

Use of the Virtual Health Classroom by Cuban students of medical sciences

Empleo del Aula Virtual de Salud por estudiantes cubanos de ciencias médicas

Claudia Díaz de la Rosa ¹ , Joel David Monzón Li ¹ , Luis Enrique Jiménez Franco ¹ ,
Yuleydi Alcaide Guardado ² 

¹Universidad de Ciencias Médicas de Cienfuegos. Facultad de Ciencias Médicas "Dr. Raúl Dorticós Torrado". Cienfuegos, Cuba.

²Centro Provincial de Información de Ciencias Médicas de Cienfuegos. Cienfuegos, Cuba.

ABSTRACT

Introduction: virtual classrooms have shown spectacular growth in the last third of the 20th century, which is a good indicator of the productive power of the use of information and communication technologies. **Objective:** to describe the use of the Virtual Health Classroom by Cuban students of medical sciences. **Method:** an observational, descriptive, cross-sectional study was carried out. The universe, made up of 126 students, was fully studied. A descriptive statistical analysis was performed. **Results:** the participation of students from the University of Medical Sciences of Cienfuegos predominated, with 52 (41,3 %). Medical students stood out (103; 81,7 %). Of the total number of respondents, 60,3 % (n = 76) had knowledge about the Virtual Health Classroom. 74 students (58,7 %) had accessed it. The frequency of access of once a month prevailed (n = 24; 19 %). The search for information and participation in scientific events stood out as the main objectives of use (n = 34; 27 %). The cause that generated the greatest impediment to navigation was ignorance of how to access it, referred to by 33 students (26,2 %). **Conclusions:** the use of the Virtual Health Classroom has become popular during the confrontation with COVID-19. The use of the virtual environment has increased in all academic years and careers in the medical sciences, especially in third year medical students, which is related to knowledge and access to the Virtual Classroom.

Keywords: Education; Medical Education; Information Technology Management; Distance Education; Virtual Classroom.

RESUMEN

Introducción: las aulas virtuales han mostrado un espectacular crecimiento en el último tercio del siglo XX, lo que constituye un buen indicador del poder productivo del uso de las tecnologías de la información y las comunicaciones. **Objetivo:** describir el uso del Aula Virtual de Salud por estudiantes cubanos de las ciencias médicas. **Método:** se realizó un estudio observacional, descriptivo, de corte transversal. El universo, conformado por 126 estudiantes; fue estudiado en su totalidad. Se realizó un análisis estadístico descriptivo. **Resultados:** predominó la participación de estudiantes de la Universidad de Ciencias Médicas de Cienfuegos, con 52 (41,3 %). Sobresalió la carrera de medicina (103; 81,7 %). Del total de los encuestados, el 60,3 % (n = 76) tenía conocimientos sobre el Aula Virtual de Salud. Habían accedido a ella 74 estudiantes (58,7 %). Predominó la frecuencia de acceso de una vez al mes (n = 24; 19 %). Destacó la búsqueda de información y la participación en eventos científicos como los principales objetivos de uso (n = 34; 27 %). La causa que mayor impedimento de la navegación generó fue el desconocimiento de cómo acceder, referido por 33 estudiantes (26,2 %). **Conclusiones:** el uso del Aula Virtual de Salud se ha popularizado durante el enfrentamiento a la COVID-19. El empleo del entorno virtual ha incrementado en todos los años académicos y carreras de las ciencias médicas, en especial en tercer año y en la carrera de medicina, lo que guarda relación con los conocimientos y el acceso al Aula Virtual.

Palabras clave: Educación; Educación Médica; Administración de las Tecnologías de la Información; Educación a Distancia; Aula Virtual.



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INTRODUCTION

University education is a very complex process that requires the sacrifice of students and the dedication of teachers. During the study of a career, the face-to-face teaching modality has been traditionally implemented, except in this last year, when that was made impossible by the COVID-19 pandemic.

Universities, on an international scale, have generalized the use of virtual teaching-learning environments (VTLE), which has been possible thanks to information and communication technologies (ICT). ICTs are the educational innovation of the moment, and allow teachers and students to make decisive changes in their daily work in the classroom and in the teaching-learning process. Cuba joins the use of ICTs through information management systems related to postgraduate academic activity and other university management systems^{1,2}.

