en Educación y Educación en Tecnología*(28). https://www.scielo.org.ar/scielo.php?script=sci_arttext&pid=S1850-99592021000100002&lng=es&tlng=es

González, A. (2021). Bienestar emocional y el docente: un diario creativo en emociones. *RIDE. Revista Iberoamericana para la Investigación y el Desarrollo Educativo, 12*(23). https://doi.org/10.23913/ride.v12i23.1025

González, M. (2021). Competencias digitales del docente de bachillerato ante la enseñanza remota de emergencia. *Apertura (Guadalajara, Jal.), 13*(1), 6-19. https://doi.org/10.32870/ap.v13n1.1991

Guerra, D., Gonzáles, V., Bravo, E., Cavadas, R., Benítez, C., & Rubio, R. (2021). Intervención educativa sobre COVID-19 en adultos mayores del Consultorio Médico de la Familia No. 4. Cumanayagua, 2020. *MediSur, 19*(5), 741-747. http://scielo.sld.cu/scielo.php?script=sci_arttext&pid=S1727-897X2021000500741&lng=es&tlng=es

Guiñez, N., & Mansilla, K. (2021). WhatsApp Web con fines académicos en tiempos de la covid-19. *Apertura (Guadalajara, Jal.), 13*(2), 54-69. https://doi.org/10.32870/ap.v13n2.2084

Lardoeyt, R., Calixto, Y., Torres, Y., Taboada, N., Lardoeyt, M., & Juan. (2021). Entorno virtual de aprendizaje de Genética Médica en tiempos de la COVID-19 en la Facultad de medicina Finlay-Albarrán. *Revista Cubana de Informática Médica, 13*(2). http://scielo.sld.cu/scielo.php?script=sci_arttext&pid=S1684-18592021000200012&lng=es.

López, M., Herrera, M., & Apolo, D. (2021). Educação de qualidade e pandemia: desafios, experiências e propostas de alunos em formação de professores no Equador. *Texto Livre, Belo Horizonte-MG, 14*(2). https://periodicos.ufmg.br/index.php/textolivre/article/view/33991

Manrique, G., Motte, E., Naveja, J., Sánchez, M., & Gutiérrez, C. (2021). Cambios y estrategias de la educación médica en respuesta a la pandemia por COVID-19. *Investigación en educación médica*, 79-95. https://doi.org/10.22201/fm.20075057e.2021.39.21360

Martínez, J., Botero, L., Arboleda, D., & Pérez, J. (2021). Programa "Libremente Creativos" como estrategia de docencia en línea en tiempo de pandemia. *Información tecnológica, 32*(4), 13-22. https://dx.doi.org/10.4067/S0718-07642021000400013

Mínchala, C., & Langer, E. (2022). Derecho a la educación, pandemia y estrategias para la continuidad escolar en contextos de precaridad urbana. *Sophia Austral, 28*. https://dx.doi.org/10.22352/saustral20222807

Mohera, D., Shamseera, L., Clarkeb, M., Ghersic, D., Liberati, A., Petticrewd, M., . . . Stewartf, L. (2016). Ítems de referencia para publicar Protocolos de Revisiones Sistemáticas y Metaanálisis: Declaración PRISMA-P 2015. *Revista Española de Nutrición Humana y Dietética, 20*(2), 148-160. https://dx.doi.org/10.14306/renhyd.20.2.223

Montero, L. (2021). Visibilización de dificultades educativas: Los retos del gobierno colombiano y de las comunidades educativas para afrontarlas. *Actualidades Investigativas en Educación, 21*(3), 216-241. https://dx.doi.org/10.15517/aie.v21i3.46489

Morales, M., Bárzaga, J., Morales, Y., Cárdenas, M., & Campos, D. (2021). Entornos virtuales desde la ontología de los nuevos saberes de la educación superior en tiempos de pandemia covid-19. *Revista Universidad y Sociedad, 13*(3), 301-307. http://scielo.sld.cu/scielo.php?script=sci_arttext&pid=S2218-36202021000300301&lng=es&tlng=es

