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ORIGINAL

Pertinence of the teaching use of virtual classroom by Basic Biomedical Science Department

Pertinencia del uso docente del aula virtual por el Departamento de Ciencias Básicas Biomédicas

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ABSTRACT

Introduction: the use of digital technology is recognized as a strategic university educative policy.
Objective: to analyse the relevance of the teaching use of virtual classroom by the Basic Biomedical Science Department, in Salvador Allende Medicine Faculty, of Havana Medical University.
Methods: it was developed a descriptive and qualitative investigation, using the case study method. There were used theoretical methods: analysis-synthesis, induction-deduction, historic logic and moving up from the abstract to concrete, and empirical methods: documentary review and focal group.
Results: criteria were determined that allow accepting the teaching use of the virtual classroom as a departmental teaching innovation that, based on the use of digital technology, it constitutes a transition from the face-to-face teaching toward the hybrid teaching model,
Conclusions: the teaching use of virtual classroom by the basic Biomedical Science Department, in Salvador Allende Medicine Faculty, of Havana Medicine University is a relevant teaching innovation that participates in the digital transformation of medical education.

Keywords: Hybrid Teaching; Teaching Innovation; Digital University Transformation.

RESUMEN

Introducción: el uso de la tecnología digital se reconoce como una política educativa estratégica en la educación superior.
Objetivo: analizar la pertinencia del uso docente del aula virtual por el Departamento de Ciencias Básicas Biomédicas, en la Facultad de Ciencias Médicas Salvador Allende, de la Universidad Médica de La Habana.
Métodos: se desarrolló una investigación descriptiva, con enfoque cualitativo, basada en el estudio de caso. Se utilizaron métodos teóricos: análisis-síntesis, inducción-deducción, histórico lógico y el ascenso de lo abstracto a lo concreto; y empíricos: revisión documental y grupo focal.
Resultados: se determinaron criterios que permiten considerar el uso docente del aula virtual como una innovación docente departamental que, sustentada en el uso de la tecnología digital, constituye una transición de la enseñanza-aprendizaje presencial hacia un modelo híbrido.
Conclusiones: el uso docente del aula virtual por el Departamento de Ciencias Básicas Biomédicas, en la Facultad de Ciencias Médicas Salvador Allende, de la Universidad Médica de La Habana, constituye una innovación docente pertinente al tributar a la transformación digital de la docencia médica.

Palabras clave: Aula Virtual; Enseñanza Híbrida; Innovación Docente; Transformación Digital Universitaria.

INTRODUCTION

The use of Information and Communication Technologies (ICT) plays a significant role in the current acceleration of changes affecting the dynamics of various aspects of social life. In the educational subsystem, incorporating digital technology is recognized as a strategic measure in shaping the educational policies of higher education institutions (HEIs).[1] The immediate implementation of the digital transformation process in higher education is acknowledged as a challenge,[2] requiring the active involvement of all university community members,[3] particularly professors who play a crucial role in executing the necessary actions to address this educational endeavor.[4]

During the recently held V International Scientific Convention UCIENCIA-2023 in Cuba, the current international emphasis on the use of digital technology as an educational tool became evident. An example of this is the establishment of the Ibero-American Network for Training and Research on Digital Transformation in Higher Education. It is conceived as a regional organization aimed at promoting the modernization of the professional training process. Building on this concept, Santana and Deler[5] have stated that embracing this change in Cuban universities could transform national HEIs into vital cultural centers, propelling the advancement towards the digital transformation of our society.

Since 2018, the Basic Biomedical Science Department, Salvador Allende Health Sciences Faculty has embraced the instructional use of the Moodle platform. This has led to a progressive enhancement of its features, including alterations in the management of the teaching-learning process within the Biological Bases of Medicine discipline. The virtual classroom has been implemented as a supplementary component to traditional face-to-face instruction. This study aims to assess the relevance of using the virtual classroom for instructional purposes within the Basic Biomedical Science Department, Salvador Allende Health Sciences Faculty, Medical University of Havana.

