Original article

Model of infotechnological professional competence of university librarians for information management

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ABSTRACT

The limitations of librarians of the University of Ciego de Avila for the use of infotechnological tools in information management constitute a problem for their professional performance in the current context. In the literature consulted, it is evident the theoretical-methodological and practical lack of definition of information management with the use of infotechnological tools in the university library. The use of the methods of theoretical systematization, modeling and structural systemic allow presenting as a result the model of professional infotechnological competence of university librarians for information management.

Keywords: University librarians; Digital competencies; Professional competencies; Information management.

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Introduction

The achievement of the social relevance of the university has much to do with the contribution to the development of human knowledge, which is based on the management and socialization of scientific and technical information. These processes require dynamic and efficient ways of working, capable of following the progress of science, culture and, fundamentally, the needs of society. Several authors have based their analyses on the role that the university library should play to contribute to the social relevance of the university, finding in their criteria coincidences in pointing out that:

- Libraries are part of the system that must guarantee the quality of the main activities entrusted to universities, as it is closely linked to the development of their mission.
- The university library is an agent of change and is considered an essential part of the university infrastructure.
- It is the main center of information assurance of all university functions, the space where the information resources necessary for the generation of new knowledge are organized.

Another important aspect addressed by the aforementioned authors is related to the change of scenario that university libraries have undergone since the introduction of information technologies in their traditional processes. When referring to this topic, terms such as challenge, challenge, uncertainty are recurrently used, since information technologies have made access to information and its use much easier, but the development achieved in this field requires university librarians to update their knowledge, skills, attitudes and values for the location, processing and socialization of information in order to respond to the new demands and contribute to the university's mission. Similarly, the relevance of the study of the subject is understood from the need of its approach from the pedagogical sciences: What is the place of the librarian among the personal components of the educational process; how should the informatics and pedagogical contents be integrated in the technical-librarian performance; on what bases are the professional development plans of university librarians based?

The social relevance and the contribution of the university to the development of human knowledge, requires the theoretical projection and the approach in practice to an ideal of university librarian, characterized by a high professional level, possessing the professional skills that allow him/her to assume a leading and creative role in the

performance of his/her activity, from the integration of computer tools to the information management service.

It is common to find in the scientific literature consulted, reflections on the importance and relevance of the preparation of librarians in the use of information technologies in information management, however, the theory does not reveal a theoretical-methodological construct that specifies what contents should be incorporated into the training of librarians. For this reason, it was necessary to model the infotechnological professional competence of the university librarian for information management.

Development

Theoretical foundation of the infotechnological professional competence of the university librarian for information management.

In Latin America, coinciding points are found for the conceptualization of competencies: in the association with intelligent, responsible, autonomous actions; with suitability and ethical commitment (Reinoso, 2004; Tobón, Pimienta & García, 2010; Pinilla, 2012: Hernández, 2013; Villafuerte & Benites, 2018); in the recognition of the link between competency and the context of performance (Reinoso, 2004; Posada, 2004; Tobón, Pimienta & García, 2010; Hernández, 2013). Another coincidence is revealed in the consideration of the influence of the development of professional competencies on competent and suitable professional performance, as a perspective of continuous improvement, which hints at the regulatory nature of competencies (Tobón, Pimienta & García, 2010; Pinilla, 2012; Hernández, 2013; Villafuerte & Benites, 2018).

When defining competencies, some authors refer to complex constructions of knowledge or human qualities that combine knowing how to be and knowing how to be (Reinoso, 2004; Villafuerte & Benites, 2018); others understand them as complex capabilities or set of capabilities (Posada, 2004; Pinilla, 2012); while, for (Tobón, Pimienta & García, 2010; Hernández, 2013) they are integral actions. This shows the diversity of criteria when assuming a definition of competency.

In Cuba there is coincidence in defining competencies from the psychological perspective: complex psychological configuration (González, 2002), personality

qualities (Pla, 2005) or complex processes (Montes de Oca & Machado, 2014); also in terms of their structure: for González (2002) competencies integrate in their structure and functioning motivational, cognitive formations and personological resources; according to Pla (2005) they integrate a set of knowledge, skills, habits, abilities, professional skills, value orientations, interests, motivations and personality qualities; while Montes de Oca & Machado (2014) refer to the integration in their structure of knowledge, values, skills and strategies.

From the above, it can be inferred that competencies are manifested in professional performance, in the quality of performance, the confrontation of conflicts, the reconstruction of their strategies to act in the solution of tasks, professional and life problems; that their development allows a self-regulated, independent, flexible, responsible and reflective performance; that they make the professional suitable for the development of the activity in its different functions and guarantee a responsible and efficient professional performance.

