GESj
Vol. 4, N° 1, 2022

Journal of Global Education Sciences

A publication of
CINCADER
Centre of Research and Training for Regional Development
Online at www.journals.cincader.org

ISSN 2663-3787
DOI: https://doi.org/10.32829/gesj.v4i1.168

Teaching through electronic devices and learning in times of pandemic in Peru

[Enseñanza por medio de dispositivos electrónicos y aprendizaje en tiempos de pandemia en el Perú]

Manuel Nicolás Morales Alberto[a], Víctor Henrry Morales Pacora[b], María Cleofé Saucedo López[b], José Reynaldo Salvatierra Rosales[c], Yocet Yojan Rosales Depaz[c], Andrea Rosario Pari Soto[c], Andrea Luisa Pari Soto[c], Alexander Pacheco Castillo[c], Jaime Braulio Cahuana Flores[c], Jorge Wilson Leiva Gonzales [c]

[a] Universidad Nacional de Cañete, Perú
[b]Universidad Nacional José Faustino Sánchez Carrión, Perú
[c] Universidad Nacional Santiago Antúnez de Mayolo, Perú

* mmorales@undc.edu.pe
Received: 07 June 2022; Accepted: 22 June 2022; Published: 30 June 2022

Resumen

En la apertura de las clases semipresenciales hubo incremento de dispositivos electrónicos para el aprendizaje. Por lo que, esta investigación trata sobre las enseñanzas por medio de dispositivos electrónicos para el aprendizaje en tiempos de pandemia. El objetivo fue determinar cómo influyen los dispositivos electrónicos en el aprendizaje. Se basa en el método descriptivo comparativo y corte transversal; para lo cual se tomó una muestra representativa de 40 alumnos que rotaron por grupo de manera alterna a clase presencial y remota con el fin de evitar contagiarse. Se empleó instrumentos de cuestionarios sobre ¿Cuentan con dispositivos electrónicos para las clases remota?, ¿Cuentan con conectividad de internet para las clases remota?, ¿Entienden las enseñanzas de manera presencial de los cursos de matemática y comunicación? y ¿Captan las enseñanzas de manera virtual de matemática y comunicación? Se determinó que, la semana 8 hubo 95 % de alumnos que cuentan dispositivos electrónicos, servicio de internet con 90 %, entienden las enseñanzas de manera presencial con 88 % y entienden las enseñanzas de manera virtual con 80 %. Se concluye que, a medida transcurrió las semanas hubo incremento de dispositivos electrónicos y servicio de internet, lo cual mejoró las enseñanzas en la clase presencial y fortaleció lo aprendido en las clases remota.

Palabras clave: Clases semipresenciales; servicio de internet; clases remota; instituciones educativa, aprendizaje y pandemia.

GESj
Vol. 4, N° 1, 2022

Journal of Global Education Sciences

A publication of
CINCADER
Centre of Research and Training for Regional Development
Online at www.journals.cincader.org

ISSN 2663-3787
DOI: https://doi.org/10.32829/gesj.v4i1.168

Abstract

At the opening of blended classes there was an increase in electronic devices for learning. Therefore, this research deals with teaching through electronic devices for learning in times of pandemic. The objective was to determine how electronic devices influence learning. It is based on the comparative descriptive and cross-sectional method, for which a representative sample of 40 students was taken, who rotated by group alternately to face-to-face and remote classes in order to avoid getting infected. Questionnaire instruments were used on: Do they have electronic devices for remote classes? Do they have internet connectivity for remote classes? Do they understand the face-to-face teachings of mathematics and communication courses? And do they capture the teachings in a virtual way of mathematics and communication? It was determined that, in week 8, there were 95% of students who have electronic devices, internet service with 90%, understand the teachings in person with 88% and understand the teachings virtually with 80%. It is concluded that, as the weeks passed, there was an increase in electronic devices and internet service, which improved the teachings in the face-to-face class and strengthened what was learned in the remote classes.

