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LIS Education and Web Services in the Public Sector: the Case of Spain

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This article deals with the need to define the public administration sector as a major provider of Web-based job-placement resources in the field of corporate information management for Spanish graduates in librarianship and information science. The Web as an instrument of information dissemination gives the citizen who uses it many advantages. Unlike other information services where the flow of information is targeted at a specific part of the population, the Public Administration Sector generates information that is, or should be, useful to any citizen, regardless of his or her situation or profession. Throughout life, one has to interact with local, regional, and national Public Administrative units. Sometimes the process is direct between a citizen and the staff of these units, but on other occasions the Administration itself has to structure the flow of information to the citizen. The Web has become an effective tool in this sense, but who are the professionals managing these information resources? The present work will show that Spanish universities offering courses in librarianship and information science have remained unaware of these new job opportunities that have arisen in recent years. Data used to support this conclusion are: 1) Spanish reports on the job market for librarianship and information science graduates, 2) study plans at the different levels of higher education in Spain (first, second, and third cycles of university), and 3) the educational qualifications of the website administrators of Spain's provincial capitals, a typical sample of Spanish public administrative units.

Introduction

University courses in library and information science began in Spain at the beginning of the 1980s [1]. More than 25 years have passed since then as the discipline has settled itself, perhaps a little too much so in our opinion, into a library and archive oriented academic profile.

A Ministerial order of 1981 set out the first study plans for a university-level qualification – the three-year (first cycle) 'Diplomature' in librarianship and information science. The first universities to undertake this course were Barcelona, Granada, Salamanca, and Murcia, in that order. In 1991, these study courses were reformed in the overall context of the Universities Law of 1983,

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with a complete overhaul of a study plan that had become obsolete and sclerotic. 1992 saw the approval of the Study Plan for the Bachelor's Degree in Information Science. This consisted of a two-year course (second cycle) designed as the continuation of the Diplomature, but allowing access for students who had been following other degree courses.

The difference between the first-cycle teaching with respect to the second cycle is that the Diplomature is aimed at producing middle-level technicians trained in the traditional areas of librarianship and information science such as cataloguing, classification, and librarianship, while the full degree course is aimed at producing higher-level professionals suited to taking on posts as directors of information and library service centres.

These two new study courses – the Diplomature approved in 1991, and the full degree course approved in 1992 – represented a point of inflexion in the content being taught. To the traditional material of librarianship were added other subjects from such disciplines as computer science, statistics, law, and management, with instructors from these specialities. The perspective of the teaching thus became more wide ranging and more integrative. The instructors from these other disciplines naturally brought with them a new approach to the subject, with greater or lesser impact according to the university. In the second half of the 1990s, there began PhD studies (third cycle) in information science aimed at producing researchers in the field.

The reform of the early 1990s also meant that information science became a compulsory subject in the study plans of other degree courses: Audio-Visual Communication, Translation and Interpreting, and Public Management (although, for graduates of these courses, information science would be just one more tool to use in the exercise of their professions). This development gave rise to an enrichment of information science in Spain, with the opening of new lines of research.

In the new context of the information and knowledge society, information has become an essential element in organisations' everyday functioning. This has led many in the field to ask what direction the profession is taking, and what objectives university courses in librarianship and information science are now seeking [2]. In principle, one might think that the orientation would be towards the broad area of information resource management, i.e. towards integrated management of the cycle of information in all types of organisations. Nevertheless, we believe this is still not the case. Indeed, even so many years after this unprecedented technological revolution ushered in today's information society with its new forms of working and completely new jobs, the profession of librarianship and information science in Spain seems more concerned with maintaining its status than adapting to the new opportunities that have emerged. Certainly, it has adapted its techniques and methods to the new information and communications technologies, but constrained within the solid immovable walls of the world of libraries and archives and that form of specialized library represented by document retrieval services.

