Library and Information Science students and DCMI Metadata Terms: do they understand the resource?

Marina Salse Rovira	Andreu Sulé	Cristóbal Urbano
https://orcid.org/0000-0003-2003-7225	https://orcid.org/0000-0002-2467-3678	https://orcid.org/0000-0003-0935-6436
Faculty of Information and Audiovisual Media, University of Barcelona, Spain	Faculty of Information and Audiovisual Media, University of Barcelona, Spain	Faculty of Information and Audiovisual Media, University of Barcelona, Spain
salse@ub.edu	sule@ub.edu	urbano@ub.edul

Abstract

The DCMI Metadata Terms website is a basic resource for all those who implement or want to implement Dublin Core in their metadata projects, but also for all those students of Library and Information Science (or related degrees) who are starting in the complex world of information representation. The aim of this paper is to analyze the students' perception of the DCMI Metadata Terms webpage and of the metadata schema itself. This is done through a mainly quantitative survey to the students of the subjects Information Representation: Metadata and Digital Libraries and Repositories of the University Degree in Information Management and Digital Documentation of the University of Barcelona. The results show a moderately positive perception of the website and additional tools such as the Dublin Core User Guide. They also indicate that students have problems understanding the practical application of several terms from the metadata scheme itself (coverage, relation, and contributor, especially). The conclusions offer some recommendations to overcome the difficulties identified by the students, such as improving the clarity in the writing of some sections, the connection between the website and the Dublin Core User Guide and the presence of multilingual pages.

Keywords: DCMI Metadata terms; metadata learning; metadata students.

1. Introduction

The Faculty of Information and Audiovisual Media of the University of Barcelona has a long tradition in the teaching of Library Science and Documentation, since it was founded in 1915 as the School of Women Librarians to train women who were to work in the library project promoted by the Mancomunitat de Catalunya[1]. Currently, the training of these professionals is carried out through the university degree in Information Management and Digital Documentation, which, in addition to preparing students for library work, trains them to manage information in a wide variety of information environments. Subsequently, students can specialize thanks to the different master's degrees available at the center or they can continue their academic career by enrolling in doctoral studies in Information and Communication.

Within the degree in Information Management and Digital Documentation, there are two subjects in which DCMI Metadata Terms is of great importance: on the one hand, *Information Representation: Metadata*, where students learn the structure of the metadata schema, practice with it and know its different applications. On the other hand, within the subject Repositories and Digital Libraries, they study and analyze in depth the practical application of the schema as an exchange standard between this type of tools. These two subjects are located in the second year of the

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[1] Commonwealth of Catalonia: Institution that brought together the management of Catalan municipal entities from 1913 to 1925.

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curricular itinerary of the degree and, upon completion of them, the DCMI Metadata Terms ends up being one of the basic knowledge areas on which the rest of your training must be based.

To learn the schema, the *Information Representation: Metadata* teaching staff, basically uses three types of resources. On the one hand, monographs written by metadata specialists, who always use Dublin Core as a basic reference (Joudrey et al., 2018; Lubas et al., 2013; Miller, 2022; Riley, 2017; Zeng & Quin, 2022), or audiovisual resources, such as the videos available from DCMI on its YouTube channel (DCMI - YouTube, 2017-Present.). or freely accessible MOOCS, such as those by Pomerantz (Pomerantz - YouTube, 2017.). Thirdly, we find the DCMI Metadata Initiative's own resources on its website. Among them are two we consider fundamental for student learning: on the one hand, the *DCMI Metadata Term*s itself (DCMI, 2020.) and, on the other hand, the *Dublin Core User Guide* (DCMI, 2019).

It is on these last two tools that, because of their importance in the learning of our students, our work is focused.

