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## **Teaching classification in the 21<sup>st</sup> century\***

**Abstract:** Cataloguing and classification were at the core of the first librarian training programs In 2011, LIS educators continue to believe in the importance of teaching the basics of the classification process to all future information professionals. Information on classification instruction was collected through a survey of instructors in ALA-accredited LIS masters' programs. The survey was structured around issues touching several dimensions of any teaching endeavour, with an emphasis on the tools used to help students develop several types of skills involved in the classification process. This article presents quantitative data provided by respondents representing 31 distinct LIS masters' programs. We hope it can be used as foundation to pursue the examination of classification instruction in an ever changing information world.

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### **1. Introduction**

Cataloguing and classification were at the core of the first librarian training programs (Spillane 1999). More than 100 hundred years later, they are still part of the curriculum in a majority of Library and Information Science (LIS) masters' programs. Over the past 25 years, cataloguing and classification courses have been deconstructed and restructured, evaluated and critiqued, usually by those who teach them or those who benefit directly from them in technical and reference services. During that time, the technology evolved at an incredible speed and complex and powerful networks were created, leading to the implementation of the World Wide Web. Reference librarians were replaced on the front lines by smart interfaces allowing end-users to access information from their living-room, the neighbourhood café or the bus on their way to work. New types of documents and new formats were offered, threatening the very existence of traditional collections. Subject representation and classification policies have had to adapt to new possibilities offered by the technology, for example assigning an information resource to multiple classes as a way to better deal with the multidisciplinary and interdisciplinarity that have characterized scientific evolution over the period.

LIS educators continue to advocate the importance of teaching classification. It seems obvious that the process cannot anymore be presented strictly as a way to order physical documents in a library collection, that it must be seen more widely as an efficient means of providing subject access to all types of resources, including digital ones. In LIS schools, instructors have had to deal with the need to change not only course contents, but also its delivery, the technology having had an important impact on teaching methods in class or at a distance.

To collect baseline information on classification instruction at the start of the second decade of the 21<sup>st</sup> century, we surveyed classification instructors in ALA-accredited LIS masters programs. The survey was structured around specific issues touching several dimensions of any teaching endeavour and we obtained descriptive data on classification courses taught in U.S. and Canadian LIS schools. In the survey as well as in this report, the phrase "classification course" is used to represent both those section(s) of broader organization or cataloguing courses that focus on classification operations and tools, and full courses that focus on those exclusively.

Our research questions were:

1. What are the most common objectives pursued in classification courses?
2. What proportion of instruction time is currently dedicated to the process of subject analysis as it relates to classification, to class number identification and building techniques, and to the use of the web interface in classification courses?
3. Which classification systems are commonly used to teach classification?
4. Which version(s) of classification schedules are most commonly used in classification courses, by the instructor and by the student?
5. What use is currently being made of web-based versions of classification schedules?
6. Which techniques are currently used to evaluate learning outcomes in classification courses?

The survey was conducted in January and February 2011. This article focuses on questions 2-6 and presents a preliminary analysis of quantitative data provided by respondents representing 31 LIS masters' programs. At this time, the results are presented in amalgamated form and few correlations have been attempted.

## **2. Previous research and brief literature review**

From 1987 to the present date, four types of contributions were made to the literature on the topic of cataloguing and classification instruction: research papers, description of course objectives, contents and outcomes by cataloguing and classification instructors, pleas made by researchers and practitioners on the necessity to increase the number of cataloguing and classification courses in LIS programs, articles expressing the view of practitioners on the place of these subjects in the LIS curriculum; papers in this last category are the most likely to assess critically the knowledge and skills of recently minted professionals. Eight themes are recurrent: history, the place of cataloguing and classification in the LIS curriculum, theory versus practice, general course contents, specific topics, systems and standards, teaching methods and tools, teaching with online tools, and learning outcomes (Hudon 2010).