The competencies also fulfill certain functions; according to Pla (2005) they allow studying, projecting, revealing and evaluating in an integrated manner the performance of the professional in relation to the development of specific functions of his activity. Another element to be taken into account is the individual character of competencies stated by Montes de Oca & Machado (2014) when they state that the elements that integrate them are related according to the conditions, characteristics and potentialities of each subject, of the context and of the specific activity.

In the context of this research, the definition of professional competence provided by González (2002) is assumed, who defines professional competence from a personological approach as: "A complex psychological configuration that integrates in its structure and functioning motivational, cognitive and personological resources that are manifested in the quality of the professional performance of the subject, and that guarantee a responsible and efficient professional performance" (p.4).

The state of the art on this subject evidences a very advanced conception of the librarian's professional competencies that would allow him/her to be involved in the training of graduate students and to design services that favor the mobility and activity of the students in academic programs (Roque & Valenciaga, 2018), these authors consider the development of informatics tools for teaching activity and the help in the decision making of its users as part of the librarian's professional competencies.

From the information sciences, the term competency is defined in reference to a psychological configuration of the personality or characteristics of people that designate the suitability of the librarian (Rodriguez, 2008). When referring to the structure of competencies, a set of elements composed of knowledge, skills, attitudes, values and capabilities is mentioned. It is also stated that competencies designate the librarian's suitability to perform his/her work effectively or better and contribute positively to his/her institutions, users and profession, and that competencies are linked to the challenges imposed by technological advances.

From the point of view of the librarian's professional competencies, theoretical and practical competencies are recognized: strategies in the search for electronic information, creation of personalized services with the support of new technologies, organization and dissemination of knowledge, permanent research readiness, innovative attitude and constant willingness to learn; and conceptual competencies: management of electronic databases, design and implementation of repositories, bibliometric measurement of publications, knowledge of various e-learning platforms (education and training through the Internet) and concepts related to Web 2.0.

In the characterization of the librarian's professional competencies, reference is made to a wide range of skills and qualities, of which the following are suitable for this referential framework: adaptability, commitment to excellence, active listening, team spirit, entrepreneurial spirit, creativity, motivation; as well as instrumental capacities for innovation, incorporating blogs and wikis in their tasks and responding to the demands of educational technology and didactic design.

For the design of the infotechnological professional competence of the university librarian, it is convenient to consider as background the proposal of Rodriguez (2008), who provides a model of pedagogical professional performance of the school librarian of the Technical-Professional Education; the model contemplates as one of the areas of performance the area of information management, for which the author defines the professional competence of information management, which is assumed as a professional competence of general character. The infotechnological professional competence of the university librarian, which is proposed in this research, can be recognized as a specific competence that is integrated to the information management competence proposed by Rodriguez, (2008).

The diversity of models, conceptualizations and typologies linked to professional competencies, differences in the scope of the librarian's professional competencies,

according to the scientific disciplines and the context of technological development in which their definitions originate, are noted, and a set of fundamentals that theoretically condition the university librarian's infotechnological professional competency is derived:

- The integration of knowledge (knowing, knowing how to do, knowing how to be), skills, complex capacities or set of capacities.
- Its orienting character with respect to professional performance in order to guarantee the integral response of the personality in a given situation.
- Its structuring as a system of knowledge, skills, attitudes, values, abilities and qualities.

Modeling the infotechnological professional competence of university librarians for their performance in information management.

For the modeling of the infotechnological professional competence of the university librarian for his performance in information management, a methodological procedure was used that included the following stages in the research process:

I.-Theoretical foundation of the infotechnological professional competence of the university librarian for his performance in information management.

II.-Contextual analysis of information management with the use of informatics tools in the professional performance of the university librarian in the environment of the University of Ciego de Avila Máximo Gómez Báez.

III.- Modeling of the infotechnological professional competence of the university librarian for his performance in information management.