Spain has not been spared the tension between information science and library science of which Blaise Cronin wrote in 1995. The complexity of the discipline is beginning to become evident in this country. There are now roughly 400 university instructors belonging to the area of librarianship and information science [3] in the 16 universities where these courses are offered, and more than 300 PhD theses have been defended (in Information Science and Automated Information Science) [4], with lines of research that have begun to inquire into the complex world of information in organisations. Nevertheless, the mind-sets apparent in the teacher-student relationship reflect compliance with respect to professionalization. In the Diplomatures, there exists the compulsory subject of the practicum helping students to get to know the profession through periods of regulated practice in centres that they can choose from a list maintained by their university. For the present study, in an evaluation of the 2006/07 practicum centres, we found that most were archives and libraries of different specialities, although there were also a reasonable number of communications media in which newspaper and audio-visual document management seems to have emerged as an interesting professional outlet. There is no possibility given, however, for practice in information management in other organisations.

In recent years, Spanish universities have been preparing for adjustment to the European Higher Education Area. In May 1998, the Ministers of Education of France, Germany, Italy, and the United Kingdom signed an agreement at the Université

Paris Sorbonne which called for a process of political change in the European university world. That document, known as the Sorbonne Declaration, led to a new Conference which culminated in the Declaration of Bologna on 19 June 1999, signed by 30 European states, and which laid the foundation for the construction of a homogeneous university space in Europe, based on quality, mobility, diversity and competitiveness.

This process of political change in the European university model falls squarely within the context of a comprehensive process of change in the workplace, with its newly emerging professional demands. Clearly, these new job market demands must influence the academic sphere of librarianship and information science (or at least that is our opinion) and their course curricula. Indeed, it has been precisely the world of librarianship and information science that has been one of the most drastically altered by the technological revolution in information and communications.

Francisco Michavila and Benjamín Calvo, Spanish experts on university policy, have analyzed the transformation that today's society has undergone and that allows a re-think of what the role of universities should be. The scientific and technological developments that are now part of society's everyday experience have created new needs that did not exist before. Those authors (1998, 81) tell us that: "It is necessary to recall the statement that appeared in a journal of European scope, according to which half of the professions that will be in demand twenty-five years from now are today unknown." Their reflections thus point to the complexity of a society with a highly diversified and specialized job market that is changing every few years. They also pose a question that will serve us as a final reflection: "Who can believe that the traditional university, with its solid lectures, imparted magisterially by teachers who learnt them forty years ago, can give a satisfactory response?" (Michavila and Calvo 1998, 82).

The European reform established: Bachelor-level degrees whose function is to provide a general training alongside other instruction as preparation for the future professional career exercise; Master's courses, offering advanced and specialized training and fostering the work of research; and Doctoral courses with advanced training in research techniques. In Spain, all Diplomatures, Bachelor's and Engineering Degree Courses will undergo complete restructuring. The Degree in Information and Library Science will replace the two current qualifications– Diplomature in Librarianship and Information Science, and Degree in Information Science. Those responsible for the teaching in these courses have been meeting since 2003 to plan the future degree course. One outcome of these meetings has been the White Book on the Degree Course **(**Ministerio de Educacion 2004), which sets out the generic and specific skills that the future graduates must have, as well as indicating some career guidelines. These guidelines derive from the professional outlets that current diplomature and bachelor's degree course graduates have, in particular in the following types of centres:

1. General libraries, whether national, public, university, primary and secondary schools, parliamentary, etc.
2. Specialized library and information services in public administration, companies, communications media, publishers and bookstores, law offices and consultancies, computer science and technologies, reference and document retrieval services, etc.
3. National, institutional, and public administration, and private archives.
4. Companies involved in database creation and dissemination, information storage and retrieval systems, information systems, Internet portals, editorial content creation, etc.

The job market in Spain

The last two decades in Spain have seen organisations accept information resources as one more of their major assets. As such, the life cycle of information has become an integral part of their overall management, independent of the type of organisation. In this job context, an information science graduate is responsible for the overall cycle of information management in addition to being able to design information systems with nodes and channels that allow the totality of the information to serve the institution's objectives. Information, whether generated internally or externally, becomes the organisation's memory. External information has many uses, such as reducing uncertainty in decision making, and, in accordance with the strategic goals of the organisation's top management, part of the information will serve to structure the flow of general corporate information to the outside.