Several authors have described the trend of eliminating courses devoted entirely to either descriptive or subject cataloguing in the core curriculum, replacing them with integrated courses bearing the words "information" and "organization" in their titles (Spillane 1999; Joudrey 2002; Davis 2008; Joudrey 2008). Papers on the topic of cataloguing and classification instruction tend to offer similar lists of elements of contents to be covered in core and elective courses (Williamson 1987; Connaway 1997; Velluci 1997); bibliographic classification appears on every list, with the proviso that teaching must stress the relation between tools, processes, users' needs and behaviour, and information system functionalities. Familiarity with the Dewey Decimal Classification (DDC) and the Library of Congress Classification (LCC) are required for catalogers (Joudrey 2002), and in core courses, the DDC is commonly introduced as example of a functional hierarchical structure (Taylor and Joudrey 2002; Taylor 2006).

It has always been considered useful that students become familiar with the tools they will be using in their first professional position (Williamson 1987; Hall-Ellis 2008). The classification schedules themselves remain a most effective tool for teaching bibliographic classification. The availability of major cataloging and classification tools in the familiar Windows environment have changed not only "the way in which catalogers function" but also "the way in which we teach the cataloging process" (Velluci 1997, 42), adding complexity to an already difficult curriculum subject.

Few educators have picked up on the difficulty of teaching classification using web-based e-versions of classification schedules. Taylor observes that students struggle to gain an appropriate conceptual model of the DDC if they learn with WebDewey (2006) and Hider addresses this difficulty in a comparative study carried to "examine whether the student's use of a particular version of DDC affected their learning" (2004, 15).

The difficulties of teaching with web-based tools, such as WebDewey and Classification Web, are of two kinds. First, these tools are intended for professional cataloguers and assume prior knowledge and skills required to classify; they are intimidating for novices. Secondly, the need for the students to tame

the interface and to learn how to benefit from the capabilities of the software adds another, far from insignificant, stratum to the learning curve.

Classification calls for the application of distinct types of skills. On the cognitive level, students learn how to analyze the contents of a document, to identify topics, concepts and facets, and to discriminate between core and peripheral topics in relation to specific contexts, systems, and needs. On the technical level, they must learn how to navigate classification structures and to translate topics, concepts, and facets into appropriate representations in the form of class numbers. We suggest that the use of web-based versions of classification schemes introduces a third dimension to the classification process, a technological dimension.

The complexity of the process no doubt makes it difficult for educators to evaluate actual learning outcomes. One would think that evaluation would be an important topic in the literature of a professional field such as LIS. Yet, few articles address this with sufficient details. This is why Romero's conclusions are so eloquent. Her examination of entry-level professionals' errors in subject analysis and representation indirectly evaluates the practical knowledge possessed by LIS recent graduates. Her observation that the principal weakness of new LIS professionals is not of a technical or technological, but rather of a conceptual nature, is challenging. She observes "an inadequacy on the part of the participants in determining the subject content of a book" (1995, 224), and concludes that "there appears to be a relationship in the ability to assess the subject of a book and the ability to convey that information into subject cataloging and classification" (1995, 226).

Individual course outcomes must also be evaluated. We know that clarity of objectives, teaching methods and tools, class size, learning aids, etc. are among factors sure to have an impact on learning. Indirectly, Hider evaluates his own course in a small-scale comparative study of learning outcomes in students who are being taught the DDC using different versions (paper-based and online) of the schedules. His conclusion that there does not seem to be any significant difference in performance and results, whatever version of the DDC the students were given (Hider 2004), is intriguing and suggests the need to investigate further the topic of teaching classification with web-based tools; Hider himself warns that his conclusions must not extend across to other classification schemes and other circumstances (2004, 23).

### **3. Methodology**

The lack of details available in recent literature on the specific objectives, methods and tools of classification instruction, as well as the specificity of our questions, warranted the use of the survey questionnaire as primary tool for data collection. The questionnaire was structured in five sections: Respondent, Course status, Course objectives, Teaching tools, Evaluation methods. Course outlines designed by our respondents for the current academic year (2010-2011) were also collected to serve as secondary source of descriptive data.