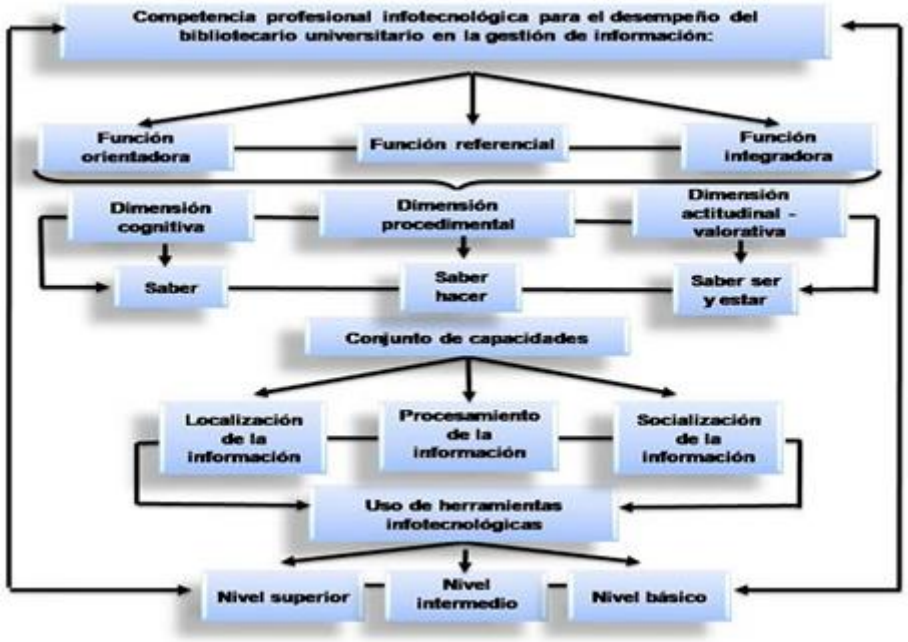
The infotechnological professional competence of the university librarian for his/her performance in information management is defined as:

Complex configuration of the librarian's personality that manifests itself in the gradual and sustained demonstration of integrated knowledge in the cognitive, procedural and attitudinal-valuative dimensions; it is expressed as a set of information location, processing and socialization skills with the use of computer tools and fulfills the guiding, referential and integrating functions for the university librarian's performance in information management.

The following chart shows in a synthetic way the modeling of the infotechnological professional competence of the university librarian for his performance in information

management, for a better understanding of its structure and integration of the internal components that make it up; which are subsequently explained in detail.

Figure 1. Diagram of the modeling of infotechnological professional competence



Source: Madrazo (2019)

Functions that are integrated in the professional infotechnological competence of the university librarian for information management.

- Guiding function: it specifies the contents for the projection and design of professional development, as well as the contents of the professional performance of the university librarian, of interest for work planning and assignment of tasks.
- Referential function: it offers a contextualized image of the university librarian, taking into account the specific conditions in which he/she performs his/her professional activity and serves as a reference for professional self-assessment and evaluation.
- Integrative function: it integrates the conception of the university librarian's performance: as a professional information manager, defined from the information sciences; as a component of the educational process, in interaction with the other personal components of such process, from the pedagogical sciences; as a user of computer technologies and tools.

Dimensions that are integrated in the professional infotechnological competence of the university librarian for his/her performance in information management.

Cognitive Dimension

Localization of information

- Knowledge of computer tools for the design of diagnostic instruments, their application and information processing for user studies and information needs.
- Knowledge of computer tools for locating updated scientific information (search engines, specialized databases, and scientific journals in electronic format).
- Criteria for the evaluation and selection of computer tools according to the user's characteristics and information needs.
- Knowledge of the language to define intentional searches and create thematic alerts for the efficient location of information.

Information processing

- Knowledge of the criteria to be followed to evaluate the quality and reliability of the information obtained.
- Knowledge of computer tools for understanding texts in foreign languages (translators).
- Knowledge of computer tools for filing, ordering and preserving localized information (office suite tools and bibliographic managers).
- Knowledge of computer tools for the design of information products with added value and proactive character, in correspondence with the user's characteristics and information needs.

Socialization of information

- Knowledge of computer tools to socialize information products and scientific results achieved by university researchers.
- Knowledge to guide users in the publication of scientific results, according to their characteristics, needs and interests.

Levels of development of the cognitive dimensión

Basic level, when the librarian demonstrates in his or her professional performance in information management:

- Knowledge of desktop computing tools and those of the university's Web site for locating information (Wnisis, ABCD, institution's repository, FTP).
- Basic computer skills to assemble information packages.
- Identifies at least e-mail and other digital devices to socialize information.

Intermediate level, when the librarian demonstrates in his/her professional performance in information management:

- Knowledge to locate information on the Internet using the Google search engine.
- Criteria for information selection.
- Knowledge of the computer tools of the office package for information processing.
- Knowledge to conform information products.
- Knowledge of the computer tools offered by the University's Web page for the socialization of information (institutional repository, FTP, library site).

