Comparative Analysis in the Ethical Use of Information and Librarianship Education in Mexico: an Investigation Process

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Abstract: The aim of this investigation study is to perform a comparative analysis of study programs and plans taught in higher education schools in Mexico related with Librarianship, and Information Sciences, regarding how students use the information, as well as to analyze how professors are involved in the ethical formation for the use of information.
Authors like Luciano Floridi and Rafael Capurro, among others, have studied in depth the importance of Information Ethics in regard to its nature, scope, and purpose. However, the importance of analyzing the ethical use of information by the users, and moreover, in the professional education and training related with information has been set aside. Thus, a need to perform comparative investigations in the training schools of the future professionals of information in Mexico emerges for understanding the situation of the ethical use of information.

Keywords: Comparative Analysis, Ethics Information, Librarianship education, Content Analysis, Library education in Mexico

1. Introduction

To solve problems in researching on the disciplines of information science, many qualitative and quantitative techniques have been followed, which, not always are the best. It becomes more evident when we deal with issues related to the ethical use of information, specifically the professional formation and librarianship education in the ethical use of information.

This disciplinary subfield handles aspects that had to do with human behaviors of qualitative order, so it requires following qualitative techniques, as an example, the content analysis.

The content analysis has its origins in the conscientious use of symbols and language. It looks for analyzing data within the communications, which are seen as a set of symbolic phenomena that have a particular purpose. These symbols contain a great importance: provide us messages which produces effects and its meaning help us to understand the ways of thinking and behaviors generated by different human groups. The content analysis focuses primarily in identifying words and analyzing them in order to discover its hidden message. This is part of the idea which pretends to carry out the development of the research.

In Mexico there are seven schools in national level where are taught the science degrees in Librarianship and sciences alike, which are:

1. Escuela Nacional de Biblioteconomía y Archivonomía (ENBA) (National School of Library and Archive. Degree of Librarianship (Mexico city)
2. Universidad Nacional Autónoma de México (UNAM). (National Autonomous University of Mexico). Degree in Librarianship and Information Studies. (Mexico city)
3. Universidad Autónoma del Estado de México (UAEMex), (University of the State of Mexico (UAEMex). Degree in Information Science Documentary. (Toluca, Mexico)
4. Universidad Autónoma de Chihuahua (UACH) (Autonomous University of Chihuahua). Degree of Librarianship (Chihuahua)
5. Universidad Autónoma de San Luis Potosí (UASLP), (Autonomous University of San Luis Potosí). Degree in Librarianship. (San Luis Potosi)
6. Universidad Autónoma de Chiapas (UNACH), (University of the State of Chiapas). Degree in Library and Information Management. (Chiapas)
7. Universidad Autónoma de Nuevo León (UANL). Degree in Librarianship (Monterrey, Nuevo Leon)

The importance of schools and education in librarianship at a national level lies in the idea that future professionals need to have the enough theoretical and methodological tools to provide a service to library users. Libraries and other information centers have certain missions and objectives of social nature and act according to a set of values. This means, the achievement of its objectives of social nature should be achieved through an ethical conduct, which supposes the recognition that information professionals are agents responsible to themselves, to others and to the society as a whole group. Ethics provides a framework to guide the essential functions of the professionals, establishing policies and developing strategies for service.

According to the aforementioned, the purpose of this document is to provide an approach to the content analysis technique on the basis of its application in the analysis of the scholar curricula of the bachelor´s degree in the librarianship area in Mexico, in order to identify the presence of contents designed to provide the librarian of theoretical knowledge related to the ethical use of information on professional education for its development in the workplace and academia. It is worth mentioning that this document, in this moment will be presented only the initial phase of the achievement of the research work, because it is in developing process, as well as the definitive criteria to be considered, which will be definite only when the theorist corpus of the research is fully informed.

2.   The Technique of the content analysis

The registered history by Krippendorff (1990) about the content analysis marks three historical phases developed in the United States of America. The first phase happened in the area of journalism and tried to show that the news were reorienting to the violence in cities, there, the method used was to measure the sizes of the columns of the newspapers and register the type of information presented. The second phase was characterized by the entry of electronic media to analyze the economic crisis which was causing social and economic problems, and also the role played by the mass media in this process. The third phase was its appearing as an empirical method of study within the social sciences. Within this current of thought there are terms like "stereotypes", "favorable or unfavorable attitude", "followers", "objectivity", "equilibrium", all of them with a heavy load of information and based on which years later appears the theory of the attitudes.