All instructors (rank professors, adjuncts and lecturers) assuming full or partial responsibility for classification courses offered in 2010-2011 in one of the 56 ALA-accredited master's programs in the United States and Canada were personally invited to complete a web-based questionnaire. The questionnaire was designed to provide numerical data (number of courses, frequency of use of a specific tool, etc.) as well as information in the form of text (objectives, description of recent modifications, etc.) The professional version of *SurveyGizmo* ([www.surveygizmo.com](http://www.surveygizmo.com)) was used to edit the questionnaire, communicate with the participants, collect the data and produce basic reports.

Descriptive statistics were used to organize and present quantitative data. Text analysis focused on comparisons of wording and expressions, with a view to identifying similarities and differences in distinct courses, as well as relations to one or more of the three dimensions (cognitive, technical and technological) of the classification process.

### **4. Results and discussion**

In this article, quantitative data collected to answer our research questions 2, 3, 4, 5 and 6 are presented in amalgamated form. Fractions have been rounded up/down to the nearest integer.

#### 4.1. Respondents

One hundred and forty-seven (147) instructors were invited to participate in the web-based survey. Thirty-six (36) questionnaires were completed (25%). Of the 36 respondents, 27 are rank professors, seven are adjuncts, one is a lecturer and one a LIS professional. All respondents had previous teaching experience in a graduate LIS program, with three respondents declaring as many as 32, 35 and 40 years of experience respectively. The average number of years of experience is 11,6, with a median of 10 years. Most participants have been teaching classification for as long as they have been teaching in a LIS program; only three declare no previous experience in teaching classification while five instructors claim more than 21 years of experience in teaching this subject; the average number of years of experience in teaching classification is 12, with a median of 10 years. Thirty-one (31) of our 36 participants also declare at least one year of professional experience in a library or other information service, the highest number of years of professional experience being 29 and the average nine years.

Eleven (11) more questionnaires (8%) were only partially completed and could not be used in our discussions; eight came from rank professors, two from adjuncts and one from a LIS professional.

#### 4.2. Courses

Our 36 respondents hail from 31 distinct ALA accredited programs. All seven Canadian accredited LIS programs and 24 programs offered across the US are represented; five programs are represented by two instructors. Asked how many distinct classification courses they were teaching in academic year 2010-2011, 21 instructors told us they were fully or partially responsible for only one course; 12 instructors listed two courses and three instructors listed three distinct courses. Fifty-one (51) distinct courses focusing entirely or partially on bibliographic classification were thus described in detail.

##### 4.2.1. Course characteristics

It did not come as a surprise that the words “organization” or organizing” are the most common words found in the titles of mandatory and elective course (25 occurrences), closely followed by “classification” (24 occurrences) and “cataloging” (21 occurrences). The combination “cataloging and classification” appears 20 times while “Information”, “Information organization” and “Organization of information” are read 17 times. “Knowledge Organization” and “Organisation of knowledge” appear five times only in all 51 course titles.

Several courses have been taught a considerable number of times. Eighteen (18) courses have already been offered more than 10 times; on the other hand, 26 courses had been offered five times or less before the 2010-2011 academic year. The large number of courses taught 10 times or less (33 or 65%) may be attributed to recent curriculum reviews in many LIS programs. As for extreme values (40, 50, 60 times), they are explained by the fact that half of these courses (25) are normally offered several times in a single academic year. Twenty (20) courses are offered once a year, one is scheduled every other year and five are taught occasionally. Mandatory courses are offered most frequently.

Twenty-seven (27) courses are taught in a class setting exclusively, eight are offered online only, and 16 are offered in a mixed format. For courses taught online, there may be a requirement for the students to spend some time in a classroom on campus or elsewhere. Mixed format also applies to courses taught in a classroom during a particular term and online the following term. Close to half (24) of the classification courses described can now be completed at a distance.

Twenty courses (20) are mandatory for all students in the LIS program, four are mandatory in a particular stream only, and 27 are elective. Second and third courses listed by a single instructor are all elective. Even if a significant proportion (39%) of courses is required of all students, many can only be

taken after or in parallel with one or more other courses (Table 1). A few courses list more than one prerequisite, while 16 courses are open to all students. The large number (24) of courses requiring that the students have completed an “Introduction to information organization” course prior to registering for classification instruction shows that classification is considered important enough in several programs to warrant advanced and specialized instruction.