In Spain, there have been studies of the job market for university information science graduates (Moreiro *et al.* 1995; Moreiro 2001), of employment offers (Montes López 1995), and of the new employment niches that have opened up in different fields, including in companies (Frías Montoya 2000; Muñoz Cañavate and Chaín Navarro 2006). In recent years, there have also been reflections on the need to look for new job outlets for graduates in the field (Sanz Casado 2001; Tejada Artigas 2003).

Nevertheless, these studies have not managed to create a true intellectual debate in the university context about what librarianship and information science represents for society. Studies by the Ministry of Labour have concluded that there has been a lack of awareness in Spain of the need to look for new profiles different from the traditional librarian, archivist, or library scientist. This has led to new graduates looking for any job in fields far from the specialities that they studied, despite living in the era of the information and knowledge society. This situation is reflected in the data that will be presented in the following paragraphs.

Possibly a change in approach is necessary – a change that some have been calling for many years already. The principal problem may lie in the old, but in certain areas still very much alive, consideration that librarianship and information science university course graduates can only work in libraries and document retrieval services. That the job market has for some time been demanding other profiles (even though in a more restricted area) is illustrated by the practicums performed by the students of the Diplomature of Librarianship and Information Science in the Spanish Region of Murcia from 1991 to 2001 (Table 1). One observes that, of all the institutions involved, town councils (Local Administration) were those that demanded most practicum students. Clearly in those still early years of Internet, the functions required were not for work on websites, but this did represent the opening of a major market niche that had nothing to do with the traditional outlets for graduates in the speciality. The potential for continuity, however, seems not to have explored. The tasks carried out by the students went from answering '010' information desk calls, to document retrieval support for administrative functions, search for and compilation of information for the preparation of reports, organisation of administrative files, intermediate archiving, etc.

Table 1. Practicum in the Diplomature of the University of Murcia (1991–2001).

Institution in which the practicum was carried out by L&IS Diplomature students in the academic years 1991–2001		
Institution	Nº students	%
Town Halls	139	23.1
Autonomous Community	90	14.9
Associations and Colleges	85	14.1
Other enterprises	66	10.9
Radio and TV	58	9.6
University	51	8.5
Schools	39	6.5
Ministry of Education	24	4.0
Museums	16	2.7
Libraries	14	2.3
Financial entities	11	1.8
Hospitals and health centres	8	1.3
Archives	2	0.3
Total	603	100%

Source: Information elaborated from data in Chaín *et al.* 2002.

We believe that in Spain it has become necessary to open a debate in the academic sphere of library and information sciences aimed at bringing the educational requirements of the official study plans into line with the real situation facing graduates who are just entering the job market. It seems that 'Electronic Administration' is not regarded as a strategic target in the world of our universities, when the data clearly indicate that it should be and that this area has the potential for capturing new job placements.

The demand for information science degree courses has, however, undergone a marked fall in recent years. Tables 2 and 3 present the trend in the numbers of students enrolled in the last seven academic years. The gradual decline in the number of students is not exclusive to these specialities, since other degree courses in Spain have seen significant reductions deriving from demographic factors (in particular, a falling birth rate). Nevertheless, the data for the year 2005/06, with declines relative to the previous year of 15.40% in the Diplomature courses and 10.95% in the full Degree courses should serve as an alert to the academic authorities since, in the framework of the information society, these figures concerning information professionals in the management of that knowledge might well be described as alarming.

Table 2. Total students enrolled: L&IS Diplomature.

	1999/2000	2000/01	2001/02	2002/03	2003/04	2004/05	2005/06
Library & Information Science	4874	4675	4777	4419	3998	3429	2901
Variation relative to previous year		-4.08	2.18	-7.49	-9.53	-14.23	-15.40

Source: INE 2007.

Table 3. Total students enrolled: BA in Information Science.

	1999/2000	2000/01	2001/02	2002/03	2003/04	2004/05	2005/06
Information Science	2606	3218	3732	3839	3717	3525	3139
Variation relative to previous year		23.48	15.97	2.87	-3.18	-5.17	-10.95

Source: INE 2007.