Keywords: Blended classes; Internet service; remote classes; educational institutions, learning and pandemic.

I. Introduction

The Covid-19 pandemic, caused by a virus called SarsCov2 or coronavirus, has a harmful effect on health worldwide, since the vast majority of the population has suffered from symptoms such as respiratory conditions, sequelae of ailments and that in many ended in cases deaths. This disease spread in different countries in which preventive measures were taken in order to reduce its spread to this day. According to Defaz et al. (2020) mention that the pandemic caused by SARS-CoV-2 has caused more than 700,000 deaths worldwide, affecting different age groups and sex.

Due to this situation, preventive measures were implemented to reduce the spread of the virus, such as traffic restrictions, in which the closure of educational institutions and other study centers was taken into account until the spread was reduced and the symptoms of the disease were overcome and the conditions improved. facilities services until the opening of class. The above is supported by UNICEF (2022), which states that the School Closure Analysis report highlights that 14 countries around the world remained largely closed from March 2020 to February 2021.

In Peru, the obligation and responsibility of preventive measures towards the new coexistence established by Supreme Decree No. 044-2020 -PCM, was established, and a state of emergency was declared at the national level, for which isolation must be observed. Social. This measure led to the closure of shops and other public centers, including the closure of educational institutions in order to prevent the spread of the virus. This statement is supported by Delerna and Libano (2021), who mention that due to the pandemic, educational institutions in many countries and in Peru have had to close their doors as a preventive measure against the spread of the virus.

This provision established by the government has had an effect in reducing the spread of Covid-19; however, it has affected many activities such as teaching classes, since the implementation of the virtual method has presented difficulties due to the lack of materials such as laptops, smartphones, tablet computers and internet connectivity to date, which has affected recruitment of teaching in all educational institutions. According to Aguilar J. (2020), he states that the closure of classrooms, caused by the covid-19 pandemic, led to a forced migration towards the non-face-

GESj
Vol. 4, N° 1, 2022

Journal of Global Education Sciences

A publication of
CINCADER
Centre of Research and Training for Regional Development
Online at www.journals.cincader.org

ISSN 2663-3787
DOI: https://doi.org/10.32829/gesj.v4i1.168

to-face modality at all educational levels. Also Cabrera et al. (2020) state that the lack of resources in the family home as the socioeconomic gap and the sociocultural gap of families is added, which over time, a parallel digital divide has affected teaching.

Currently, more than 50% of those vaccinated by this virus have been exceeded, which has improved the health of the population and this has allowed the start of blended classes. It is worth mentioning that the facilities for academic activities, prevention measures and group rotation of students are being implemented in order to avoid contagion; however, it is necessary to highlight the lack of electronic devices at the time of the remote class.

For this reason, research is carried out on teaching through electronic devices and learning in times of pandemic in Peru, with the aim of knowing what percentage of students use electronic devices in blended classes. It is necessary to mention that the purpose of this research is to obtain a diagnosis in order to promote the improvement of teachings.

II. Materials and Methods

Type of research

The research work has a descriptive comparative and cross-sectional basis; since the students were evaluated weekly through questionnaires if they have electronic devices and capture the teachings during the blended process to classes

Population and sample

These are the students enrolled in public and private institutions at the initial, primary, secondary and alternative basic level (including adult education), special and productive technical occupational, which according to the last census, 36,675 were registered in 2015. , reference date (INEI, 2016). For which the student population of 130 students enrolled in the Ricardo Palma soriano school No. 21571- Araya Grande - Barranca was taken. Regarding the sample, 40 students of the 5th year of secondary education were taken, which are made up of 26 women and 14 men, who attend by group of 20 students alternately, who were evaluated by questionnaires of a secondary school.