Prerequisite	Number of courses
Intro to LIS (or equiv.)	12
Intro to info technology (or equiv.)	4
Intro to organization of info. (or equiv.)	24
Others	11
None	16

Table 1. Course prerequisites

The duration of a course over a semester varies from 30 to 64 hours, with a mean of 36 hours and a median of 40 hours.

#### 4.2.2. Course contents

One of the most challenging question in this survey requested instructors to estimate the number of hours devoted in their course to bibliographic classification and to various elements of contents pertaining to classification more generally; these were: subject analysis as it relates to classification, theory, DDC, LCC, other classification schemes. We also asked how much time, if any, was devoted to supervised classification exercises.

The data reported in Table 2 provides food for thought on the importance given to specific elements of contents, but it should be remembered that the figures are at best approximations of the actual number of hours spent on teaching the subject. Several instructors commented on the difficulty of estimating how much time was actually spent on a specific topic or category of topics. A colleague said, for example, that “subject analysis was always taught in the background and not as a separate curriculum item”; this could make it harder to assess subject analysis skills independently.

Number of hours	Number of courses (n=51)						Appl.
	Bibliogr. class.	Subject analysis	Theory	DDC	LCC	Other schemes	
None	2	8	3	9	8	25	13
1-5 hours	10	32	44	27	31	25	22
6-10 hours	18	7	2	14	12	1	13
11-15 hours	13	3	0	1	0	0	1
16 + hours	8	1	2	0	0	0	2

Table 2. Number of hours devoted to classification

In a majority of courses, instructors pay much more than lip service to bibliographic classification, to subject analysis, to DDC and LCC. Theory is allotted from one to five hours in 44 courses; this may be interpreted as time set aside to familiarize students with theoretical principles but it is probable that theory is also presented through examples and discussed during exercises. This colleague’s comment will sound familiar to those who teach introductory courses: “More practical examples in the class before presenting the conceptual understanding with principles and methods. Students do not appear to appreciate the principles and concepts. The younger students today seem to want the practical examples more than theories and principles”. Also interesting is the amount of time given to applications; thirty courses (30) include supervised exercises which would address primarily the technical dimension of the classification process.

#### 4.2.2.1. Dewey Decimal Classification

The DDC exhibits all of the features that make a bibliographic classification scheme functional and that we want students to be familiar with; this would explain why DDC is taught in most classification courses offered in North American LIS schools as typical example of a hierarchical classification scheme.

Most of our respondents are giving some time to the DDC in their courses; DDC is covered in 42 courses in our list of 51. We asked these respondents whether they are using the DDC schedules for teaching, and if so, what edition/version of the scheme is favoured. Not surprisingly, we confirmed that the DDC schedules are used as teaching tool in a large majority of courses (39 out of 42). Several versions of the DDC are used by instructors and their students (Table 3), often more than one within a same course. We considered that a particular version or edition is used even if only excerpts of the scheme are used in class.

DDC version	Number of courses
22nd ed (Full paper)	17 (40%)
21 <sup>st</sup> ed. (Full paper)	4 (10%)
20th ed. (Full paper)	2 (5%)
14 <sup>th</sup> ed. (Abridged paper)	3 (7%)
WebDewey (Full or Abridged)	30 (71%)
DDC summaries	1 (3%)

Table 3. Versions of DDC used for teaching

WebDewey® is a product of OCLC ([www.oclc.org/dewey](http://www.oclc.org/dewey)) available through the OCLC Connexion® service ([connexion.oclc.org](http://connexion.oclc.org)). The use of WebDewey for teaching classification was a focus of our study; we learned that it was used as teaching tool in 30 out of 42 courses, and by 28 of our 36 participants (78%). We were also interested in knowing why instructors would or would not use WebDewey as teaching tool. Eight respondents only declared not using WebDewey for teaching. The reasons behind their decision are given in Table 4 (more than one reason could be given by one instructor).