Table 4. Jobs in which graduates in Information Science in Spain were hired.

	Diplomas		Graduates	
	Nº contracts	Nº persons hired	Nº contracts	Nº persons hired
Office employee	644	521	150	128
Librarian	342	274	80	67
Library scientist	204	183	138	120
Shop assistant	150	134	21	20
Library assistant	128	94	42	32
Worker in manufacturing	101	80	15	15
Interviewer, pollster	62	18	43	8
Storeroom worker	61	45	-	-
Worker in food industry	52	16	-	-
Archivist	-	-	20	19
Teacher educator	-	-	14	13

Source: Report on the Job Market for University Degrees in the Area of Social and Legal Sciences. Madrid: Ministry of Labour, 2003, pp. 17 and 141.

The expected emergence of new job profiles for the information profession in Spain, different from the classic librarian and information scientist, seems not to have taken place. This is reflected in the report published in 2003 by Spain's Ministry of Labour (see Table 4) on placements of Spanish graduates in librarianship and information science. This snapshot of access to the labour market paints a picture of very different profiles between the graduates' aspirations, the jobs that they actually find, and the job perspectives that could open up in other areas but which are not filled.

One observes that in a very high percentage of cases, the jobs are not in the profile of the university course, nor even close to it. Apart from traditional positions in the world of archives, libraries, and museums, numerous Spanish graduates in information science are taking jobs whose connection with their university studies is slight (office employee) or non-existent (shop assistant, worker in manufacturing or food industries, storeroom worker, etc.)

That study also includes a section entitled "The College Reports", based on the data provided by various Spanish professional associations. There one finds the statement that the expectation for the job outlook is good if there is an increase in the number of posts available in archives, libraries and museums.

This is a clear demonstration of the extreme narrowness of vision that also exists in the world of professional associations.

Table 5. Job offers in employment portals in Spain.

Job profiles requested	*Infojob*	*Infoempleo*	TOTAL per profile
Webmaster	34 (5%)	36 (41%)	70 (9%)
Web design	605 (89%)	17 (20%)	622 (81%)
Library scientist	39 (5.9%)	29 (34%)	68 (9%)
Librarian	0	0	0
Archivist	1 (0.1%)	4 (5%)	5 (>1%)
Total	679	86	765

Source: Infojob & Infoempleo

Table 6. Jobs created following Ministry of Labour sponsored specialisation courses.

Speciality	Diplomas in L&IS		Graduates in Librarianship	
	Nº trained	% hired	Nº trained	% hired
Web page design	48	68.75%	14	57.14%
Office computing	36	61.11%	4	25%
Initation to Internet	28	67.86%	7	71.43%
Management software	23	73.91%	6	50%
Office software	16	68.75%	3	33.33%
Communications media IS assistant	15	73.33%	4	25%
English: sales management	8	87.50%	2	100%
English for tourism: travel agency	7	85.71%	3	66.67%
IS techniques	8	75%	2	50%
Expert in Internet	10	50%	-	-
English: help desk	7	71.43%	-	-
Local network system administrator	7	71.43%	-	-
Specialist in computing for education	7	71.43%	-	-
Software programmer	6	83.33%	-	-
Analyst of relational database applications	6	50%	-	-
Executive secretary	-	-	2	50%
Programming languages	-	-	2	100%
Internet/intranet software programmer	-	-	2	100%
Software analyst	-	-	2	100%
Microcomputing hardware technician	-	-	2	100%
Specialist in CAD	-	-	2	100%

Source: Report on the Job Market for University Degrees in the Area of Social and Legal Sciences, Madrid: Ministry of Labour, 2003. pp. 18 and 142.

The real demand for jobs related to the proposed profiles

A search made in March 2007 in two of Spain's best known Internet job portals – Infojob and Infoempleo – provided figures that illustrate the need existing in the labour market (both in public administration and in companies) for new profiles in information management. Table 5 lists the positions offered during that month of March 2007. One observes that 90% are related to a profile of information resource management in Web systems, whether in design, maintenance, updating, etc.