In the same country appears the political discourse analysis as a stream and from the works of Lasswell at the Library of Congress, those works were intended to determine the measurement problems, reliability and validity of the content categories previously established.

From its origins up to the present time, the conceptualization of the content analysis has evolved in some aspects (see Table 1).

Table 1 Content analysis evolution		
YEAR	WRITER	**DEFINITION**
1942	**ALLPORT**	Method to study and analyze the content of written communications, oral or visual, in a systematic, objective and qualitative way.
1952	**BERELSON**	Research technique for the objective,

		systematic and qualitative description of the manifest content of the communications with the purpose of interpreting them.
1968	**HOLSTI**	Techniques to make inferences by systematically and objectively identifying of specific characteristics of the messages.
1971	**TRAVERS**	Group techniques designed to analyze the verbal communications.
1977	**BARDIN**	Joint analysis techniques of the communications which aim to systematic and objective procedures of the message content.
1981	**FOX**	Method to categorize verbal and behavioral data with classification, summary and tabulation purposes.
1981	**KERLINGER**	Method for analyzing and studying communications in a systematic, objective and quantitative way. Observation.
1990	**KRIPPENDORFF**	Research technique intended to formulate, from certain data within a text, reproducible and valid inferences that can be applicable to a context.

Following the definitions presented in the table above, the common elements are:

- Objectivity: verification of the obtained results.
- Systematizing: rules and criteria previously established.
- Manifest content: analysis of the expressed in the message.
- Capacity of generalization: Hypotheses demonstration (heuristic function, discovering of aspects of speech and their functions of checking, verification of the accuracy or communication of the hypotheses).

Klaus Krippendorff (1990, p.28) defines the content analysis as "[...] research technique designed to formulate, from certain data, reproducible and valid inferences that can be applied to their context." Which brings us to point out that

the goal of the content analysis is to formulate inferences about the effects of the communication (it also includes the emotional part, as Habermas says), while it allows us to make inferences (These are discursive thinking) based on verbal, symbolic or communicative type data; data that can be reproduced by other researchers in different moments. By applying the same technique to the same data the result must be the same, which makes it objective and reproducible.

According to Krippendorff, the content analysis pretends to generate qualitative reasoning (inferences) from registered data, extracted from the documents.

The main characteristics of the content analysis are:

- Finding a symbolic meaning in the messages.
- Considering that the messages do not have a single meaning, that may be there is no coincidence about the meaning, and may be, symbolic communications try to consider different phenomena from those that are observed.
- To examine the context of the data.
- To establish the kinds of inferences and the symbolic communications and give them validity.
- To allow locating ourselves in the data environment, and conceptualize it.

The advantages of content analysis are: there is not a technique introductive that accepts unstructured material that is sensitive to the context of the subject matter.

There are several classifications of the content analysis:

- Pragmatic Content Analysis: procedures that classifies the sings according to their probable cause or effect.
- Semantic Content Analysis: Procedures that classify signs according to their meanings. Includes three subclasses: a) designations, which provides the frequency that a reference is made to certain objects, people, things, groups or concepts, it means the equivalent to a thematic analysis, b) of attribution, which tells us the frequency that we refer to certain characterizations of an object, and c) of asseverations, which gives us the frequency that certain objects are characterized in a particular way.
- Analysis of vehicles-signs: procedures that classify the content according to the psychophysical properties of the signs (Krippendorff, 1990, pp.45-46).

3. Steps to performs a content analysis

The process involves the following actions:

- Formulate data which include the determination of units, sampling and the registry.
- Reduce data.
- Generate inferences.
- Analyze.
- Validate directly or through other methods, and
- Check the hypothesis with other data. These components are integrated into three basic stages: A. project B. execution and C. report.

A) Project

Krippendorff (1990) defines the project as:

The analytical steps network through information is processed [...] shows the way how data is obtained and what is made of them in the course of the analysis, and provides instructions to other people about all they have to do if they pretend to reproduce the results. Every research report should contain a description of the research project (pp.70-71).