Data collection techniques and instruments

Evaluations were made using questionnaire techniques 3 times a week (Monday, Wednesday and Friday) for 8 weeks. It was asked if they have electronic devices for remote classes, internet connectivity for remote classes, understand the teachings in person and virtually when alternating classes.

Statistical analysis

After having carried out the survey, the data per week was obtained, which was processed through basic statistics, then tables were prepared that were interpreted and analyzed.

Procedures

40 students who agreed to answer the evaluation questions were taken as a representative sample.
The students attended alternately by group of 20; that is, one week it is face-to-face and the other week remotely or virtually, during classes in the classroom the questions were asked three times a week (Monday, Wednesday and Friday) for up to 8 continuous weeks.
In this evaluation they were asked about: Do they have electronic devices for remote classes such as cell phones, tablets, laptops or computers? Do they have internet connectivity for remote classes? math and communication? And do they capture the teachings in a virtual way of mathematics and communication?

GESj
Vol. 4, N° 1, 2022

Journal of Global Education Sciences

A publication of
CINCADER
Centre of Research and Training for Regional Development
Online at www.journals.cincader.org

ISSN 2663-3787
DOI: https://doi.org/10.32829/gesj.v4i1.168

Once the data was obtained, it was averaged per week, then it was processed through basic statistics, followed by the elaboration of tables that were interpreted and analyzed.

III. Results

The results are shown below.

Students with electronic devices

According to the results on the availability of electronic devices for learning detailed in table 1, it is indicated that during the start of blended classes, an increase of 95% was noted in week 8. Therefore, it is interpreted that students preferentially acquired these devices; that is, permanently in order to capture the virtual teachings and strengthen what has been learned. Therefore, it is analyzed that during the beginning of blended classes there was an increase in electronic devices, which improves student learning. This analysis is supported by Benites R. (2021) who mentions that in the post-pandemic period, it will be essential to establish and provide educational goods and services for the development of virtual and blended modalities, which include internet access, electronic devices and strengthening of technological and communication skills.

Table 1: Have electronic devices for learning (%)

	Week 1	Week 2	Week 3	Week 4	Week 5	Week 6	Week 7	Week 8
Have	85.0	87.5	87.5	90.0	90.0	92.5	95.0	95.0
Have not	15.0	12.5	12.5	10.0	10.0	7.5	5.0	5.0
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

They have internet connectivity for alternate classes

Regarding internet connectivity during the blended classes that can be seen in table 2, it is indicated that in week 8 the acquisition of this service increased to 90% of the students. This result is interpreted that during the week of classes, the internet service was acquired in order to capture the teachings given during the rotation to remote classes. Therefore, it is analyzed that this increase in the internet service in the opening of blended classes has facilitated, improved the illustration and strengthened the teachings of what has been learned. This analysis is based on Alonso et al. (2016), who concluded that the influence of Communication Technologies provides clear advantages both for the training process of students and for the daily work of their teachers.

Table 2: They have internet connectivity for blended classes (%)

	Week 1	Week 2	Week 3	Week 4	Week 5	Week 6	Week 7	Week 8
Have	82.5	85.0	85.0	87.5	87.5	87.5	90.0	90.0
Have not	17.5	15.0	15.0	12.5	12.5	12.5	10.0	10.0
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

They understand the teachings in person

Regarding the evaluation on understanding the teachings in person that is detailed in table 3, it was obtained that 88% of the students understood the teachings in week 8. This result means that as the weeks passed, the students understood the teachings in person, since the interaction with their environment improved and participation improved the reception of the message.

GESj
Vol. 4, N° 1, 2022

Journal of Global Education Sciences

A publication of
CINCADER
Centre of Research and Training for Regional Development
Online at www.journals.cincader.org

ISSN 2663-3787
DOI: https://doi.org/10.32829/gesj.v4i1.168

Therefore, it is analyzed that this result shows that the student captures and understands the teachings in an interactive way with his environment, participates and questions, which strengthens what he learns. Analyzing the results, it is supported by Byrne (2021), who mentions face-to-face teaching-learning as the best way to advance in mastering the instrument; Well, currently, accommodating all this to the virtual form has many drawbacks, starting with the lack of management of virtual platforms, and the equipment that students must have and manage. Jiménez and Ruiz (2021), mention that the approach of the new methodologies and information and communication technologies (ICT), are used to face the new situation of confinement and continue with the distance teaching-learning process and as tools pedagogical to be used in the future.