2. Objectives

In the present study we want to analyze the perception that students have of the information contained in the DCMI Metadata Terms website with two primary objectives:

1. Detect gaps in understanding among students to improve the teaching and learning of DCMI Metadata Terms.
2. Offer these results to the DCMI itself so that they are considered in the successive modifications of the content of the DCMI Metadata Terms web page with the aim of improving the clarity of its explanations.

3. Methodology

The study was conducted among 113 second-year students of the university degree in Digital Information and Documentation Management, specifically students belonging to the following subjects: *Representation of Information: Metadata* and *Repositories and Digital Libraries*. If a student has been/or is enrolled in both subjects, he has only been able to answer the survey once and he has only been counted as a single individual.

The authors of this study consider that the selected students are highly representative for this study, as they are halfway through their studies and are obtaining the foundations for information management in the field of repositories and metadata. It is at this moment that they are introduced into the profession, and it is important to ensure that they have a good understanding of its basic concepts.

The survey was developed using the Microsoft Forms tool and was essentially quantitative in nature. The questions have been developed in the following blocks and the answers obtained are provided in a separate file.

1. Demographic questions (sex, age, etc...).
2. Evaluation of the clarity of the content of the *DCMI Metadata Terms* web page. At this point, we have included both an assessment of the clarity of different important aspects in any metadata scheme (objectives, purpose, serialization languages, user support, etc...), together with an assessment of the clarity of the concepts themselves of *DCMI Metadata Terms* (properties, classes, Syntax Encoding Schemes, Vocabulary Encoding Schemes, etc.…)
3. Evaluation of the global understanding of the scheme.
4. Evaluation of the clarity of the *Dublin Core User Guide*

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4. Results

The average profile of the student who responded to the survey is that of a young female student, between the ages of 19 and 25, who has studied (or is currently studying) the subjects *Representation of Information: Metadata* and/or *Repositories and digital libraries*. The survey was answered by 34 of the 113 potential students (30.09%)

4.1. Perception of the DCMI Metadata Terms. General concepts of metadata schema.

This section c is composed of 9 questions of a quantitative nature, which have been rated from 1 to 5 (1 = very unclear; 5 = very clear). Table 1 shows the average rating of the 9 items, ordered from best rated to worst rated.

How clearly can you locate…	
… the types of items that allows to describe DCMI Metadata Terms.	3.50
… the creation, evolution, and history of DCMI Metadata Terms	3.47
… the objectives of DCMI Metadata Terms	3.47
… if DCMI Metadata terms has any user support services	3.41
… the organizations that have developed and maintain DCMI Metadata Terms.	3.29
… which services / communities / application environments are addressed by the DCMI Metadata Terms	3.24
… how DCMI Metadata Terms adapts to the Semantic Web	3.09
… which serialization (encoding) languages can be used with DCMI Metadata Terms	3.03
… which companies, institutions or services use DCMI Metadata Terms	3.03
Average Rating	**3.28**

TABLE 1: Students' perception of the general concepts accessible from the DCMI Metadata Terms

In general, students rate moderately well (an average of 3.28 out of 5) the clarity with which the general concepts present in the *DCMI Metadata Terms* are expressed, although many of the rated concepts are not developed in the content of the webpage itself, but instead refer to other pages on the Dublin Core site, often accessible directly from the top menu (such as goals, history, or the companies and institutions that use it).

However, the more technical and/or more recently developed aspects, such as serialization languages, or the adaptation of Dublin Core to the Semantic Web, seem to be the ones that are worse resolved. These results should be a call to those responsible for the web to solve these very practical aspects and, at the same time, so necessary for the application in real contexts of the scheme. So, for example, it is true that on the web page there are references to RDF and there is some explanation in other parts of the web, such as *Metadata Basics* (a submenu from *Resources* menu), or in the webinars section (menu *Events*), but these are resources that are quite hidden.