Reason	DDC	LCC
	Number of instructors (n=8)	Number of instructors (n=4)
No absolute necessity to be familiar with the format	4 (50%)	1 (25%)
Non-effectiveness as teaching tool	2 (25%)	2 (50%)
Difficulty of access	2 (25%)	1 (25%)
Difficulty of using the interface	1 (13%)	1 (25%)
Not available at my school	1 (13%)	1 (25%)
Other	3 (37%)	1 (25%)

Table 4. Reasons for not using web-based versions of classification schedules as teaching tools

The unavailability of the web-based version of the DDC is a deciding factor for one instructor only and it appears that WebDewey is available in all other LIS schools. Of the three respondents who offered other reasons for not using WebDewey, one declared not having time to do it all and another not having been given the appropriate credentials to show how WebDewey works. One instructor specifies that the small section of his course which discusses classification focuses on concepts and not on specific schemes or applications.

WebDewey is used as teaching tool in 30 distinct courses, and the reasons offered by 22 instructors for doing so are detailed in Table 5.

Reason	DDC	LCC
	Number of	Number of

	<b>instructors (n=22)</b>	<b>instructors (n=24)</b>
Necessity to be familiar with the format	14 (64%)	15 (63%)
Effectiveness as teaching tool	10 (46%)	10 (42%)
Convenience and accessibility	20 (91%)	21 (86%)
Only version available at my school	9 (41%)	10 (42%)
Cost	3 (14%)	4 (17%)
Other (Course taught online)	6 (27%)	5 (21%)

Table 5. Reasons for using web-based versions of classification schedules as teaching tools

Convenience and accessibility are the main incentives for instructors to use WebDewey, but not everybody appears convinced yet of the need for students to be familiar with the format. Of the six respondents who offered other reasons for using WebDewey, five specified that they were teaching online courses and that a web-based version of the DDC was the only one they could use.

WebDewey is used by 20 instructors (91%) to provide examples in class, by 15 instructors (68%) for supervised exercises, by 16 instructors (73%) for assignments and by two instructors only (9%) during exams. On average, instructors who use WebDewey as teaching tool have been doing so for five years, while the format has been available for a little under 10 years.

Identical questions were asked with regards to the use of a paper-based version of the schedules. To teach DDC, 15 instructors declare using the traditional paper version of the schedules and 15 declare never using it. Their reasons to do so are detailed in Tables 6 and 7.

Comments by respondents reveal that a majority of instructors who declare not using the paper version (nine out of 15) do in fact use it occasionally to prepare a class; two online instructors scan pages so that students “can see what it looks like, see examples and do a small exercise”. An elective course’s instructor specifies that his students are already familiar with the paper version of the DDC, since they have worked with it in a prerequisite course.

One third of the instructors (10 out of 30) who teach bibliographic classification through the DDC still agree that the traditional version is effective as teaching tool. Indeed, among other reasons provided, two clearly relate to ease of use and effectiveness: “some students find it easier when learning” and “the paper allows the students to form a more comprehensive picture of the classification compared to single screen shots online”. This confirms what Taylor (2006) and Hider (2004) have suggested, but the relatively small proportion reveals that instructors’ views on this matter may be changing as they become more closely acquainted with the functionalities of WebDewey.

DDC on paper is used by 14 instructors (93%) to provide examples in class, by eight instructors (53%) for supervised exercises and assignments, and by three instructors only in the context of exams (20%).

#### 4.2.2.2. *Library of Congress Classification*

Classification Web (classificationweb.net), a product of the Library of Congress Cataloging Distribution Service, has been available for over ten years. Given the bulk of the LCC schedules, it has been readily adopted and integrated to the classifier’s toolbox; the same happened in LIS schools, which could not afford multiple full sets of schedules in print; for classification instructors, Classification Web has always been an attractive teaching tool.