Table 3: They understand the teachings in person (%)

	Week 1	Week 2	Week 3	Week 4	Week 5	Week 6	Week 7	Week 8
Understand	82.5	82.5	85.0	85.0	82.5	85.0	85.0	87.5
Not understand	17.5	17.5	15.0	15.0	17.5	15.0	15.0	12.5
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

They understand the teachings virtually

Regarding the evaluation on how you understand the teachings in a virtual way that is exposed in table 4, it was highlighted that 80% of the students understand the teachings remotely. Therefore, it means that during the development of the blended classes they acquired electronic devices and installed the internet service, which influenced the uptake of the teachings. Therefore, it is analyzed that during the blended classes there was an increase in the acquisition of technological materials and connectivity, these conditions improved the uptake of the teachings and strengthened what was learned during the group rotation to remote classes; however, it is necessary not to use it in excess as it affects visual health. This analysis is based on Vallejos and Guevara (2021) who conclude that the results show that virtual education offers the support to give continuity to educational processes in times of social isolation, allowing to develop, build, interact and socialize knowledge from of the exchange of knowledge, experiences and ideas of the actors at all academic levels. Likewise, Espinoza et al. (2021) conclude that new technologies must always be incorporated, taking care not to fall into excesses to avoid addictive behaviors, nor reach harassment or exhaustion due to the intensive use of it.

Table 4: They understand the teachings in a virtual way (%)

	Week 1	Week 2	Week 3	Week 4	Week 5	Week 6	Week 7	Week 8
Understand	70.0	72.5	75.0	80.0	75.0	82.5	72.5	80.0
Not understand	30.0	27.5	25.0	20.0	25.0	17.5	27.5	20.0
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

IV. Conclusions

- It was determined that in week 8 of the blended classes, it increased to 80% of students who understand the teachings remotely. This result is due to the fact that during the group rotation, the students strengthen at home with the use of these electronic devices what is taught in the face-to-face class.

GESj
Vol. 4, N° 1, 2022

Journal of Global Education Sciences

A publication of
CINCADER
Centre of Research and Training for Regional Development
Online at www.journals.cincader.org

ISSN 2663-3787
DOI: https://doi.org/10.32829/gesj.v4i1.168

- It was also determined that in week 8 there was an increase in internet service to 90%; that is, most students have stable connectivity for remote classes and strengthens learning what is taught in the classroom.

- It is concluded that, when rotating to face-to-face class in week 8, there was an increase to 88% of the students who understand the teachings. This is due to the fact that the student interacts and participates during the development of classes in the classroom, which favors the learning of the topics covered.

References

Aguilar J. 2020. Educación y pandemia una visión académica, Instituto de Investigaciones sobre la Universidad y la Educación, Universidad Nacional Autónoma de México. 1ra edición. pp. 1-314. http://132.248.192.241:8080/jspui/bitstream/IISUE_UNAM/533/1/CasanovaH_Coord_2020_Educacion_y_pandemia.pdf

Alonso Mosquera, M., Gonzálvez Vallés, J., Muñoz de Luna Á. 2016. Ventajas e inconvenientes del uso de dispositivos electrónicos en el aula: percepción de los estudiantes de grados en comunicación / Advantages and disadvantages of using electronic devices in the classroom. Revista de Comunicación de la SEECI, volumen 41, pp. 136-154. DOI: https://doi.org/10.15198/seeci.2016.41.136-154