One might at first think that these profiles offer a better fit for computer science or telecommunications graduates. Not one of the employment offers, however, requires these degrees. What is asked for is proven experience. One infers therefore that there exists a major employment niche that is being filled little by little, and that, while it does not exactly correspond to any particular degree course, is clearly closely related to those of librarianship and information science.

To check this hypothesis, we took further data from the Ministry of Labour's report, in this case concerning jobs created after specialisation courses had been given to graduates who thus acquired

Table 7. Subjects included in the librarianship and information science study plans of Spanish universities.

Area	Subjects
Law and public administration	History of public administration
	History of contemporary administrations
	History of library and information service institutions
	Administrative law
	Law concerning information services
	Organisation of public administrations
	Official and government publications
	Juridical regime of Librarianship
	Juridical aspects of Librarianship
Information Science	Information policies
	Special archivist (public administration)
	Management of administration archives
	Public administration archives
	Evaluation of and access to administration documents
	Information systems in public administrations
	Management systems in administration information services
	Information units in the municipal context
Computer Science	Computer systems
	Multimedia systems
	Web programming
	Intranet and Web server administration
	Information resource design in the Web context

training outside the university context once they had finished their degree course (Table 6). One observes that every Internet-related profile had a subsequent employment rate of greater than 50%.

Information science and electronic administration in Spain

In Spain as in other countries, especially of the developed world, public administrations have undergone an enormous transformation in all policy areas related to communication with the citizen as a result of the use of Internet. Spain has traditionally been opaque with respect to the disclosure of information (Cornella 1998) [5]. In the private sector this has been excused by concern that the information may be used by the competition. In the public sector it has been due both to a traditional incapacity to serve citizens effectively (resulting from the worst aspects of the bureaucratic model), and to the absence of appropriate public policies [6]. This began to change at the beginning of the 1990s towards a citizen-centred model. The political impulse came from the central administration through the "Plan of Modernisation of the Administration of the State" of 1992, and new administrative legislation regulating the use of electronic data communication procedures, Ley de Régimen Jurídico de las Administraciones y del Procedimiento Administrativo Común (Law of Juridical Regime of Public Administrations and Common Administrative Procedure) of 1992 which established the bases for adaptation to the imminent arrival of the Internet for the public at large in the mid 1990s.

The progress of Spain's electronic administration has been similar to that of the rest of the countries in its surroundings. The principal legislation in the respect is represented by *Ley 59/2003 de firma electrónica* (Law 59/2003 on electronic signatures), the Ley General Tributaria (General Tributary Law) of 1993 which allows income tax declarations to be made by electronic data communications, and the *Ley para el acceso electrónico de los ciudadanos a las Administraciones Públicas* (Law for Citizen's Electronic Access to Public Administrations) of 2007.

Against this background of the development of new employment opportunities for information science graduates, the question that many of us in Spain have been asking ourselves is why, given the aforementioned figures of the fall in student demand for these courses and of instability in the traditional employment profiles, has electronic administration not become a strategic objective for

Table 8. Website work in the practicum of university L&IS Diplomature courses.

University	Practicum centre
A Coruña	None
Barcelona	None
Carlos III (Madrid)	None
Complutense (Madrid)	None
Extremadura	None
Granada	None
León	None
Murcia	None
Salamanca	None
Valencia Estudi General	None [8]
Vic	None
Zaragoza	Zaragoza city council website

information science courses in Spanish universities.

We shall show that in the professional and academic context of information science in Spain there regrettably still exists no integrated vision in which information management in electronic administration is treated as a potential field of employment. From our analysis of all the study plans of the Diplomatures in Librarianship and Information Science and of the Degree in Information Science, we can affirm that there already exist the academic bases for the construction of a professional and academic profile in electronic administration, as reflected in the inclusion of various subjects in the areas of law and public administration, information science, and computer science (Table 7).

We also analyzed how the subject 'practicum' is dealt with in the universities that offer the Diplomature in Librarianship and Information Science [7]. This subject allows the student to gain academic credit-hours towards completing the diplomature with real working hours while training in practice, as well as providing an opening into the job market. In Spain, the time devoted to the practicum ranges from 200 to 300 hours, unevenly distributed according to the university (a more detailed study of the topic may be found in Chaín 2002).

