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Principles for the creation of scientific books for teaching

Principios para la creación de libros científicos para la docencia

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ABSTRACT

Books with teaching purposes should have a didactic approach in their content. They can be of rapid elaboration, socialization and distribution. Teachers during their teaching planning, produces documents and materials that can constitute a scientific book for teaching. There is a low scientific production of scientific and teaching books that can be used in teaching. Generally the optional subjects lack a bibliographical coverage that allows the students to have a specialized material that facilitates learning. The main aspect that limits this production is the lack of knowledge on the part of the faculty regarding the way to elaborate books with didactic focus destined to learning. The objective of the study was

to identify the necessary aspects for the creation of academic books for teaching. To obtain results, methods were applied at the theoretical and empirical levels, mainly the documentary analysis. In the study, the teaching texts are classified from the content as basic texts or complementary texts, based on the form of presentation of the contents such as compilations and reading selections. The aspects for the elaboration of teaching texts and the way in which they should be evaluated as a way to guarantee their quality are established in order that the text has greater recognition and prestige in the scientific and academic community to which it is addressed.

Keywords: technical scientific literature; academic book; scientific production; learning resource.

RESUMEN

Los libros con fines docentes deben tener en sus contenidos un enfoque didáctico. Los mismos pueden ser de rápida elaboración, socialización y distribución. En tal sentido, los profesores durante su planificación docente, elaboran documentos y materiales que pueden constituir un libro científico para la docencia. Lo anterior responde a que existe una baja producción científica de libros científicos y docentes que puedan ser empleados en la docencia. Generalmente las asignaturas optativas carecen de un cubrimiento bibliográfico que les permita a los estudiantes contar con un material especializado que facilite el aprendizaje. El principal aspecto que limita dicha producción es el desconocimiento por parte del claustro en cuanto a la forma de elaborar libros con enfoque didáctico destinados al aprendizaje. Se planteó como objetivo el estudio identificar los aspectos necesarios para la creación de libros académicos para la docencia. Para la obtención de resultados se aplicaron métodos en los niveles teórico y empírico, fundamentalmente el análisis

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documental. En el estudio se clasifican los textos docentes a partir del contenido como textos básicos o textos complementarios, a partir de la forma de presentación de los contenidos como compilaciones y selecciones de lectura. Se establecen los aspectos para la elaboración de textos docentes y la forma en que los mismos deben ser evaluados como forma de garantizar su calidad con el propósito de que, el texto tenga mayor reconocimiento y prestigio en la comunidad científica y académica.

Palabras clave: literatura científico técnica; libro académico; producción científica; recurso de aprendizaje.

INTRODUCTION

Modern socialization media of science have their antecedents in the seventh century with the emergence of the first scientific journals: "the *Journal des Scavants* in France and *Philosophical Transactions* of the Royal Society of England in 1665" (Dorado and Martínez, 2010). The improvement of print aids was an important instrument that favored the dissemination of scientific knowledge. These magazines were preceded by serial publications that were generally known as newsletters, whose character was purely informative (journalistic). The emergence of serial scientific publications meant that socialization was carried out at a faster rate. According to Núñez (2003): "(...) it was the Scientific Revolution of the 16th and 17th centuries that gave rise to modern science and led to the processes of institutionalization and professionalization of modern science".

After the emergence of scientific journals, these gradually become the main means of socialization of research results. The production of technical scientific books has now been relegated

to the background, largely conditioned by the time for its preparation, the editorial process and the costs of printing. The little recognition of researchers for the production of books has determined that they concentrate on the production of articles.

Academic and scientific books, as we know them today, had their antecedents in the development of universities during the 17th and 18th centuries (Paz, 2018). The development of academy and science led to the creation of specialized and university libraries according to the area of knowledge they addressed.

Unlike technical scientific books aimed at specific scientific communities, books for teaching purposes can be rapidly elaborated, socialized and distributed. This allows teachers during their teaching planning to prepare documents and materials that can constitute a scientific book for teaching.

The above is reflected in the studies by Chartier (2018) and Domínguez, et al. (2019) where in addition, the aspects that determine the tendency to consult electronic books by students are exposed. Editing in multiple formats has made it possible to socialize books first in digital format and then (once the printing process is finished) in printed format.

In this sense, there is a low scientific production of scientific books and teachers that can be used in teaching. Electives usually lack a bibliographic coverage that will allow students to have a specialized material to facilitate learning. The main aspect that limits this production is the lack of knowledge on the part of the cloister as to the way of developing books with a didactic approach for learning. The objective of the study was to identify the necessary aspects for the creation of academic books for teaching.