METHODS

A descriptive research study was carried out, adopting a qualitative approach. The investigation focused on the instructional use of the virtual classroom, concentrating on its innovative impact on the educational and methodological management within the Basic Biomedical Science Department, Salvador Allende Health Sciences Faculty, Medical University of Havana. The study used a historical-organizational case study methodology to analyze the evolution of the subject,[6] supported by the Constructivist Grounded Theory, with the aim of assessing its relevance.[7] To achieve this, the study compared the general requirements of educational innovations with the evidence of the teaching-methodological management style implemented by the department in the virtual classroom of the Biological Bases of Medicine discipline, based on the intersubjective construction of the participating researchers.

Five professors with over 20 years of experience in higher education and holding a master's academic degree participated in the research. All held the academic title of assistant professor. Additionally, two of them also held the designation of consulting professor. Four of the professors serve as principal instructors for various subjects within the Biological Bases of Medicine discipline taught by the Basic Biomedical Science Department.

Theoretical and empirical methods were applied. Theoretical methods included analysis-synthesis for information processing; induction-deduction for the overall characterization of the study object from specific data; historical-logical analysis to assess the study object's relevance, and the progression from abstract to concrete for the conceptual integration of the instructional use of the virtual classroom as a teaching innovation through the analysis of its application. In terms of empirical methods, two approaches were used. Firstly, a documentary review was conducted to gather theoretical information on the departmental use of the virtual classroom. This involved considering eight scientific articles produced within the department, specifically related to the topic. The selected articles were published from the year 2020 onwards or were currently in the process of publication. Secondly, a focus group was employed to foster reflective interaction among the researchers.

In the organization of the analysis of virtual classroom usage, four essential general characteristics for the development of educational innovations were taken into account:[8,9]

- Existence of a situation in need of improvement.
- Choosing a suitable method to implement the innovation.
- Choosing the content, technology, and activities to be implemented.
- Providing evidence of beneficial outcomes.

RESULTS AND DISCUSSION

The documentary analysis yielded criteria that supported acknowledging the instructional use of the virtual classroom as a departmental teaching innovation. These criteria are outlined below:

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1. The use of the virtual classroom for instruction has been directed towards addressing a specific improvement area: enhancing students' abilities for self-management of knowledge. This involves implementing teaching and methodological initiatives to foster the development of self-regulated learning, a goal aligned with an ongoing educational research study in the department.
2. Hybrid teaching, achieved by combining in-person and virtual instructional activities, has been chosen as the suitable method to implement the instructional use of the virtual classroom.
3. Within the virtual classroom, both theoretical content and practical skills relevant to the programs of all subjects in the Biological Bases of Medicine discipline have been covered.
4. Except for training, which is currently being introduced as an activity in the virtual classroom, the other activities have undergone evaluation by the participants. This has resulted in positive feedback regarding their effectiveness (Figure 4).

The technological support for the virtual classroom has been provided by the Moodle platform, within the Virtual Health University Classroom.

Starting in 2020, a gradual incorporation of new activities has taken place in the virtual classroom of the discipline. These include self-assessment of learning, flipped classes, training for handling basic content, and forums for addressing doubts (Figures 1, 2, and 3).

Figure 1. Self-assessment

Figure 2. Flipped classroom (video-lecture)

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Figure 3. Forum for doubts

Figure 4. Training

The department's use of the virtual classroom has been grounded in the hybrid teaching model, signifying a departure from the conventional (in-person) method of handling the teaching-learning process. Hybrid teaching is defined by its combination of in-person and virtual instruction, using appropriate didactic and technological tools for each mode of teaching and learning. It represents an alternative approach stemming from the trends in the digital society, serving as a viable strategy in university academic management. In the hybrid teaching model, the virtual environment enables asynchronous interaction among students and between students and professors during activities and tutorials. This approach aims to foster motivation for studying and encourages student engagement in the learning process, within the context of a flexible curriculum.[10]

Hybrid teaching demands fostering students' awareness of their responsibility for learning, which is essential for undertaking self-management of knowledge.[11] In this regard, educators should promote learning self-regulation strategies that include monitoring their own learning process.[12]

Self-assessment serves as a means to promote reflective analysis of both achievements and failings during study.[13] The departmental adoption of the virtual classroom in the Biological Bases of Medicine discipline comes from the systematic use of self-assessment, with the intention of improving students' aptitudes for self-management of knowledge, promoting the development of autonomy in studying.[14] There is evidence of limitations in this skill, as indicated by the identification of challenges among first-year students in self-regulating their learning.[15]