Navia, M. (2021). Educar en tiempos de pandemia. *Revista Ciencia y Cultura, 25*(46), 164-186. http://www.scielo.org.bo/scielo.php?script=sci_arttext&pid=S2077-33232021000100008&lng=es&tlng=es

Niño, S., Castellanos, J., & Huerta, L. (2021). Implicaciones de la Covid-19 en la educación escolar; una revisión temprana de los artículos publicados en revistas académicas. *Nóesis. Revista de ciencias sociales, 30*(59), 20-40. https://doi.org/10.20983/noesis.2021.1.2

Oviedo, M. (2021). La educación en tiempos del COVID desde la epistemología social de Thomas Popkewitz. *Sophia, Colección de Filosofía de la Educación*(31), 211-235. https://doi.org/10.17163/soph.n31.2021.08

Pérez, D., Figueroa, Y., Toledo, B., Rodríguez, A., & Villareño, D. (2021). Uso de WhatsApp en curso sobre la atención estomatológica en tiempos de COVID-19. *EDUMECENTRO, 13*(4), 196-212. http://scielo.sld.cu/scielo.php?script=sci_arttext&pid=S2077-28742021000400196&lng=es&tlng=es

Piña, L. (2022). Educación Virtual en escenarios post pandemia. *Episteme Koinonía. Revista Electrónica de Ciencias de la Educación, Humanidades, Artes y Bellas Artes, 5*(9), 2-3. https://doi.org/10.35381/e.k.v5i9.1667

Rodríguez, R., Peña, M., Aguilera, M., & Licea, J. (2021). Experiencias en Cuba sobre la utilización de métodos colaborativos de aprendizaje en asignaturas de la carrera Ciencias de la Información. *Revista Cubana de Información en Ciencias de la Salud, 32*(1). http://scielo.sld.cu/scielo.php?script=sci_arttext&pid=S2307-21132021000100009&lng=es&tlng=es

Sánchez, A., Aparicio, K., Miranda, C., Castillo, C., & Arellano, N. (2021). COVID-19: epidemiología, virología y transmisibilidad. *Revista Eugenio Espejo, 15*(3), 90-104. https://doi.org/10.37135/ee.04.12.10

Sánchez, M. (2021). ¿Pérdida de aprendizaje o ganancia vital?: los efectos de la pandemia en el aprendizaje. *Investigación en educación médica, 10*(40), 5-8. https://doi.org/10.22201/fm.20075057e.2021.40.21402

Sangoluisa, R. (2021). La educación para personas de escasos recursos y grupos vulnerables. Una mirada desde el Ecuador. *Conrado, 17*(82), 86-95. http://scielo.sld.cu/scielo.php?script=sci_arttext&pid=S1990-86442021000500086&lng=es&tlng=es

Santana, B., Santana, Y., Santana, E., Ruiz, G., González, J., & Santana, L. (2021). Actitudes y conocimientos sobre la pandemia por la COVID-19 en docentes de Canarias. *Revista Peruana de Medicina Experimental y Salud Publica, 38*(1), 64-69. https://doi.org/10.17843/rpmesp.2021.381.6312

Vallejos, G., & Guevara, C. (2021). Educación en tiempos de pandemia: una revisión bibliográfica. *Conrado, 17*(80), 166-171. http://scielo.sld.cu/scielo.php?script=sci_arttext&pid=S1990-86442021000300166&lng=es&tlng=es

Vilchez, H., Cervantes, L., Inocente, M., & Rojas, C. K. (2021). Role-play para la atención farmacéutica en la pandemia COVID-19 como método de enseñanza para los estudiantes de Farmacia y Bioquímica. *Ars Pharmaceutica (Internet)*, 280-289. https://dx.doi.org/10.30827/ars.v62i3.17924