MATERIALS AND METHODS

The research classifies as descriptive with theoretical and methodological contribution. The study focuses on identifying, designing and describing the aspects that allow the creation of books of a scientific nature. The methodology followed to define the conceptual and methodological criteria in the conception of teaching texts has a qualitative approach. The documentary analysis was decisive, it was directed in two aspects: 1) review and analysis of the conceptual aspects around the edition and elaboration of scientific materials 2) identification of theoretical and conceptual aspects about the elaboration and revision of books for teaching.

Methods at the theoretical and empirical levels were used to obtain results. On the theoretical level, the deductive inductive, synthetic analytical, systemic structural and logical historical was applied. At the empirical level, documentary analysis was used. The technicals applied were reviewing documents from the consultation serials and specialized sources recovered by Scirus, Google Scholar, EBSCO, Redalyc and SciELO.

RESULTS

Types of scientific and teaching books

The scientific and educational books are those used for conducting experiments, in teaching activities and for obtaining research results. It is not a common practice to capture the first results obtained by a book researcher. In general, the first results of research processes are published gradually in the form of journal articles for two fundamental reasons: 1) they are results that due to their brevity cannot constitute sufficient material to make a book. 2) Scientific articles give it greater

prestige to a researcher to publish in books.

Teachers and researchers should publish as a way to demonstrate that they are fit to perform in scientific activity. The scientific activity is structured by groups and communities that direct the processes of obtaining the knowledge of its members. The scientific community exerts a fundamental influence on individual research. Its members are responsible for recognizing research needs and carrying them out. It is characterized by being logical, open to revision, deterministic, intersubjective, general, specific and empirically verifiable. (Massucci and Docampo, 2018)

The scientific activity is constituted by all the actions, institutions, organizations, projects and scientific communities that establish social relations to produce and transmit science. It is every act between people or institutions in order to promote and develop science. Casanueva and Caro (2013) argue the importance of the social aspects of it. It has a strong social component in its creation, dissemination and delimitation that condition it. The social component allows the researcher to make links in related scientific groups, which will allow him to develop his activity.

Scientific production is the materialization and objectification of scientific activity. It is a measure of success of scientific activity and marks the path of professional progress. Martínez (2018) and Rodríguez (2018) affirm that scientific productivity is proof of activity. In this case, the need for a production that serves as evidence for the scientific activity of the researchers is inferred. The production allows you to evaluate the activity, either by criteria of quantity of publications or by the quality of them (prestigious publishers, awards obtained, high impact journals, among others). From the above it is evidenced as a priority for teachers

and researchers to have a systematic scientific production.

The main way of socializing research results is scientific articles. The scientific article is the most recognized document in the academic field. It usually focuses on the exposure of the results of scientists, has a short extension and editorial processes are fast. It is the most used documentary typology for the socialization of research results. It is arbitrated, an aspect that gives it greater recognition by researchers.

The recognition of scientific articles on books becomes relevant after World War II, where scientific production doubles and socializes rapidly. In the early 1960s Thomas Kunh highlights the importance of articles in the academic field in his book: "The Structure of Scientific Revolutions." Kunh (1962) refers to the form of communication of the scientific results by the researchers, in this regard he refers: "their research statements (...) will not have to be included regularly in a directed book (...). Instead they will normally be presented as short articles aimed only at professional colleagues. "

Kunh (1962), referring to the importance of articles on books, states: "... in science today, books are usually texts or retrospective reflections on some aspect of scientific life. The scientist who writes one of these books is more likely that his professional reputation is damaged than enhanced (...) only in the fields that still retain the book, with or without the article, as a vehicle for communication of research, are so lightly drawn the lines of professionalization that a layman can expect to follow progress."

Despite the criteria issued by Kunh (1962), it is valid to establish that each documentary typology has its function and characteristics. Scientific books and teachers are documents that currently many publishers are contacted s professional peers so that

their contents are reviewed. Its extension allows having in the same source a large amount of content on one or several topics. Researchers can locate several aspects of the same theme in a single source without the need to download numerous articles and then assess whether they are useful or not. They are the documentary typology for teaching, allowing students to have a material where the necessary information for their training and the way to acquire knowledge is located.

According to their purpose, scientific and educational books can be classified according to two aspects:

1) According to the content.

- Basic texts
- Supplementary texts

2) According to the form of presentation of the contents.

