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ORIGINAL

Training informational competencies in Health Technology students from the curriculum

Formación de competencias informacionales en estudiantes de Tecnología de la Salud desde el currículo

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ABSTRACT

Introduction: the formation of informational competencies from the curriculum in university students is a frequent topic of analysis by various researchers. The search for excellence in the education and training of competent information professionals are premises for higher education worldwide, an aspect from which Cuba is not exempt. In this context, the authors developed a research with the objective of characterizing the formation of informational competencies in Health Technology students from the curriculum.
Method: a descriptive cross-sectional study was carried out at the Faculty of Health Technology of the University of Medical Sciences of Havana during the year 2024. In the research, a critical analysis of the teaching programs that are related to training was developed of informational competencies from the Health Technology curriculum. An observation guide was applied in which the inclusion of topics that contribute to the formation of informational competencies in Health Technology students was evaluated.
Results: among the results obtained, it stands out that 70,8 % of the components evaluated globally in the four teaching programs do not fully contribute to the formation of informational competencies.
Conclusions: it is essential to take into consideration the growing tendency to link the information literacy process within the university curriculum for the formation of information competencies and, consequently, design teaching programs that contribute to this end.

Keywords: Informational Competencies; Curriculum; Health Technology; ALFIN; ICT.

RESUMEN

Introducción: la formación de competencias informacionales desde el currículo en los estudiantes universitarios constituye tema frecuente de análisis por diversos investigadores. La búsqueda de la excelencia en la educación y formación de profesionales competentes en información, resultan premisas para la educación superior a nivel mundial, aspecto del que Cuba no está exenta. En ese contexto, los autores desarrollaron una investigación con el objetivo de caracterizar la formación de competencias informacionales en estudiantes de Tecnología de la Salud desde el currículo.
Método: se realizó un estudio descriptivo de corte transversal en la Facultad de Tecnología de la Salud de la Universidad de Ciencias Médicas de La Habana durante el año 2024. En la investigación se desarrolló

un análisis crítico de los programas docentes que guardan relación con la formación de competencias informacionales desde el currículo en Tecnología de la Salud. Se aplicó una guía de observación en la que se evaluó la inclusión de temas que tributan a la formación de competencias informacionales en los estudiantes de Tecnología de la Salud.
Resultados: entre los resultados obtenidos destaca que el 70,8 % de los componentes evaluados de forma global en los cuatro programas docentes no aporta de forma total a la formación de competencias informacionales.
Conclusiones: resulta imprescindible tomar en consideración la creciente tendencia a vincular el proceso de alfabetización informacional dentro del currículo universitario para la formación de competencias informacionales y en consecuencia, diseñar programas docentes que contribuyan a este fin.

Palabras clave: Competencias Informacionales; Currículo; Tecnología de la Salud; ALFIN; TIC.

INTRODUCTION

Humanity's information society is directly linked to the accelerated development of Information and Communication Technologies (ICT). The use of the latest technologies related to the production and dissemination of information impacts the professional activities of all sectors of society. Consequently, training information skills is a new issue that is becoming increasingly important.[1,2,3]

In the information society, as could not be otherwise, new technologies for accessing, processing, and transmitting information and new forms of communication determine that a large part of the content and skills of basic training necessary today are directly related to ICT. Expressions such as computer, audiovisual, multimedia, digital, media, and informational literacy, all of which are associated with each other and called to converge, demonstrate this.[3,4]

In education, competencies are considered to be comprehensive actions that arise from an education oriented towards the development of the different potentialities of the subject, considering their context and the other educational scenarios, as well as their multi-dimensionality. They can be classified into specific and basic-generic:[3,5]

- Specific competencies: These are those specific to a particular occupation or profession and, therefore, have a high degree of specialization and specific educational processes (technical programs, job training, and higher education).
- Basic-generic competencies: Also known as transversal, for life, they are fundamental for achieving personal fulfillment. They enable and empower people to integrate successfully into professional, work, and social life, and they can be trained in basic, secondary, and higher education.

Based on the systematization of normative documents of Higher Medical Education in Cuba for undergraduate studies, difficulties are detected in the development of actions during the teaching-learning process from the curriculum in the training of informational competencies of human resources that are trained in Health Technology careers at the University of Medical Sciences of Havana, together with the disuse of activities to develop information literacy through the use of ICT.[2,6]

Consequently, Olazabal[3] established an apparent contradiction between the model of information-literate professionals demanded by today's society and the professional who graduates from university without developing information literacy. Faced with this contradiction, in a previous piece of research, he proposed a methodological strategy for using ICT to develop information literacy in students of the Faculty of Health Technology at the University of Medical Sciences of Havana (UCM-H).