Benites, R. 2021. La Educación Superior Universitaria en el Perú post-pandemia. Documento de política pública. Pontificia Universidad Católica del Perú. https://repositorio.pucp.edu.pe/index/bitstream/handle/123456789/176597/La%20Educaci%c3%b3n%20Superior%20Universitaria%20en%20el%20Per%c3%ba%20post-pandemia%20VF.pdf?sequence=1&isAllowed=y

Byrne, J. 2021. Aprendizaje del instrumento musical en la enseñanza virtual, caso estudiantes de secundaria de la institución educativa adventista “El Buen Pastor” de Ñaña. Lima 2020. Tesis para obtener el Título Profesional de Licenciado en Educación, Especialidad: Musical y Artes. Universidad Peruana Unión. https://repositorio.upeu.edu.pe/bitstream/handle/20.500.12840/4474/Jose_Tesis_Licenciatura_2021.pdf?sequence=1&isAllowed=y

Cabrera, L., Nieves Pérez C., Santana F. 2020. ¿Se incrementa la desigualdad de oportunidades educativas en la Enseñanza Primaria con el cierre escolar por el coronavirus? International Journal of Sociology of Education, pp. 27–52. DOI: https://doi.org/10.17583/rise.2020.5613

Defaz S, Escobar N, Ausay J., García C., 2020, Características Clínico-Epidemiológicas de pacientes COVID 19 atendidos en las unidades operativas del Distrito de Salud 05D06, cantón Salcedo. *Investigación y Desarrollo I+D, volumen 12, Número* 1, pp. 27-33. https://revistas.uta.edu.ec/erevista/index.php/dide/article/view/990

Delerna Ríos, G. and Lévano Rodríguez D. 2021. Importancia de las tecnologías de información en el fortalecimiento de competencias pedagógicas en tiempos de pandemia. Revista científica De Sistemas E informática, volumen 1, número 1, pp. 69-78. DOI: https://doi.org/10.51252/rcsi.v1i1.104

Espinoza Lastra O., Moreira Rosales L., Silva Álvarez N. 2021. Efectos en el rendimiento académico por uso de dispositivos electrónicos. Revista Conrado, volumen 17 Número S2, pp. 149-158. https://conrado.ucf.edu.cu/index.php/conrado/article/view/2003

INEI. 2016. Compendio Estadístico Lima Provincias 2016. Compendio Estadístico. INEI (Instituto Nacional de Estadística e Informática), Perú. https://www.inei.gob.pe/media/MenuRecursivo/publicaciones_digitales/Est/Lib1521/Libro.pdf

GESj
Vol. 4, N° 1, 2022

Journal of Global Education Sciences

A publication of
CINCADER
Centre of Research and Training for Regional Development
Online at www.journals.cincader.org

ISSN 2663-3787
DOI: https://doi.org/10.32829/gesj.v4i1.168

Jiménez Guerra Y. and Ruiz González M., 2021, Reflections on the Challenges that Higher Education Faces in Times of COVID-19. Economía y Desarrollo, volumen 165, supl.1, e3. Epub 21. http://scielo.sld.cu/scielo.php?script=sci_arttext&pid=S0252-85842021000200003.

UNICEF. 2022. Las escuelas de más de 168 millones de niños del mundo llevan casi un año entero cerradas por completo debido a la COVID-19. Fondo de las Naciones Unidas para la Infancia. https://www.unicef.org/es/comunicados-prensa/escuelas-168-millones-ninos-llevan-casi-ano-entero-cerradas-debido-covid19#:~:text=Adem%C3%A1s%2C%20en%20torno%20a%20214,2020%20hasta%20febrero%20de%202021.

Vallejos Salazar G. and Guevara Vallejos C. 2021. Educación en tiempos de pandemia: una revisión bibliográfica. Revista Conrado, volumen 17, número 80, pp. 166-171. https://conrado.ucf.edu.cu/index.php/conrado/article/view/1825