- Original or pure books
- Compilations
- Reading selections

The basic texts are those that constitute the main source of information for a subject. It contains the contents of the subject in a general way allowing, through it, students acquire the necessary knowledge for their future professional performance. They are usually prepared only for the basic subjects and own of the curricula. Its advocacy is guided by national career missions who designates a coordinator, responsible for the future author itself.

Complementary texts are those that deepen specific topics or contents of a subject. Teachers are the ones that determine which texts are appropriate to complement the knowledge imparted. They can vary (and in fact they do) attending to the students, the context, by decision of the professors,

discipline groups and teaching departments. They can be prepared at the initiative of teachers.

The original or pure books are the least predominant in scientific production for educational purposes. Those are books made exclusively for the purpose mentioned from the effort of one to five authors. Usually the contents of the text have not been socialized (or have been poorly socialized) in other media as events or thesis. It is not a work derived from others, but the contents are original and the author chooses the book to capture their results or findings. They can be the product of research project reports.

Compilations are collaborative works, generally performed by call. Career commissions usually appoint a coordinator who will lead the process of building the book. The coordinator sends a call to those professionals who for their results and prestige, their collaboration in the text would be important. Once the collaborators send their contributions, the coordinator structures the contents and the way they are presented.

Reading selections are made with materials that have already been published. The person in charge of the elaboration of the text locates articles, book chapters, presentations, among others; and organizes them in a text. The origin of the source must always be respected and the Creative Commons licenses must be verified for the reproduction of said works. For the realization of the selections of reading the levels of elaboration of new contents is very low, in general it is only limited to the realization of the introduction, prologue and maybe some chapter. It has no spatial limits; the contents can be national or international.

DISCUSSION

The construction of scientific books and teachers

There is an imaginary in the academic and scientific field that the elaboration of books is something extremely cumbersome, complicated; it demands a lot of time and effort. The books that are elaborated for teaching processes, such as the subjects in the undergraduate and for diplomats, courses and workshops in the post degree; can be made in a short time. Teachers in planning their teaching forms (especially conferences and seminars), should consult numerous sources, usually with a high degree of updating. When planning, the teacher draws up ways of teaching by subject and uses various learning resources which, facilitated by the acquisition of knowledge by students.

The preparation of a scientific book for teaching could then be shaped by the teaching methods developed by the teacher. The chapters could be the main subjects of the subjects. In general, books will be created for electives, proposed by careers and that do not have basic teaching material. Creating a first text could be enriched in future editions, with the final works, extra classes' works and reports of higher quality produced by the students. The teacher's work would be aimed at the management of the contents and their presentation. The final product would be a basic book with the necessary information for the students.

Prior to the formation of the text, the professor must present his idea to his professional colleagues organized in teaching disciplines, departments, faculties, research projects; as a way to compile criteria that could enrich the text. Several subjects have points of contact with others, so a text could be made which pays tribute to several

subjects carried out in collaboration between teachers. This can be enhanced among young teachers because they usually do not have a wide scientific production to enrich the book.

Once the book is formed, it must be presented to professional colleagues as a way to improve its contents. This allows the collective review of the material by homologous professionals in the scientific community where the researcher operates. Later the scientific advice should evaluate proposals to meet if appropriate to the subject, to which must issue an endorsement. At this time a specialized professional must make an opposition to the text as a way to improve aspects in it. Once the aspects identified have been corrected, the editorial process will proceed. The above, seen as a process, gives a criterion of quality of the contents of the book.

Authors should write the contents of the book with a didactic approach. There are not scientific - technical books that are written for the scientific community and other professionals, there are books for undergraduate students. It must contain examples and although it is used the appropriate technical language It should be used terms that facilitate understanding by students. The objective of the book is to contribute to the acquisition of the necessary knowledge of the student for his future professional performance.

For those professionals who have high scientific production, building a book is much easier. The author can make a selection of readings of his articles and papers related to his research topic. The texts resulting from the above may constitute a systematization of the results obtained by the researcher, in addition to being another way of making their results visible. The structuring of the contents and their presentation form can be elaborated together with the publishing house so that it has a higher quality.

Peer review in scientific texts

The review of proposals for teachers is responsible in the first instance by committees or immediate scientific councils in their schools. There will be a designated professional who performs an opposition. The text must be presented in the discipline to which the subject belongs or to the cloister of postgraduate programs as the case may be.

It should be made a peer review guided by scientific advice. It is the evaluation by academic peers that gives the most prestige to a book. The fundamental distinction of prestigious academic books is that they are arbitrated or peer reviewed. Elsevier (2018) states that peer review helps validate research, establish a method by which it can be evaluated and increase the chances of establishing contacts within the research communities. Peer review remains the only widely accepted method for research validation.