There are several types of projects:

1. Basic. That evaluates phenomena in the context of existing data.
2. Those that test the possibility of substituting a method. This means, apply two or more methods to the same data or to different methods.
3. Those that test the hypotheses. This research project allows comprehending the relationships that may exist among the phenomena which use the content analysis and their surrounding conditions (Krippendorff, 1990, p.75).
4. In this process the analyst reviews the existing materials, playing with his ideas and puts in trial, seeking to establish a procedure that gives logic to his thinking.

Krippendorff, (199: 259) proposes the following categories to develop a project:

1. **Application of the reference framework of the content analysis.** The content analyst must find matching points of the two realities: the one of the data and the one that is desired to know. He must clarify what does he want to know and cannot directly observe, as well as establishing the objective which follows and mark the study universe. So, he will gather the documents where he will extract those data that

works for him to infer. In this process, he must choose carefully the information that he wants to know.

2. **Search of the right data.** The analyst collects those data which must reflect a connection with its inferences. The process of data searching may be after what was originally conceived, because the data collected could vary or its register and analysis. In summary, it can include any data that affects the study.

3. **Search of contextual knowledge.** It is necessary to have a theoretical support (theories, models, experiences, representative data, etc.), an empirical connection about what is wanted to infer, place the data in the context, and convert them in phenomena, in order to establish a logical bridge designed to make inferences with the data already mentioned.

4. **Development of plans to determine units and the register.** The analyst will determine the way to get the data, since some of them will be more difficult to obtain. The plan design involves establishing the nature of the registration units, spatial or temporal location of these units, the type of information distribution in the universe studied, and the characteristics on auto sampling subject about the different classes that exists of units of information to be retrieved. The analyst should take in advance that some sources may be difficult to access, the sample is the appropriate, and that the representative size and the reasons do not allow the results to be the expected. Anyways, the conceptualizations can be retaken and reviewed continuously. The design of such plan must be detailed and explicit, in order to be reproducible after time, it's required the next:

   - Determine the context units.
   - Define the registration units and procedures destined to its identification.
   - Establish categories that must cover certain characteristics, such as: a semantic content that represents the conceptual framework, and attributions and designations that reflect exhaustive issues and exclusive.
   - Determine the syntactic units. Which are the linguistic representations (words, symbols, phrase or paragraph), with their enumeration units (data quantification).

5. **Development of coding instructions:** The analyst must take care that the instructions are based on conceptualizations declared and tested, in addition to reviewing in the literature if there are previous or similar studies within the area that is being investigated, because sometimes it can describe new data. If so, it will be retaken instructions of the registers and with some modification can be used. One of the possible benefits of this would be the possibility to compare results in order to establish standards and generate reliable instructions to do these kinds of researches.

6. **Search of analysis procedures justified according to the context:** All analytical procedure, by its nature, involves assumptions about the context of the data that must be defended from what is known about this context. (Krippendorff, p. 260). At this point the analyst must consider especially the element of awareness about the context of the studied phenomenon as well as implicit assumptions about the fact; because sometimes the type of analysis used is not the most appropriate.

7. **Establishing of the quality standards:** It is essential to have high quality standards, which must be established before evaluating the analysis. There are two types of standards, the validity ones (related to the accuracy, reliability or specificity of the results) and the reliability ones (which offer validating evidence that allows giving reliability to the study).

The reliability of qualitative studies is understood as the degree in the data which are registered, are independent of the accidental circumstances of the study. This refers to the possibility of replicating the studies, this means, that someone perform a study using the same technique (in this case the content analysis) obtain the same results. One way to ensure reliability is to have the security that the categories to be determined include the type of data (terms) that correspond to the study (Perez, 1994, pp.77-79).

In terms of validity, it is represented the extent of the data are interpreted in a correctly way, this concerns the accuracy; it means that everything is believable. To achieve the validity in a study, it must be estimated two elements: the extent to which the conclusions or results actually represent the reality, and if the ideas expressed by analysts represent or measure actual categories. In general, any study, requires the application of both standards.