Twenty-eight (28) of our 36 respondents said they were using the LCC schedules for teaching. Eleven (39%) still use the paper-based version and 24 (86%) use Classification Web. The use of the paper version requires certain practical arrangements. Instructors comment: “only a select schedule is used in a limited way”, “I scan particular sections”, “I have selected volumes in my office that students can borrow, I bring these to class as examples when teaching on campus”. The four instructors who do not use Classification Web as teaching tool offer six reasons for not doing so (Table 4). The 24 instructors who use Classification Web to teach bibliographic classification through LCC are also doing so for six reasons

(Table 5). Convenience and accessibility are again the primary reasons for using Classification Web in class.

Classification Web is used by 23 out of 24 instructors (96%) to provide examples in class, by 14 instructors (58%) for supervised exercises, by 17 instructors (71%) for assignments and by two instructors for exams. It has been used on average for close to five years; this number may relate more to the number of years our respondents have been teaching LCC than to a recent change of teaching tool.

Seventeen (17) respondents declare not using at all the paper version of the LCC schedules for reasons quoted in Table 6.

Reason	DDC	LCC
	Number of instructors (n=15)	Number of instructors (n=17)
No absolute necessity to be familiar with the format	0	2 (12%)
Non-effectiveness as teaching tool	1 (7%)	3 (18%)
Cost	3 (20%)	4 (24%)
Not available at my school	6 (40%)	9 (53%)
Course taught online	5(33%)	3 (18%)
Other	2 (13%)	0

Table 6. Reasons for not using paper-based versions of classification schedules as teaching tools

Among the comments offered by non-users of LCC on paper, two relate to the number of students in a class: “We usually have 40-60 students per semester. ClassWeb is more practical to use”; “We do not anymore keep a complete and up to date set of LC schedules. Of the schedules that we keep, we have at most 10 copies, this is useless with a group of 40-50 students”. But the paper version has not been abandoned yet; it is still used as teaching tool by 11 respondents, several of whom are obviously also using Classification Web. They do so for reasons provided in Table 7.

Reason	DDC	LCC
	Number of instructors (n=15)	Number of instructors (n=11)
Necessity to be familiar with the format	7 (47%)	3 (28%)
Effectiveness as teaching tool	11 (73%)	8 (73%)
Convenience and accessibility	9 (60%)	6 (55%)
Cost	2 (13%)	3 (27%)
Only version available at my school	1 (7%)	1 (9%)
Other	3 (20%)	0

Table 7. Reasons for using paper-based versions of classification schedules as teaching tools

One instructor specifies that “it helps to see the paper version before learning the Classification Web version (easier to navigate and see it holistically)”, echoing this other comment from a colleague: “to give students an understanding of how the scheme is structured”. Another respondent says that he “likes to show the difference in access between the online and the paper versions”.

The paper version is used by 10 instructors (91%) to provide examples in class, by seven instructors (64%) both for supervised exercises and for assignments, and by two instructors (18%) during exams. Only two instructors use the full set of tables in print. Most respondents use one or two classes only; Classes A, H, K, N, PN-PZ, PR and Z are used for teaching purposes. In at least one case, the class and table used for teaching is the only one of which multiple copies are available in the instructor’s school.

#### 4.3. Evaluation



In a classification course, evaluating learning outcomes is not an easy process. In classifying, various skills are applied and one cannot expect that the students will develop all of them equally in a single course. Learning outcomes are evaluated by application of one or more methods (Table 8).

Evaluation method	Number of courses
Written essay or oral presentation	18 (35%)
Application / technical exercises	45 (88%)
Exam	17 (33%)

Table 8. Evaluation methods

Forty-five (45) out of 51 courses use technical exercises as an evaluation method; this would likely address primarily the technical and technological dimensions of the classification process. In eleven (11) courses, technical exercises are also used in the context of exams, thus reinforcing the importance of the technical dimension. The cognitive dimension of the process, obviously more difficult to measure, would likely be present in essays but would also appear in technical exercises if subjects are identified by students rather than given to them to be translated into an appropriate class number; eighteen (18) courses require that the students write an essay, and 10 courses require an essay as part of an exam.