Higher level, when the librarian demonstrates in his or her professional performance in information management*:*

Knowledge of how to locate information on the Internet by various means (search engines (Google scholar, Yahoo, altavista); specialized databases (Redalyc, Scielo, Dialnet) and scientific journals in electronic format).

Criteria for selecting the most appropriate computer tool for locating the necessary information.

- Knowledge of symbols and keywords for the definition of intentional searches and the creation of thematic alerts.
- Knowledge of text translators and bibliographic managers for the design of customized libraries.
- Criteria for selecting the best variant for the socialization of information products and scientific results achieved by university researchers.

Procedural Dimension

Localization of information

- Design diagnostic tools to characterize the user community of the university library and identify their information needs.

- Navigate and interact for the location of information through search engines, scientific databases, and scientific journals in electronic format.
- Define intentional searches and create thematic alerts for the efficient location of information through the appropriate use of symbols and keywords.

Data processing

- Critically assess the quality, sufficiency and reliability of the information located based on the evaluation of: accommodation and authority, content, appearance and purpose.
- Select relevant and meaningful information, according to the characteristics and needs of users.
- Work with text translators to understand articles in other languages.
- File order and conserve localized information; following the rules to create content files, using office tools or bibliographic managers according to the characteristics and needs of the users.
- Design information products with added value and proactive character, using computer tools in correspondence with the user's characterization and information needs.

Socialization of information

- Socialize information products using local, national and international informatics tools.
- Access and register in scientific journals in electronic format.
- Guide users to publish scientific results, according to their characteristics and needs.

Levels of development of the procedural dimensión

Basic level, when the librarian demonstrates in his or her professional performance in information management:

- Basic skills to locate information using desktop computing tools and those offered by the University's Web site.
- Basic computer skills to put together an information package.
- Skills to socialize information through e-mail and other devices (flash drives, CDs).

Intermediate level, when the librarian demonstrates in his/her professional performance in information management:

- Skills to navigate and interact on the Internet through the Google search engine.
- Skills to process information using the computer tools of the office package.
- Conform information products.
- Socialize information through the informatics tools offered by the University's web site.

Higher level, when the librarian demonstrates in his or her professional performance in information management:

- Skills to navigate and interact on the Internet and locate the necessary information through different means (search engines (Google scholar, Yahoo, altavista); specialized databases (Redalyc, Scielo, Dialnet) and scientific journals in electronic format).
- Skills to define intentional searches and create thematic alerts.
- Skills to download and install text translators for understanding articles in other languages.
- Skills to work with bibliographic managers (EndNote, Zotero, Mendely) for the creation of customized libraries.
- Skills to socialize information products and scientific results achieved by university researchers, complying with the standards for publication in remote repositories, specialized open access databases and scientific journals in electronic format.

Attitudinal-Valuational Dimension

- Commitment to self-improvement, innovation and teamwork.
- Flexibility to assimilate changes in computer technologies and incorporate them into their professional performance in information management.
- Respect for computer security standards.
- Demonstration of professional ethics in navigation and interaction on networks, respect for copyright in the processing of information and interaction with users.
- Ethical and legal responsibility in information management.

Levels of development of the attitudinal-valuative dimension in the librarian's performance in information management:

Basic level: when the university librarian demonstrates in his/her professional performance a low level of commitment to self-improvement, innovation and teamwork, respect for computer security standards, flexibility to assimilate changes in computer technologies and incorporate them into his/her professional performance in information management and demonstrates professional ethics in navigation and interaction in the networks, respect for copyright in the treatment of information and interaction with users, with ethical and legal responsibility in the management of information.

Intermediate level: when the university librarian demonstrates in his/her professional performance to be moderately committed to self-improvement, innovation and teamwork, respect for computer security standards, flexibility to assimilate changes in computer technologies and incorporate them into his/her professional performance in information management and demonstrates professional ethics in the navigation and interaction in networks, respect for copyright in the treatment of information and interaction with users, with ethical and legal responsibility in information management.

Higher level: when the university librarian demonstrates in his professional performance to be highly committed to self-improvement, innovation and teamwork, respect for the rules of computer security, flexibility to assimilate changes in information technology and incorporate them into his professional performance in information management and demonstrates professional ethics in navigation and interaction in the networks, respect for copyright in the processing of information and interaction with users, with ethical and legal responsibility in the management of information.

Conclusions

The theoretical foundation of professional competencies as content of the training revealed insufficiencies by not taking into account the librarians' needs and the characteristics and demands of their context of action.

The methodological procedure used for the modeling of the infotechnological professional competence of the university librarian for his performance in information management made possible an integrating logic between the functions, dimensions, capacities and levels of development of this competence in university librarians.