Likewise, an interesting aspect to know about, such as the actual applications of DCMI Metadata Terms, which is usually a must in many private software sales companies, should also be an element that could be improved and would be very convenient for our students. Those of us who are dedicated to teaching metadata know that *DCMI Metadata Terms* is a fundamental data exchange schema and, for instance, that it is the basis of the OAI PMH protocol, and this is how we teach it to students by giving some basic examples, such as *Europeana,* the *Digital Public Library of America* or a large part of the digital libraries... So, a simple link to some prestigious projects that use DCMI Metadata Terms would be very useful and a marketing element to be most valued in an environment that is already very competitive.

4.2. Perception of the DCMI Metadata Terms. Specific concepts

This section aims to analyze the different blocks into which the content of the DCMI Metadata Terms website is divided. Once again, the results of Table 2 (ordered from best to worst) show a moderate level of satisfaction:

Identify how simple it is for you:	
... to understand the meaning and use of properties (terms), in Section 2: Properties in the /terms/ namespace	3.65
... to understand the meaning and use of DCMI Vocabulary type, in Section 7: DCMI Type Vocabulary	3.53
... to understand the meaning and use of classes, in Section 6: Classes	3.41
... to understand the meaning and use of controlled vocabularies, in Section 4: Vocabulary Encoding Schemes	3.35
... to distinguish the differences between Section 2 and Section 3: Properties in the /elements/1.1/ namespace	3.26
... to understand the meaning and use of the syntax (form) of the values of certain properties, in Section 5: Syntax Encoding Schemes	3.15

TABLE 2: Students' perception of the specific concepts accessible from the DCMI Metadata Terms

It is important to point out that, within the framework of the subject *Information Representation: Metadata,* students, before delving into *DCMI Metadata Terms*, study the basic concepts related to metadata and metadata schemes (topic 1), and get to know some basic concepts of semantic web and linked data (topic 2). After acquiring this basic knowledge, our students are ready to understand specific metadata schemes and, especially, those adapted to the semantic web. When the time comes to explain *DCMI Metadata Terms*, it is presented to the students the evolution and history of the schema and are prepared to be able to properly interpret both the contents of the *DCMI Metadata Terms* web page and the *Dublin Core User Guide* resource.

We want to point this out because the results of the survey reveal that the lowest rated items are precisely those that are most difficult to understand in the classroom. On the one hand, students find it difficult to understand why, for example, creator appears twice in the DCMI Metadata Terms content and why one is a subproperty of the other, even though it is explained to them. On the other hand, the concepts of Vocabulary Encoding Schemes and Syntax Encoding Schemes are concepts exclusive to DCMI Metadata Terms, which are very different from those used by information representation theorists (e.g. when we talk about controlled vocabularies, types of controlled vocabularies, value standards, content standards or formats, among others). These concepts should be further clarified by expanding the explanations given for each of them, if not on the DCMI Metadata Terms web page, then on dedicated web pages.

4.3. Global understanding of DCMI Metadata Terms properties

In this case, the students were asked to select three properties (extracted from the original fifteen contained in the section "Section 3: Properties in the /elements/1.1/ namespace") that they found more difficult to understand in terms of meaning and practical application. The purpose was to achieve a ranking that would help those responsible for the content of *DCMI Metadata Terms* to improve the wording/examples of the elements that were worst evaluated. The results are shown in Table 3:

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Properties	Answers
coverage	19
relation	15
contributor	9
I understand all properties	8
publisher	7
source	4
date	4
creator	4
type	3
rights	3
language	3
identifier	3
format	3
title	2
subject	1
description	1

TABLE 3: Student understanding of the original 15 properties of the DCMI Metadata Terms

4.4. Evaluation of the Dublin Core User Guide

This question and the previous one (collected in Table 3) were related to each other, since it was asked whether this guide allowed to improve the knowledge of the three elements that had been pointed out as complex in the previous section. In this sense, we can consider that the answer was quite positive since the assessment obtained had an average of 3.35. Table 4 shows the overall results obtained (1 = not very useful; 5 = very useful).