To this end, he operationally defined the process of developing information competencies with the use of ICT in students of the Faculty of Health Technology of the UCM-H as the set of methodologically organized and interrelated actions to develop information competencies during the undergraduate course, based on knowledge, the student's capacity to apprehend this knowledge, the development of skills that enable adequate professional performance and the values that should characterize them about information, which will allow effective management of information and knowledge with the use of ICT.

Based on the above and their experience in undergraduate and postgraduate teaching related to the training and development of information skills in the field of medical sciences, the authors set out to research and characterize the training of information skills in Health Technology students from the curriculum.

METHOD

A descriptive cross-sectional study was conducted in the Faculty of Health Technology at the University of Medical Sciences in Havana in 2024. The research involved a critical analysis of the teaching programs related to training information competencies from the Health Technology curriculum. Six undergraduate programs,

including one discipline and five subjects, were evaluated.

For the evaluation, an observation guide was applied, in which the inclusion of topics that contribute to the training of information competencies in Health Technology students was evaluated. The provisions of the Reference Framework for the training of information competencies in the Cuban context of the health sciences[7] were taken into account in the definition of the indicators.

The Microsoft Excel tool from the Microsoft Office 2007 office suite was used to analyze and process the information. Descriptive statistics procedures were used to organize and classify the information and interpret the data obtained at different times by means of absolute frequencies and percentage calculations.

RESULTS

The analysis of the teaching programs allowed us to identify the objectives and contents that contribute to the training of information literacy from the curriculum in Health Technology degrees.

Only the Health Information Systems degree includes the subject Informational Competences (IC)[8], which is dedicated to the training of competencies as a component of the comprehensive preparation of the health information management professional. It constitutes the closing of the training cycle in the discipline of Scientific Information and assumes the core competencies defined by Fernández[9,10] for health professionals.

The rest of the Health Technology degrees (Degree in Hygiene and Epidemiology, Medical Imaging and Radiophysics, Comprehensive Health Rehabilitation, Optometry and Optics, Speech and Hearing Therapy, Clinical Bioanalysis, and Nutrition), on the other hand, include several subjects that contribute, through their content, to the development of some of the skills included in the information competencies.

The subjects are part of the Scientific Research in Health Discipline, which aims to "Develop skills related to the search for and treatment of scientific and technical information, for the development of scientific and technical language in research, as well as the use of statistics and mastery of the different categories of Research Methodology, which contribute to their research training (...)".[11]

The specific subjects that contribute to the training process in information skills are Scientific Information (IC)[12], which students study in the degree courses in Clinical Bioanalysis, Medical Imaging and Radiophysics, and Health Rehabilitation. All the degree programs take the Research Methodology (RM) program[13] at different times of the academic year, according to the curriculum planning for each specialty, except for the Health Information Systems degree program, which has the Research Methodology discipline.

From the contents of Statistics (S)[14], work is done with students with degrees in Medical Imaging and Radiophysics, Health Rehabilitation, Optometry and Optics, Speech and Hearing Therapy, Clinical Bioanalysis, and Nutrition based on the process of information and calculation of indicators. On the other hand, for the Degree in Hygiene and Epidemiology, the Statistics program[15] was modified to include topics related to the analysis of populations.

Table 1 shows the contents related to information competencies taught in Health Technology degrees based on the core concepts defined in the Reference Framework for the training of information competencies in the Cuban context of health sciences.

Table 1. Inclusion of core concepts in the curriculum programs of Health Technology degrees

Core concepts	Teaching programs			
	IC	MI	E*	CI
Knowledge is built up in the systematic search for scientific information and is conditioned by the context	SO	SO	SO	SO
Critical thinking conditions the articulated, reflective, ethical and integrated development of information for problem solving, research development and innovation	SOP	SOP	NO	SO
Healthcare decision-making is mediated by the use of information	SOP	SOP	SOP	SO
Open science marks a new way of generating and managing content	NO	NO	NO	NO
Organizational information culture as a higher stage than information literacy enhances knowledge management in organizations	NO	NO	NO	NO
Health professionals research, evaluate and communicate scientific results, continuously rethinking the traditional model of publication and dissemination	SOP	SOP	SOP	SO

Legend: observed (SO), partially observed (SOP), not observed (NO).
* Includes both versions of the Statistics program.

For the processing of the information, a quantitative scale was developed where values were assigned to each qualitative category as follows: observed (3), partially observed (2), not observed (1).