B) Execution

The second part to conduct a content analysis is to execute the project, there is where problems are usually found, many of which were not considered by the content analyst, as well as not reaching the standards established in advance to give validity and reliability to the study. It is recommendable to go back and modify the project using as a guide the overall objective of the research.

In the execution the following actions are developed:

- Identify and describe the register units, which must be reproducible and satisfy the criteria of semantic validity, there, where they are applied.
- Reduce and transform data, giving the form that is demanded by the analysis at the same time retaining all the relevant information.
- Apply context-sensitive analytical procedures (analytical buildings) to obtain inferences.

- Analyze and identify patterns within inferences, verify the hypotheses concerning the relationship between these and the results obtained by the methods and pragmatically validate the findings (Krippendorff, 1990, p. 263).

When the universe of study is too large or some data are inaccessible, it will be pertinent to reorient the universe or reduce the analysis level to count with relevant data that would provide validity and reliability to the phenomenon studied.

If there is a problem with the categories, a possible solution is to rename them, because it could be that they were not perfectly defined, so the study would lose all reliability. To rescue the study, the analyst must opt for eliminating or recodify the data using other instruments.

At the time of encoding the data, it can appear a series of problems, such as the codifiers are rescuing wrong data, or that the instructions in the register are not very clear, which may cause misunderstandings between an encoder and another.

The most common mistakes are:

- Missing registers. Omission of the registers that were not coded.
- Registers that do not appear in the previously determined sequence.
- Illegitimate values, which are produced when, appear categories that were not established.
- Inconsistencies caused by offering exclusive data.
- Improbabilities; it means, legitimate values within the context studied, but those that, due to the measuring instrument, are not applicable because they are out of the range of expectations provided.

C) Report

The report is the final part of the content analysis and where a description of what was done is presented, where the motifs of the performing of the study are presented, the success achieved and, above all, their contribution to the area of knowledge which it corresponds.

A report should cover the following points:

1. Mention the general problem that the research aims to, informing to the reader about the importance of the study.
2. Exposing the background of the problem. Is suggested to include a bibliographic review about how was approached the investigation phenomenon. Should be shown the reasons that lead to believe that they are offering new findings.

3. State the specific objectives that were pretended to achieve through the content analysis, mentioning the choice of data, methods and designs in relation to the phenomenon which is being studied. Report, in simple language and summarized, the system examined, the data, the context and, of course, the objectives of the inferences presented.
4. Justify why determined data and designs where chosen.
5. Clearly describe the procedures adopted to enable them to be reproducible. Take note of the determination of units, the sampling plan, and the registration instructions on the forms, the technique to be used in the management and analysis of data, and the results of reliability testing.
6. Presenting the findings and their significance in the context of the studied phenomenon. In addition, if it is the case, the analytical methods which result not to be the most suitable for a study of this nature.
7. Include, as a summary, a self-critical evaluation of the content analyst or researcher who was in charge. The basis of all this will depend on whether the goal were reached as set originally, and will describe the elements that were not covered and will be mentioned the results achieved in relation to the hypothesis planted.

First of all the analyst or researcher is obliged to make known the results of his study, which may be published in a scientific journal or presented at an academic forum or to their peers in an exclusive way.

4. **Propose of application of the technique of the content analysis in the study plans of librarianship in Mexico to determine the formation in the ethic use of the information**

The objective of the present research work is to make a comparative analysis of the plans and programs of study that are taught in different colleges in Mexico linked to the Librarianship, Librarianship Sciences and Information Sciences, about how students use the information and also analyze how teachers are involved in the ethical use of information formation. In this sense the methodology propose of the content analysis will be useful because it will allow analyzing symbolic data and the messages that can produce effects and meanings to understand the way of thinking and behaviors generated among librarian formers and students.

It is noteworthy that the ethical issue in future formation of professionals of the information is visualized from the behavior, thoughts, actions and the way to transmit the information, from this perspective, the content analysis will allow us to visualize whether the plans and programs of study that form to these professionals mark implicitly or explicitly those categories.

What is expected to obtain from this research is to verify that indeed the plans and programs of study are in their curriculum subjects or explicit topics related to professional ethics training and information management.