As is seen in Table 8, of the 12 universities that offer this first-cycle course, only that of Zaragoza includes a municipal website among the places where the practicum can be carried out. The University of Valencia does include some centres where corporate information is managed through Web pages, and this may possibly also be the case in other faculties, although nothing is indicated in this sense. The academic authorities of the University of Zaragoza responsible for the program are very satisfied with the now ten-year practicum experience on the Zaragoza city website. The students work with documents and relational databases. They must standardize content across all the city council sections, create and/or maintain the input forms for attending to citizens and respond to all the requests for information as they arrive (from city employees and citizens). They have also created an alerting service for news items, employment, etc.

Doctoral Programs in Information Science

The third (postgraduate) academic cycle is research-oriented, culminating in a doctoral degree. Spain is currently immersed in the process of adapting to the European Higher Education Area (EHEA). There thus coexist universities following two different standards. Firstly, there are those whose third cycle is still adapted to the 1998 norm, with doctorate programs consisting of two courses, one of lectures where the student takes specialist courses, and the second of tutored research where the student is responsible for a study of original research. And secondly, there are those that have already adapted to the EHEA by setting up a Master's postgraduate program.

The doctorate programs, unlike the undergraduate degrees, have never had any common directives for all universities. The doctorate courses have therefore reflected the most diverse views, often depending more on the profiles of the teachers than on academic profiles truly adapted to the reality of society. (Although this is a general tendency in all three classes of university study plans, it is far more marked in the third cycle.)

In our study of the 16 universities which in 2007 were offering at least one of the two undergraduate information science courses (Diplomature or Bachelor's Degree), 15 have established third-cycle studies for a doctorate or masters. Few of them, however, have courses or lines of research related to electronic administration or information management in public administrations. During the first year, only three universities provide lecture courses on these aspects, and also during the second year, in which the student begins research,

Table 9. Educational qualifications of personnel responsible for the content of Spanish city council websites.

Educational qualifications	Nº of city councils in which the qualification appears	Percentage of the total
BA in Information Science and Diploma in Librarianship and Information Science	6	10.34%
BA in Geography	2	3.45%
BA in Journalism	8	13.79%
BA in Psychology	2	3.45%
BA in Philology (no specification of the branch)	1	1.72%
Superior-Level Engineer in Computer Science	2	3.45%
Industrial Technical Engineer	1	1.72%
Computer Science Technical Engineer	10	17.24%
Diploma in Social Education	1	1.72%
Diploma in Tourism	1	1.72%
Secondary school education	2	3.45%
Professional school (FP) office work	8	13.79%
FP II computer science and graphic design	3	5.17%
Other unspecified qualifications	9	15.52%
Total	58	100%

only three of the fifteen programs include some line of research connected to the management of information resources or information systems in public administration. There is thus very little weight being given to this novel line of research in the academic structures of librarianship and information science in Spain.

Who administers website content in Spain's Public Administrations?

As a platform, the website channels the outward flow of information from within the administration, from both the administrative and policy-making areas, to citizens and companies. Since this information is typically highly dynamic and changeable, it requires daily administration. We believe that this is a growing area which requires personnel specialized in content management, and thus in which there is a market and employment niche. There have been no overall studies of Spain's public administration that would allow one to determine the professional profiles of the website administrators (the 'webmasters'). We therefore decided to survey the managers responsible for the website contents corresponding to the city councils of Spain's provincial capitals.

The survey method was first by e-mail, and then by fax and telephone for those who had not answered. The final response rate was 61% (32 city councils responding out of 52 requests). Table 9 lists the educational qualifications of the personnel working on these websites, including both university degrees and lower level qualifications.

It is more than evident from the variety of educational qualifications shown in Table 9 that, certainly because of its novelty, Web system administration is neither regulated nor are there any common standards. The content of these systems is managed by professionals who have graduated in specialities as different as journalism, philology, geography, tourism, primary school teaching and social education. Some of the content managers even have no formal educational qualifications (although it is possible that they are self-taught).