Other evaluation methods include a final project, the creation of a classification scheme on a topic chosen by the student, subject analysis of a set of materials and selection of an appropriate controlled vocabulary to represent the subjects, and a DDC/LCC comparison; these methods of evaluation, used in advanced level courses, make it possible to assess more accurately the acquisition of cognitive skills in students.

Despite the difficulty of evaluating subject analysis and classification skills, instructors appear confident in the capacity of their chosen method(s) of evaluation to assess correctly types and levels of capabilities in their students (Table 9).

Dimension	Number of courses (n=51)			
	Not confident	Somewhat confident	Reasonably confident	Totally confident
Subject analysis	4	5	28	14
Technical application	6	8	25	12
Use of interface	10	12	22	9

Table 9. Level of confidence in evaluation methods

In 42 courses, instructors are reasonably or totally confident that they can assess correctly their students' subject analysis abilities through the evaluation methods they have selected. In 37 courses, they also think that their students' skills in using the schedules to locate or construct class numbers are correctly evaluated; this would indicate that, in most courses, technical exercises are not used only to assess technical skills but also to stimulate the development of subject analysis skills. The few instructors who have yet to adopt either WebDewey or Classification Web as teaching tools are no doubt those who say they are not confident in their students' abilities to use web interfaces.

## 5. Some limitations of the study

This article presents quantitative data collected through our survey questionnaire. An analysis of qualitative information found in course objectives, statements of recent and significant changes made to courses and instructors' comments will eventually allow us to present an even more interesting picture of bibliographic classification instruction in the 21<sup>st</sup> century. However, some general limitations of our study

will not authorize us to pretend that we could ever provide a complete picture of the state of classification instruction in 2011.

The use of a web-based questionnaire and the emphasis on quantitative information could at best provide baseline data, but without the richness of details and the nuances that we could obtain during an interview with individual instructors. Despite our care in constructing and refining the questions and the navigation patterns so that respondents would not see questions that did not apply to their situation, the length of the questionnaire was a challenge to all; it was a disincentive for 11 instructors, who did input data but left the questionnaire uncompleted, and no doubt for many others among the non-respondents.

One instructor pointed out that a few questions were biased towards in-class teaching and did not apply to online courses; such a bias would have reflected the researcher's personal experience. However, a closer examination of questionnaires completed by online instructors showed that the bias, if there indeed was one, does not appear to have skewed the information in any significant way; nevertheless, the remark is pertinent, does open a new window on the topic, and suggests that a study of respective characteristics of in-class and online classification courses may be warranted at this time.

## 6. Conclusion

Classification retains its importance in LIS masters' programs where it is first introduced in core, mandatory organization courses, and then covered in depth in elective advanced level courses. The amount of time dedicated to concepts, principles and theory is modest but these are indirectly discussed in lessons on specific classification schemes, with the DDC and the LCC still used as primary examples of functional hierarchical structures. Instructors confirm that they do not consider essential at this time to add theoretical content in their courses; on the other hand, the integration of more examples and exercises is a priority.

The number of classification courses offered online or in a mixed format is now significant. This explains in part the apparent popularity of web-based versions of classification schedules; a majority of instructors appreciate their convenience and accessibility, and seem little concerned about their effectiveness as teaching tools. However, classification instructors are not yet ready to abandon the traditional paper-based format of major classification schemes, and to turn to digital formats exclusively.

Web-based instructional tools impact not only learning outcomes, but also teaching. Can we teach classification the same way using paper and web-based tools? Is there a need to modify course objectives when teaching with web-based tools? Which elements of contents become unnecessary? Which must be added? How much time is spent on "teaching" the interface? How do we guard against the risk of transforming a knowledge, information and documents organization course into another "how to use this web-based database" course?

Our research methodology did not supply all the qualitative details needed to provide a precise answer to the general question: How is bibliographic classification being taught at the start of the 21<sup>st</sup> century? It allowed us, however, to reach our objective of outlining a picture of classification instruction in 2011, and of providing baseline data for future studies. We hope that this data can be used as a departure point to pursue the examination of classification instruction; further studies could better reveal the current state of classification instruction than our own, which did not benefit from the availability of previous data usable for comparison purposes.

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