VTLEs are defined as teaching-learning processes or activities that are developed through the Internet, outside a physical and temporary space, and offer a diversity of means and resources to support teaching. They constitute an integral management system that allows the creation, distribution, control and monitoring of educational resources through the Internet. These environments use various IT tools supported by the technological medium, facilitate knowledge management, motivation, interest, self-control and the formation of feelings that contribute to personal development^{3,4,5,6}. For the use of all this information management and teaching system, VTLEs in Cuban universities of medical sciences are used through the Virtual Health Classroom (AVS, as it stands in Spanish).

Virtual classrooms have shown a spectacular expansion during the 20th century, which is a good indicator of the productive power of the use of ICTs and virtual environments for educational and training development. Among the pioneers are: OPEN University, British; *Universidad Nacional de Educación a distancia* (Spain, today with more than 160,000 students), *Feruniversität* (Germany) and Everyman's University (Israel)⁷.

The development of virtual classrooms at the international level and the boom in e-learning favored, in the 1990s, the emergence of a network from the faculties of medical sciences in Cuba, *Infomed*. Its portal began to develop with the aim of facilitating access to existing information related to health sciences, and especially to facilitate access to information produced in Cuba; two of its most relevant projects are the Virtual Health Library (BVS, in Spanish) and the Virtual Health University (UVS, in Spanish). The UVS is an inter-university space, which is based on the needs of the National Health System, supports learning processes in a flexible, agile manner and contributes to the promotion of self-learning⁷.

The use of AVS offers a number of advantages to achieve an excellent teaching-learning process. It is an interactive medium in which teachers can be in contact with students even in special situations where face-to-face attendance is not possible, and serves as a way to further enrich the knowledge obtained. However, many students are unaware of the existence of these media, and many of those who are aware of them do not know how to use them, so they are deprived of the benefits they offer.

For this reason, the objective of this research was to describe the use of AVS by Cuban students of medical sciences.

METHOD

Type of study: an observational, descriptive, cross-sectional, descriptive study was carried out in Cuban students of medical sciences during June 2021.

Universe and sample: the universe consisted of 126 students. Sampling techniques were not used, so we worked with the totality of the universe. Inclusion criteria were: students of medical sciences universities in the country who answered the digital questionnaire and expressed their consent by filling out the survey. Students who answered the survey incompletely were excluded.

Variables and data collection: the variables used were: center of studies, degree, academic year, knowledge of the AVS (yes or no), access to the AVS (yes or no), frequency of access to the AVS (once a month, 2-3 times a month, once a week, 2-3 times a week, daily), purpose of navigation (search for information, participate in scientific events, send homework, clarify doubts, receive guidance or others) and causes that prevent navigation (no cell phone or computer, do not know how to access, do not have time or others).

A 14-item survey was used to collect the information. It was prepared by the research team and validated by the judgment of 4 experts -who are members of the Scientific Council of the *Universidad de Ciencias Médicas de Cienfuegos* - and a pilot test. It was applied virtually through the Google Forms platform, with an expressive and accessible language. The multiple-choice format was used in a large part of the questions so that the student did not become exhausted.

Statistical processing: to process the information, a database was created in Microsoft Excel 2019. The analysis of the information involved the calculation of absolute frequency and percentage statistics.

Ethical aspects: no therapeutic intervention techniques or others that could affect the physical integrity of the participants were used during the study. The II Declaration of Helsinki and the Cuban ethical norms for research in health sciences were complied with. All the participants and the board of directors of the *Universidad de Ciencias Médicas de Cienfuegos* approved the study. The information was used for scientific and research purposes.

RESULTS

The participation of students affiliated to the *Universidad de Ciencias Médicas de Cienfuegos* ($n = 52$; 41,3 %), of the medical career ($n = 103$; 81,7 %), in the third academic year ($n = 39$; 31 %) predominated. A total of 60.3 % of the respondents ($n = 76$) reported having knowledge of AVS. The third academic year stood out, with 24 students representing 19 % (Table 1).

Table 1. Students according to academic year and knowledge of AHV

Academic year	Knowledge about AVS					
	Yes		No		Total	
	No.	%	No.	%	No.	%
First	15	11,9	14	11,1	29	23,0
Second	17	13,5	8	6,3	25	19,8
Third	24	19	15	11,9	39	31
Fourth	16	12,7	8	6,3	24	19
Fifth	4	3,2	3	2,4	7	5,6
Sixth	0	0	2	1,6	2	1,6
Total	76	60,3	50	39,7	126	100

A total of 58,7 % ($n = 74$) of the students had accessed the AVS, mainly third-year students, with 25 students (19,8 %). The 41,3 % ($n = 52$) had not done so; in this regard, the first-year students stood out, with 17 students, representing 13,5 % (Table 2).

