

# Methodological strategy for the formation of information competencies with the use of ICTs

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## ABSTRACT

Competencies are currently defined and classified according to their trend. Among the competencies classified as basic-generic is the competence of information and knowledge management. In Cuba, informational competencies are trained in the postgraduate stage through information literacy programs; however, they should be trained during general or university education in order to provide society with a competent professional. With the objective of designing a methodological strategy for the formation of informational competencies with the use of information and communication technology (ICT), a quasi-experiment was developed in the Faculty of Health Technology of the University of Medical Sciences of Havana during the 2022 academic year. The methodological strategy was modeled and implemented in two independent samples. When the evaluation was carried out, it was obtained that 50% of the total sample reached the evaluation of good, while 36.8% was evaluated as excellent. The strategy was validated by experts with a high rating, while the validation of the students according to the satisfaction survey showed that 100% considered that the use of ICTs in the process of information competencies training had a positive influence, 91.6% considered that they acquired the competencies, and 100% expressed satisfaction with the use of ICTs during the development of the course. It is concluded that the methodological strategy for the formation of informational competencies with the use of ICT is valid for future generalization.

**Keywords:** information competencies, information literacy, methodological strategy, ICTs

**How to cite:** Olazabal Guerra, D. J., & Estrada Velazco, A. (2024). Methodological strategy for the formation of information competencies with the use of ICTs. In M.J. Peralta González (Ed.), *Generation and Transfer of Knowledge for Digital Transformation, II International Symposium, SITIC 2023, Santa Clara, 15-17 November 2023, proceedings. Advanced Notes in Information Science, volume 6* (pp. 31-40). Pro-Metrics: Tallinn, Estonia. DOI: 10.47909/978-9916-9974-5-1.91.

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## 1. INTRODUCTION

Information and communication technologies (ICTs) are nowadays an important working tool to dynamize the process of scientific research at all levels. The efficient use of these technologies contributes favorably to a higher degree of technological professionalization of professionals in the process of permanent training, which allows them to face a research according to the advances of society in the present century (Mesa Vázquez et al., 2022).

In the information society, as it could not be otherwise, the new technologies to access, process, and transmit information, the new forms of communication determine that a large part of the contents and competencies of the basic training required today are directly related to ICTs (Gutiérrez Martín, 2022).

It is necessary to analyze the definition of competence, which is considered as the mobilization of knowledge, ability, attitude, and value that a person shows when acting effectively in the face of various problems based on his or her own characteristics and experiences. Therefore, it refers to a group of knowledge, procedures, and attitudes

that are combined, in a coordinated and integrated manner, in the sense that the person must know how to do and know how to be for professional development (González Calatayud et al., 2018; Salazar Farfán & Lescano López, 2022).

In the knowledge society that humanity lives in, information plays a key role, and it is important to acquire competencies and/or informational skills to effectively access the largest amount of information resources, which will be part of new knowledge (Aliaga Maraño, 2022). From the systematization carried out to normative documents of Higher Medical Education in Cuba for undergraduates, difficulties are detected in the development of actions during the teaching-learning process from the curriculum in the formation of informational competencies of human resources who are trained in Health Technology careers at the University of Medical Sciences of Havana, coupled with the disuse of activities to form informational competencies through the use of ICT (Zelada Pérez, 2018).

In assessing the above, a clear contradiction is established between the model of competent information professional demanded by society today and the professional who graduates from university training without developing informational competencies during their training.

Research problem: How to contribute to the development of informational competencies with the use of ICTs in the students of the Faculty of Health Technology of the University of Medical Sciences of Havana?

General objective: To implement a methodological strategy for the use of ICT in the development of informational competencies in the students of the Faculty of Health Technology of the University of Medical Sciences of Havana.

## **2. METHODOLOGY**

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A quasi-experiment was developed in the Faculty of Health Technology of the University of Medical Sciences of Havana during the 2022 academic year. For the development of the research, theoretical methods (analytic-synthetic, inductive-deductive, historical-logical, documentary analysis, systematization, modeling, and functional structural systemic) and empirical (observation and survey) were used, as well as statistical methods for the presentation and analysis of the information, supported by the work with office tools and SPSS software.