Rating	Answers	Percentage
1	4	12%
2	3	9%
3	10	29%
4	12	35%
5	5	15%
1	4	12%

TABLE 1: Evaluation of the Dublin Core User Guide

4.5. Open Question

The open question was worded as follows: **What would you add to the DCMI Metadata Terms website to improve understanding of the metadata schema**?

In this case, the answers have obtained an overwhelming response to a very specific request: that the website should be translated into more languages. Of the 15 responses obtained, 9 asked for the website to be available in more languages to make it easier to understand the concepts. One of the responses even specifies that, given the complexity of some of the terms, there is not enough with the existing automatic translations provided by the browsers (for the moment).

The next group of answers asks for a better clarification of the contents. Specifically, they suggest that there should be links to pages where a better definition of each term is provided.

5. Conclusions

In general, students are satisfied with the information they get from the DCMI Metadata Terms, although there are certainly some aspects that could be improved:

- Some shortcomings are detected in relation to the way the DCMI Metadata Terms website addresses the most emerging aspects, such as the semantic web or the different forms of serialization. We suggest making them more obvious and more instructive in the top menu.

- One of the most cumbersome aspects to locate are the links to entities that use the schema. We suggest making a section of links to successful cases that allow users (or future users) to see first-hand the practical application of the scheme.

- It would be necessary to improve the definition, and the comments of some elements that are revealed as conflicting. We propose three possible solutions:
  - To improve the connection of the DCMI Metadata Terms with the Dublin Core User Guide. In fact, some solutions capture from the answers to open ended questions of the survey already point to the need to expand the information about each property with examples, more explanations or images, materials that should be kept on linked pages. And one of the possible solutions would be to better relate the two tools. Right now, the Dublin Core User Guide is very much hidden within the DCMI Metadata Terms website.
  - To enhance some definitions. The spirit of DCMI Metadata Terms is to recommend and not to oblige, we are aware of this, but some definitions are so broad that they can lead to error. The inclusion of examples is also suggested.
  - Encourage real users of the DCMI Metadata Terms to generate application profiles that are clear enough that they can also be shared in the Dublin Core web environment, so that potential users can find answers to their most common problems, if they work with very specific types of information (such as the YouTube videos).

- The website should be in more languages. Although English is in Spain the foreign language taught in high schools (before any other), many of the concepts in the DCMI Metadata Terms are complex in nature and to have translation in other languages than English could help to improve the understanding among users and the dissemination of the tool.

References

DCMI. (2019). Dublin Core User Guide (2nd ed.). Retrieved Mai 18, 2023 from https://www.dublincore.org/resources/userguide/

DCMI (2020). DCMI Metadata Terms. Retrieved May 14, 2023, from https://www.dublincore.org/specifications/dublin-core/dcmi-terms/

DCMI (2017- Present). Dublin Core Metadata Initiative (DCMI). YouTube Retrieved May 14, 2023, from https://www.youtube.com/@DublinCore/featured

Pomerantz, J. (2017). Metadata MOOC. YouTube Retrieved May 14, 2023, from https://www.youtube.com/watch?v=fEGEJhJzrB0&list=PLkp3pG2Rd3yqfIn313V32fXG4nng9Tb-H

Joudrey, D. N., Taylor, A. G., and Wisser., K. M. (2018). The organization of information (A. G. Taylor & K. M. Wisser, Eds.; Fourth ed.). Libraries Unlimited.

Lubas, R. L., Jackson, A. S., and Schneider, I. (2013). The metadata manual: a practical workbook. Chandos Publishing.

Miller, S. J. (2022). Metadata for digital collections (Second edition). Facet Publishing.

Riley, J. (2017). Understanding Metadata: What Is Metadata, and What Is It For? A Primer. NISO. Retrieved Mai 18, 2023 from https://www.niso.org/publications/understanding-metadata-2017

Zeng, M. L., & Qin, J. (2022). Metadata (Third edition). Facet Publishing.