Tabla 2. Students according to access to AHV

Academic year	Access to the AVS					
	Yes		No		Total	
	No.	%	No.	%	No.	%
First	12	9,5	17	13,5	29	23
Second	16	12,7	9	7,1	25	19,8
Third	25	19,8	14	11,1	39	31
Fourth	17	13,5	7	5,6	24	19
Fifth	4	3,2	3	2,4	7	5,6
Sixth	0	0	2	1,6	2	1,6
Total	74	58,7	52	41,3	126	100

Table 3 shows that students with a frequency of accessing AVS once a month predominated ($n = 24$; 19 %).

Tabla 3. Students according to frequency of access to AVS

Frequency of access to the AHV	No.	%
Once a month	24	19
2-3 times a month	11	8,7
Once a week	19	15
2-3 times a week	16	13
Daily	7	5,6

The main navigation objectives were participation in scientific events and information search, both referred by 34 students, for 27% in each case (Table 4).

Tabla 4. Students according to navigation objective

Navigation objective	No.	%
Search for information	34	27
Participate in scientific events	34	27
Send tasks	7	5,6
Clarify doubts	0	0
Receive guidance	0	0
Others	2	1,6

The cause that generated the greatest impediment to navigation was the lack of knowledge of how to access, reported by 33 students, representing 26,2 % (Table 5).

Tabla 5. Students according to the causes that impede navigation

Students according to the causes that impede navigation	No.	%
Do not have a phone or a computer	7	5,6
Do not know how to accede	33	26,2
Do not have time	3	2,4
Others	6	4,8

DISCUSSION

The use of tools or ICT for information search, such as the AVS, is associated with the need for knowledge and task resolution, according to the authors' criteria. In this sense, students belonging to the medical career have a greater teaching load in their medical training. This, together with the impact of COVID-19, which generated that the student acquired a leading role in their training, supports the results presented in the research, which agree with those presented by Humanante Ramos *et al.*⁸.

The *Universidad de Ciencias Médicas de Cienfuegos*, in order to enhance access and allow continuous training during the on-the-job education developed as part of the measures to confront COVID-19, made it possible to access the AVS of the headquarters from any point of access and free of charge.

Awareness of the AVS for knowledge development or information search depends on individual interests. This is influenced by aspects such as the need for knowledge, its management, and the ways and means of accessing it. In this sense, Martínez-Hernández *et al.*⁹ refer to the knowledge economy as an aspect that modulates the acquisition of knowledge, encompasses the aforementioned aspects and highlights them as one of the factors that determine the use of virtual environments, such as AVS.

The results obtained in this study regarding the academic year are similar to those of Sánchez Palacios *et al.*¹⁰ and Cruz Barrios *et al.*¹¹.

Abrigo Córdova *et al.*¹² and Cruz Barrios *et al.*¹³ disagree with the results of the present study regarding the frequency of access to the virtual classroom. They state in their research that participants accessed the virtual classroom almost daily, as well as more than once a day. The virtual classroom and the use of ICTs, in general, have advantages for users, such as allowing access at any time of the day and without time limits. This aspect allows students to organize their training time and complement it with their personal activities.

The need for information is projected as one of the reasons for greater access to AVS, a criterion that was exposed previously and that allows establishing a close relationship between the results presented in this research. This is consistent with the results presented by Fernández Alemán *et al.*¹⁴ and Area Moreira *et al.*¹⁵.

CONCLUSIONS

The use of the AVS has become popular during the COVID-19 confrontation. The use of the virtual environment has increased in all academic years and careers in the medical sciences, especially in the third year and in the medical career, which is related to knowledge and access to the AVS. Likewise, the socialization of knowledge contributes to greater interaction.

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CONFLICT OF INTEREST

The authors declare no conflict of interest.

AUTHORSHIP

Claudia Díaz de la Rosa: conceptualization, data curation, formal analysis, methodology, writing - original draft, writing - revision and editing.

Joel David Monzón Li: conceptualization, data curation, formal analysis, writing - revision and editing.

Luis Enrique Jiménez Franco: data curation, formal analysis, methodology, writing - original draft, writing - revision and editing.

Yuleydi Alcaide Guardado: data curation, formal analysis, writing - revision and editing.

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