There are multiple variants of the review of academic material. Elsevier (2018) distinguishes the following:

Simple blind review.

- The names of the reviewers are hidden from the author. This is the traditional method of review and is the most common by far.
- The anonymity of the reviewer allows impartial decisions. The reviewers will not be influenced by the authors.
- Authors may be concerned that reviewers in their field delay publication, which would give the reviewer the opportunity to publish first.
- Reviewers could use their anonymity as a justification for being unnecessarily critical or

hard in commenting on the authors' work.

Double blind review.

- Both the reviewer and the author are anonymous.
- The anonymity of the author prevents the reviewer from having prejudices, for example, based on the country of origin or previous controversial work.
- The contents written by famous and prestigious authors are valued for the content, rather than for its reputation.
- Reviewers can often identify the author through his writing, thematic or self-citation style.

Open review.

- The reviewer and the author know each other.
- Some believe it is the best way to avoid malicious comments, prevent plagiarism, prevent reviewers from following their own agenda and promote open and honest reviews.
- Others consider open review as a less sincere process, in which education or fear of reprisals can cause a reviewer to refuse to criticize or moderate the tone.

Peer review more transparent.

- Reviewers play a fundamental role in academic publications. However, their contributions are often kept hidden.
- Recognizes the important role of the reviewers.
- Enrich the published content and improve the reading experience.

It is concluded that, scientific books and teachers are those used for conducting experiments in educational activities and to obtain research results.

According to their purpose, scientific and educational books can be classified from the content as basic texts or complementary texts, based on the presentation of the contents as compilations and reading selections.

From the documents generated by the teachers, books can be made. During the planning of teaching forms, teachers should consult numerous sources and learning resources that facilitate the acquisition of knowledge by students. A possible structure could be constituted from naming the chapters as the subjects of the subjects and the contents from the conferences and other teaching forms.

Proposals must be evaluated by professional colleagues. The scientific councils should evaluate the proposals to know if it fits the subjects. A specialized professional should make an opposition to the text as a way to improve aspects in it. It is recommended to perform a peer evaluation so that the text has greater recognition and prestige in the scientific and academic community to which it is addressed.

BIBLIOGRAPHIC REFERENCES

- Casanueva, C., & Caro, F. J. (2013). La Academia Española de Comunicación: productividad científica frente a actividad social. *Comunicar*, 41(21), 61-70.
- Chartier, R. (2018). Libros y lecturas. Los desafíos del mundo digital. *Revista de Estudios Sociales*, 64(6), 12-23.
- Domínguez, J., Ruiz-Velasco, E., Bárcenas, J., Tolosa, J., & Reyes,

- A. (2019). El libro electrónico en el entorno universitario: Problemática para su adopción. *Revista Internacional de Ciencias Humanas*, 8(1), 23-31.
- Dorado, Y., & Martínez, A. (2010). Representatividad de las fuentes de información sobre Archivística en bibliotecas especializadas de la ciudad de La Habana. *Bibliotecas. Anales de Investigación*, 6(2010), 3-14.
- Kunh, T. S. (1962). *The structure of scientific revolutions*. Chicago: University of Chicago Press.
- Martínez, R. (2018). La bibliometría como herramienta para el análisis de dominio en Comunicación Social. Comportamiento de la producción científica cubana (1960-2016): Propuesta de investigación. *Revista Publicando*, 5(14), 1-21.
- Massucci, F. A., & Docampo, D. (2019). Measuring academic reputation through citation networks via PageRank. *Revista arXvi*, 2(4), 1-26.
- Núñez, J. (2003). *La ciencia y la tecnología como procesos sociales*. La Habana: Editorial Félix Varela.
- Paz Enrique, L. E. (2018). *Actividad editorial y socialización de la ciencia*. Santa Clara: Editorial Feijóo.
- Rodríguez, A. (2018). Las redes de citación como elemento de construcción del campo científico: análisis de la comunicación política en México. *Palabra Clave*, 21(3), 641-672.ç
- Rodríguez, E.G. (2013). La revisión editorial por pares: roles y procesos. *Revista Cubana de Información en Ciencias de la Salud*, 24(2), 160-175. Recuperado en 09 de octubre de 2019, de http://scielo.sld.cu/scielo.php?script=sci_arttext&pid=S2307-21132013000200006&lng=es&tlng=es.



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