The qualifications that would seem best suited to content management are evidently those in the area of communications – information science, journalism, audio-visual communications. The first of these groups is represented in 6 city councils, the second in 8, while there is no representation of audio-visual communications or of advertising.

Various studies have described a diversity of deficiencies in the management of the website content of Spanish administrations. For example, the studies published by the Fundación France Telecom España in 2006 find that, while regional government websites provide generalized information, approximately half (47%) give no personalized information on local taxes, status of administrative dossiers, etc. In local administra-

tions, the degree of availability of personalized information has been 8.4% and 12.9% in the last two years, respectively. The "ease of browsing" in local administration websites was described as not even reaching 70%. The study conducted by Sureda and Comas (2004) of 60 city councils of the Spanish Region of the Balearic Islands concluded with a sad panorama. There was very little use of the Web as a tool of administrative management or for citizen participation. In general, the information was sparse and not kept up-to-date, and there was little use of the Web as a channel for the dissemination of relevant news. With respect to citizen participation, only two city councils had discussion forums, and almost 80% had no system of taking suggestions or complaints from citizens.

Conclusions

The article has hopefully made it clear that electronic administration is not regarded as a strategic objective for librarianship and information science studies in Spain, even though the employment, academic and research opportunities it offers are potentially greater than those of the classic fields of libraries and archives. Indeed, there has been little real debate about the academic link between information science professionals and website content management in public administrations. We have shown that, with only a few exceptions, the relationship between citizens and administration has not been an objective of either the curricula or of research in university information science courses in Spain.

The complexity of Spain's public administration resulting from its highly decentralized political structure means that there exists a broad employment market in this area as well. Local administrations comprise more than 8000 city councils, 51 provincial delegations, councils, and island authorities, 17 regional governments with all their administrative structure, and a central government with 150 units distributed between ministries and autonomous organisations, many of them with official websites.

Although the profile of webmaster seems to be multidisciplinary, there are aspects, especially those related to the administration and diffusion of content, that are remarkably close to the skills described in the undergraduate courses of librarianship and information science. The academic authorities have, however, paid no particular attention to developing the opportunity represented by this connection.

The revision of the new study plans of all three university cycles (degree, masters, and doctorate) should perhaps take this demand into account, and further develop the skills needed for the administration of public or private website content, and the front-office and back-office processes.

In Spain, as throughout Europe, adaptation to the EHEA must allow strategies to be devised that endow academic training in LIS to be dynamic in its response to a changing society, since we believe that training can be provided for new careers that did not exist previously.

Notes

1. In Spain, specialist courses in the field existed prior to their appearance in university curricula. In the Nineteenth Century, there was a school that trained librarians and archivists. And in the Twentieth Century, 1915 saw the inauguration of the School of Librarians of Barcelona (later converted into a university centre), 1947 the School of Technical Training of Archives, Libraries, and Museums, and 1964 the School of Library Scientists of Madrid, among other examples. None of these still survive.
2. In Spain the term "Documentation" is used instead of "Information Science".
3. The last official data from Spain's National Institute of Statistics give, for the year 2004/05, a figure of 381 teachers in the total of state universities.
4. Data corresponding to 2007 from the nationwide TESEO database, that is a repository of all the doctoral theses defended in Spain.
5. Alfons Cornella (1998) insists on this idea, although it is also true that the policies on Electronic Administration implemented in Spain over recent years are aimed at opening up the Administration to the citizen.
6. In the 1980s, Spain's Ombudsman ('Defensor del Pueblo') received 18 000 complaints concerning the activities and procedures of public administrations.
7. The 'practicum' has since 1991 been a compulsory subject in the first cycle study plans for the Diplomature in Librarianship and Information Science. The content assigned to it by the corresponding Royal Decree is an "integrated series of practice in university centres, or linked to universities by connections or agreements, that put the students into contact with the problems of professional practice" (BOE 1422/1991, August 30, 1991).

8. It has some practicum centres in which corporate information is administered through Web pages.

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