Whenever the process has been described to perform a content analysis, the following is a proposal to use to examine the plans and programs of study of some library schools in Mexico. It should be noted that at this moment, only can be presented the first approach to the project to be performed at a national level, because the investigation is in process and cannot be determined at this moment all the elements of a content analysis. As well, is important to notice that this proposal will be the pilot test to determine how to handle all the research to be applied at the national level, because of that, it will be considered only three of the seven schools that exist nationally, which were selected for being the three that are in the center of the country.

5. **Project (Methodological propose)**

Next, the seven aspects mentioned bellow, will be developed.

1. Application of the conceptual framework of the content analysis: Under this aspect will retake two realities: the one established by the theoretical aspects of the ethic of information and professional ethic it means, if in the plans and programs of study from the librarianship schools appear content related to the ethical use of information and professional ethics. Hence, the objective of the analysis will be to determine the absence of program-related learning and with the theoretical aspects to research (information ethics and professional ethics) in the study plans of some Mexican colleges which provide the bachelor's degree in librarianship and related disciplines. To reach this objective it is going to be used as research units of the study programs of such schools, the requirement that these documents have to cover will be that they must include: the subject and its explicit objective, the itemized agenda, the learning activities to be performed; the accreditation criteria, the general bibliography, and the complementary bibliography. In a second moment, the graduated profile as an indicator of the level of involvement from the knowledge and skills acquired during the bachelor´s degree about the professional formation on the ethical use of information and in professional ethics as itself.

According to these general guidelines, the following study plans will be selected because it is a pilot research application, and because they are the three schools that are in the center of the country, however, it must be taken in consideration that regionalisms of Mexico can skew the information, so, it must be taken in advance at the moment of making the application nationally, it is worth mentioning that the study programs of librarianship schools in the country are made according to the social and cultural characteristics of the region and its influence zone where they are located, it means, that often they are bounded to cover a specific need of the place of location.

● Degree of Librarianship and Information Studies, Universidad Nacional Autónoma de México (UNAM) (México City)

● Degree of Librarianship, Escuela Nacional de Biblioteconomía y Archivonomía (ENBA) (National School of Librarianship and Archive). (México City)

● Degree of Documentary Information Science. Universidad Autónoma del Estado de México (Autonomous University of Mexico State) (Toluca, México)

2. Finding the right data: All the plans and study programs from the librarianship degrees from the mentioned schools will be gathered, because they will constitute the instrumental elements to investigate.

3. Searching of the contextual knowledge: It will be examined the theoretical basis of the ethical use of information and professional ethics.

4. Development of plans for determining the units and register: The context units and registration were determined based on the actual context, analyzing and comparing the plans and programs of study.

5. Development of coding instructions: It is worth to mention that in a study as the one that is going to be performed has no background in Mexican librarianship area, so that there is no other parameters that can be considered at this moment of the investigation.

6. Search justified procedures according to the context: It is going to be established a section for each school considering the elements, graduate profile and identification of the subjects.

The general procedure consists of the following:
● Review the plans and programs of study of the different degrees.
● Review of the graduate profile for each study plan.
● Identification of subjects within each school's curriculum maps.
● Review of each subject, from where it will be located de objective, the agenda, (registering only the one that is relative to the categories already mentioned) the review of learning activities, the accreditation, and finally, the bibliography that could be used.

7. **Establishing of the quality standards:** As stated above, the quality standards are going to be the reliability and validity. In this case the reliability will be achieved by deriving the categories from a consistent theoretical framework. Also, in order to have a higher objectivity, to each syntactic unit it is going to be given a numerical value depending on the part of the program that it will appear inside the study program, this, whit the objective of determining the level of impact caused within the program of courses.

In relation to the validity or accuracy, this will be reflected at the moment of identify the data within the study plans of every school, and to analyze such programs, which are going to be the direct sources for data collection.

The validity will be verified at the moment that the data represent which *a priori* was true or what was presumed as valid "A content analysis is valid in the extent that their inferences are sustained over other data obtained in an independent way "(Krippendorff, 1990, p.228).

The development of the project will allow the test of the feasibility of applying the technique of the content analysis to studies related to the formation in the ethical use of information and professional ethics. Such project will be used as a pilot test to determine if it is possible to perform comparative studies on the subject matter to be applicable in all librarianship schools in Mexico.

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