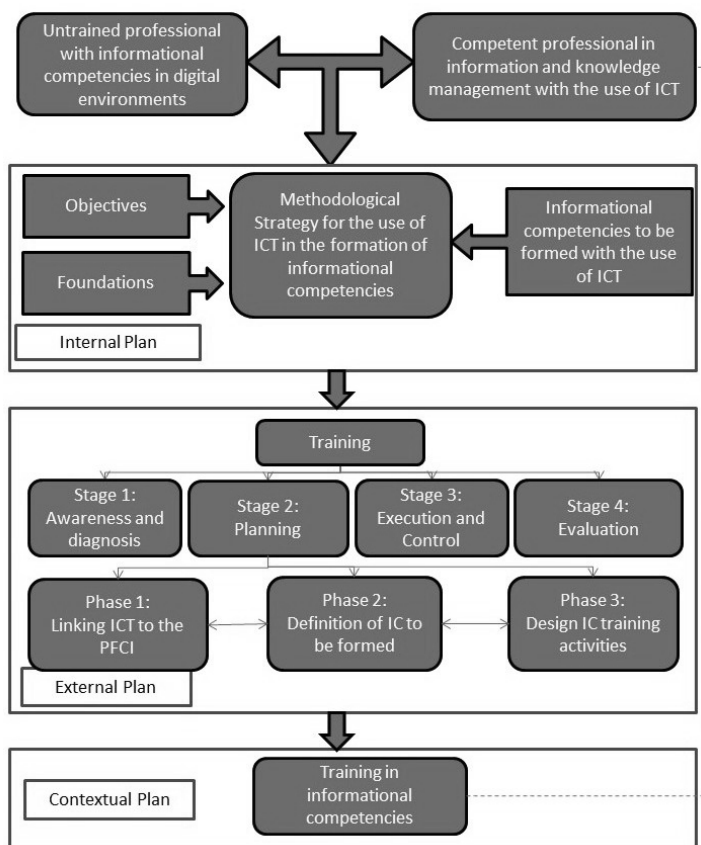
The population defined for the research were the 30 students who constituted the enrollment of the fourth year of the regular day course of the Faculty of Health Technology of the University of Medical Sciences of Havana in the academic year 2022, which at the same time constituted the sample, grouped in two sample groups. For the expert interview, a non-probabilistic sample of five specialists with experience in the use of ICT in the educational teaching process and informational competencies was selected.

The interviews were anonymous, guaranteeing the voluntariness of those involved to participate in the research by signing the informed consent form, and inclusion and exclusion criteria were established.

## **3. RESULTS**

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Based on the literature review, the methodological strategy was modeled. For this purpose, the model proposed by several authors (Suárez Jorge, 2023; Valle Lima, 2012; Zelada Pérez, 2018) was taken into account, from which the author defined his own model for the strategy designed, which is shown in Figure 1.



**Figure 1.** Methodological strategy for the use of ICTs in the development of information competencies. Source: Prepared by the authors.

Among the main results of the initial diagnosis, it was found that most of the respondents carried out self-study activities using mobile technology, dedicating more than 10 hr a day to review the Internet through electronic devices, so it was decided to take advantage of this potential in the process of updating the subject in the virtual health classroom (AVS).

For the development of the teaching process, didactic activities were enabled in the AVS, as well as the encouragement of activities from the Moodle platform such as Workshops and Wikis, contributing to the formation of values in the students at the same time as the formation and development of informational competencies. Among other actions, workshops were developed, from which infographics and video tutorials were elaborated by the students themselves, and demonstration of skills through role-playing games in which ICTs were used for the user training process.

Similarly, learning methodologies based on traditional and new educational trends (Riquelme, 2023) were used, having as a premise the use of ICT in the process of training and development of information competencies, highlighting the workshops, such as the inverted classroom, heuristic method, discussion and debate, discovery methods, playful method, pyramid method, among others.

The strategy was implemented in two independent samples. When the evaluation was carried out, 50% of the total sample was evaluated as good, while 36.8% was evaluated as excellent. The strategy was validated by experts with a high rating, while the validation of the students according to the satisfaction survey showed that 100% considered that the use of ICTs in the process of information skills training had a positive influence, 91.6% considered that they acquired the skills, and 100% expressed satisfaction with the use of ICTs during the development of the course.

#### **4. DISCUSSION**

Similar studies have shown that the use of various methods for the development of information competencies

has the expected effect, which corresponds to the results obtained in this research. Such is the case of Torres (2020) who developed a pedagogical and didactic strategy for the development of informational competencies through learning processes necessary to prepare the university community with the ability to search, handle, and manage information, with a critical, reflective, and responsible attitude for decision making, in the face of the new challenges demanded by the knowledge society.

The study observed during the implementation of the virtual learning environment, and the entry and exit tests showed that the virtual learning environment significantly improves information management skills. Students improve in the expression of their need for information, identify keywords and related terms, identify typologies of information sources, as well as in the construction of a search strategy to retrieve information, favorable impact when applying the pedagogical and didactic strategy with significant improvement in information management skills and lessons learned that contribute to the development of information management skills within a virtual learning environment.

On the use of various activities within the methodological strategy with the use of ICT, similar results are obtained to Granda et al. (2019), who in the study carried out used techniques similar to those of the present research, such as gamification, the inverted classroom, and distance education, with the use of ICT and spaces in virtual classrooms on the Moodle platform.

Other results with which the results obtained are compared are those achieved by Aquino et al. (2021) who determined that the experiences confirm that the correct use of learning environments in higher education beneficially

supports the learning of undergraduate students, as long as the teacher makes use of these environments pedagogically. They also concluded that learning environments based on self-regulation should be promoted and that learning environments should no longer be used as mere technological tools based on pedagogical methodologies. To this end, they recommended that higher education institutions should carry out actions in the use of ICTs to achieve the development of competencies and the expected learning achievements, betting on hybrid models in order to improve educational processes.

In a research conducted by Basilotta et al. (2020), it is shown that students have different technological devices at home. The presence of such resources is common, and students use ICTs to perform various personal and academic activities. However, despite the fact that ICTs are integrated into their daily lives, the results obtained in the items related to information literacy were less encouraging, finding a medium level of knowledge and ability. However, attitudes are more positive, with a higher average.

## **5. CONCLUSIONS**

It is concluded that the methodological strategy for the formation of informational competencies with the use of ICTs is valid for future generalization.

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