The inclusion of two components that were not included in the core competencies defined by Fernández(9,10)

is noteworthy, and they arise from the constant updating of information competencies with the advancement of ICT in the context of knowledge management. In the previous analysis, it can be seen that of 6 components evaluated in 4 programs, the category of "not observed" prevails in 37,5 % of the observations, as shown in figure 1.

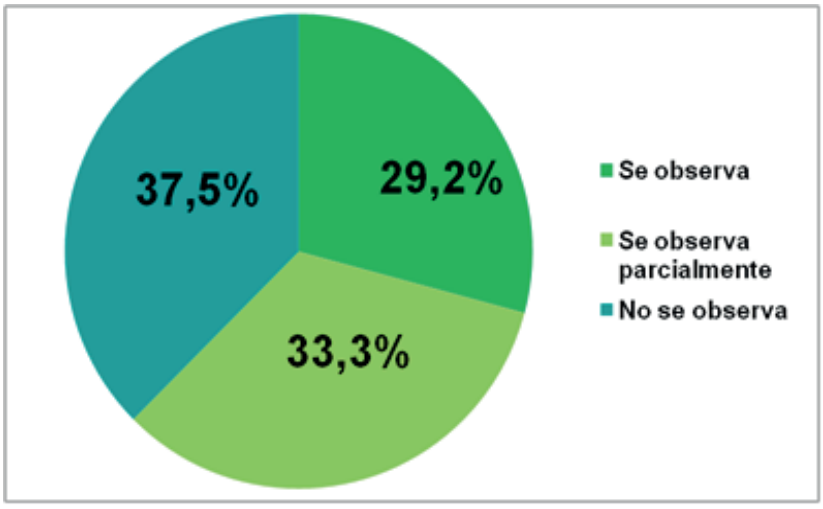

Figure 1. Overall result of the observation of the core components in the teaching programs

When evaluating the above information, 70,8 % of the assessed components globally in the four teaching programs do not fully contribute to training information competencies. In this sense, it is essential to consider the growing tendency to link the information literacy process within the university curriculum.

Plúa et al.[16] point out that information literacy is necessary for higher education, as it greatly influences the activities of the academic process, with which the authors agree. These processes promote teaching and learning and the capacity for critical, linguistic, and cognitive analysis and evaluation of information.

The authors share the criterion of implementing information literacy in a sustained way, articulated to the curricula and in a broad collaboration with teachers and librarians, as proposed by Plúa et al., who state that when studying the curricular integration of information literacy, it is clear that these competences are key in preparing for study, the world of work and personal life, something that Marzal et al.[17] in similar research carried out in Chile.

In Ecuador, Cedeño et al.[18] pointed out that the development of information literacy skills must be systematically structured, planned, and executed as an integral part of curricular training in interaction with the contents of the teaching disciplines, under the direction of the teacher and the leading participation of the professionals in training, a criterion with which the authors agree and which constitutes a common element with Fernández et al.[7] According to García et al.[19], information literacy is the cornerstone of lifelong learning. It enables students to access and efficiently evaluate information critically and use it creatively and accurately while respecting intellectual property. Hence, the need for its training from primary school to university, as also referred to by Lau et al.[20]

On the other hand, Estrada et al.[21] conceived actions for the training of informational competencies to orient the learning activity of students in correspondence with three informational competencies defined for students of Bioinformatics Engineering at the University of Informatics Sciences of Havana from the subject Software Engineering, too, from their systems of professional skills, knowledge, and values that they should form and develop in students, contribute to the formation of informational competences.

In the Peruvian university context, the study carried out by Turpo et al.[22] served as input for the curricular redesign of teacher training, confirming that the incorporation of ICT for digital literacy is crucial and influences the acquisition of IC.

At the Pontifical Catholic University of Chile, Anguita and López[23] designed the course on Information Literacy in Libraries, which was included as a three-lesson workshop within a research-based course in the Theology program. The aim of the course is to develop students' information literacy skills and incorporate them into the research work carried out during the course.

Several authors[24,25,26,27,28] obtained similar results and observations in the national university environment, in whose research the need to integrate the training of information competencies into the university curriculum was highlighted. To this end, they formulated proposals for courses using ICTs from Virtual Classrooms, with positive results in their implementation.

CONCLUSIONS

It is essential to consider the growing trend of linking the information literacy process within the university curriculum to train information competencies and, consequently, to design teaching programs that contribute to this end.

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CONFLICTS OF INTEREST

No conflicts of interest are declared.

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