The flipped classroom model has been described as an adaptation to the demands of integrating Information and Communication Technologies (ICT) into teaching. It is compatible with hybrid teaching. This approach encourages responsibility for individual learning and contributes to the development of skills in working with digital technology.[16] Previous applications in the educational management of basic biomedical sciences suggest the need for further exploration and study.[17]

The implementation of the flipped classroom in the Basic Biomedical Science Department was proposed by the Department of Educational Technology of the Medical University of Havana. It was viewed as an innovative

didactic approach to meet the department's methodological objective of enhancing the virtual classroom's functionality. This included the incorporation of new activities alongside self-assessment of learning. [18] So far, this approach has been applied to two topics related to microscopic morphology.

Training is part of the activities that can be used in virtual learning environments, and involves providing students with a guide to develop a specific skill. This guide directs students to search for answers to questions associated with images or videos. Later on, students will receive feedback to progressively know about their performance.[19] The department's training activities are designed to enhance study techniques while approaching the content´s basic. At this moment, two training activities have already been implemented in the subject Nervous, endocrine, and reproductive systems.

The forum in the Moodle platform allows for continuous asynchronous interaction between students and teachers, so that individual guidance needs can addressed during self-preparation. This has been reported as a valuable means of effective exchange among participants in courses conducted in virtual environments.[20] In the virtual classroom of the Biological Bases of Medicine discipline, students can ask for clarification on any questions that arise during scheduled activities. Dedicated forums are provided for this purpose in most of the activities.

With the introduction of hybrid teaching in the educational and methodological management, the Department of Basic Sciences has brought about a teaching innovation by integrating ICT into the teaching-learning process in a face-to-face program. This contribution extends its educational role by providing formative opportunities in asynchronous conditions.[21] It helps to legitimize virtuality as an additional educational environment,[22] where conditions can be created for the achievement of cognitive skills through information management.[23] This implies promoting innovation in educational management to focus the formative process on the student[24,25] and overcome the widespread use of digital technology merely as a support for repositories of teaching materials.

In their article Estado del arte sobre concepciones de la calidad de la Educación Superior, Acevedo, Gago, da Silva, and Bastos[26] outline that the term is defined based on the intended objectives. They emphasize that one of its defining properties is its occasional change, leading to the understanding that both its general interpretation and the indicators used for measurement possess a mutable nature. This mutability depends on the social role assigned to HEIs. This factor plays a crucial role in shaping educational policies. These authors conclude that evaluating educational quality should not solely focus on satisfying the instructional needs of users. It is also necessary to legitimize the comprehensive formative impact achieved on future professionals from social, political, and technical perspectives. Based on the above-mentioned considerations, when addressing educational quality, it is crucial to take into account the assessment of its relevance. This serves as a significant indicator of quality, reflecting the alignment between the mission of HEIs and what society needs as a result of their educational intervention. It is aimed at shaping the personality of students. Without this premise, which explains the need to systematically reassess the course of HEIs in light of the ever-changing environment in which they operate, the significance of the university as a social subsystem would be diminished. Consequently, its strategic meaning would be lost, and its effectiveness would be weakened.

The information provided suggests that the virtual classroom holds significance as a contemporary educational environment. It serves as a facilitating space for the relevant management of the teaching-learning process during the comprehensive training of professionals. Serving as the foundation of a hybrid teaching modality, it promotes educational quality by aligning with the demands of educational policies that respond to social needs. This aims to foster sustainable development in the context of a globalized society, where information and knowledge are essential elements for progress.

The research conducted has limitations as it focused on a partial analysis of the general characteristics of an ongoing process. Consequently, drawing overall conclusions is not possible. However, the results represent an experience that can be used as a reference for subsequent studies, whether within or outside the academic department involved in this work. The study addresses a current topic of interest for medical education.[27,28,29]

CONCLUSIONS

The use of virtual classrooms for teaching purposes by the Basic Biomedical Science Department, Salvador Allende Health Sciences Faculty, Medical University of Havana represents a pertinent educational innovation. It contributes to the digital transformation of medical education, particularly in the instructional and methodological management of the Biological Bases of Medicine discipline. Due to its significance, it is advisable to continue with this scientific-methodological approach within the department and expand it to other academic departments within the faculty.

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