Aslib Journal of Information Management

Assessing disciplinary differences in faculty perceptions of information literacy competencies

Maria Pinto

Assessing disciplinary differences in faculty perceptions of information literacy competencies

Maria Pinto
Universidad de Granada, Granada, Spain

Received 9 May 2015
Revised 9 December 2015
Accepted 18 January 2016

Abstract

Purpose – Uncovering faculty members' conceptions of Information Literacy (IL), as well as exploring their perceptions with regard to the importance given to a previously defined set of core IL competences grouped into four categories: searching, evaluation, processing and communication and dissemination. Ascertaining the possible differences among the five knowledge branches (arts and humanities, sciences, social and legal sciences, health sciences, and technical disciplines); and understanding the importance granted to a set of learning improvement initiatives by the faculty. The paper aims to discuss these issues.

Design/methodology/approach – The survey was completed by a set of faculty members from the University of Granada (Spain). Data were collected using the IL-HUMASS survey. The research is based on subjective data, first approached from a descriptive point of view. Later, data correlation, analysis and non-parametric tests were used with the goal of finding significant differences of faculty perceptions among the relevant academic areas.

Findings – Results suggest that more than half of the surveyed faculty have what the authors define as an Academic Concept of IL. The IL categories of communica\tion and dissemination and searching were graded in significance by the staff as being "very important," while those of evaluation and processing were assigned a slightly lesser rating of "important." Results suggest that IL awareness falls into two broad groups differentiated by subject discipline: those from health sciences, social and legal sciences and arts and humanities representing the first group, and sciences and technical disciplines the other.

Research limitations/implications – This approach address the subjective status of faculty concepts in a single university, but also in all knowledge branches. Future research is needed.

Originality/value – This is one of the few papers regarding faculty perceptions of IL.

Keywords Assessment, Information literacy, Perceptions, Disciplinary differences, Faculty members, Information competencies

Paper type Research paper

Introduction

The understanding of perceptions, and subsequent attitudes and behaviors, of faculty members in relation to the emerging paradigm of Information Literacy (IL) is an interesting question of which little is known. This is partly due to the fact that scientific papers addressing the relationships between IL and university teachers are rather scarce. Nevertheless, the importance of understanding the states of awareness of teaching faculty with regard to this topic within our information society is apparent, as this should be the actual starting point for future improvements aiming to master IL competencies among teachers. In an academic environment where IL instruction evolves into a major issue, we must recognize the key role of faculty as facilitators of learning processes, "Higher education cannot produce information literate students if it does not first have information literate teachers" (Frier *et al.*, 2001). One has

Aslib Journal of Information Management
Vol. 68 No. 2, 2016
pp. 227-247

2050-3806
DOI 10.1108/AJIM-05-2015-0079

to acknowledge that for faculty and other academic professionals to be proactive rather than reactive consumers in the information society, they must become information literate. If the faculty have limited skills, how do they train students to become proficient in information usage (Amstutz and Whitson, 1997)? In short, faculty ought to possess some basic competencies in IL which allow them to support both classroom instruction and, ultimately, students' autonomous and meaningful lifelong learning.

From a theoretical point of view, the model employed ranges from the traditional to the alternative approaches to IL. While the first approach is preferably concerned with the instruction and the corresponding instructional competencies, the second is more focussed on learner interactions with information. We are interested in both approaches, but currently our main support is the existing literature on the topic of faculty perceptions of IL competencies. As for the conceptual approach to IL, we have distinguished between its universal and academic conception and two alternative misconceptions. These emerged from the results the focus group, involving a few lecturers and professors from the University of Granada, prior to the development of this research. The academic concept is based on the ACRL approaches and refers to the set of skills needed to find, retrieve, analyze and use information. We refer to this as the Academic Concept of IL. One of the alternatives, partial and biased views, which we have selected for use in the survey, estimated that IL consists in the ability to carry out independent and ongoing learning. The other misconception, closer to the concept of digital literacy leads us to the mastering of Information and Communication Technology (ICT).

The overall objective of this paper is to reveal awareness levels of faculty members, belonging to a wide set of disciplines within the University of Granada (Spain), about the importance of IL in the students' instructional curriculum. This is a pioneering study in Spain, based on a model of subjective evaluation that assesses the perceptions and attitudes of classroom faculty concerning IL.

Through this research the following objectives are intended:

- uncovering the opinions of faculty on what constitutes an information literate person;
- checking whether these conceptions about IL expressed by faculty affect the importance which they attach to competencies;
- assessing the overall importance given by faculty to informational macro-competencies, or categories, obtained from a predefined set of core IL competencies;
- assessing the importance attached by faculty to each of the IL competencies from that set;
- uncovering differences of IL attitudes among faculty with regard to the five areas of knowledge; and
- assessing the importance given by faculty to a set of learning improvement initiatives proposed for IL instruction.

This is not an attempt, however, to evaluate faculty members' perceptions of the levels of informational competence of their students. Rather, this research aims to achieve a better understanding of the importance, for the faculty, of the various IL competencies necessary to improve student learning.

Literature review

This literature review covers the set of publications related to the perceptions of faculty members on the wide and complex phenomenon of IL. The first circumstance that cannot be ignored is the dual perspective to which this issue has been historically subjected, as it is located at the convergence of academic knowledge and library practice. For this reason, much of the existing literature refers to the faculty-librarian relationship. McGuinness's (2006, p. 575) work is "based on the premise that faculty-library collaboration is one of the critical elements for establishing successful IL programs in undergraduate education." That historical relationship has tended to lean toward either of these two sides. As an example, Van Helvoort (2010) has given greater importance to the contribution of librarians stating that IL, being mainly defended by librarians and educational researchers, is not accepted by all faculty members and students. Collaborative initiatives between libraries and teachers have also been found dealing with the topic of student research education. Miller (2010) fostered a three-year ongoing project in which librarians work with faculty members from selected departments to aid them in articulating and integrating IL skills into their curricula.

Within this collaborative stream Badke (2008), as an information professional, is concerned with the need for faculty members to be aware of the importance of IL instruction. Stanger (2009), from the library perspective, recognizes the need to redefine the roles of disciplinary faculty and librarians in the scenario of IL. It assumes that in higher education, the development of most information competencies has traditionally been integrated into the learning of each academic discipline, and nurtured by those methods derived from frameworks, languages, contents and research that are exclusive to each discipline.

Specific literature addressing IL perceptions among faculty members is rather scarce. However, this is not always the case and there are also examples of literature in which faculty members are directly mentioned. In the Canadian context, a pioneering study, specifically related to faculty perceptions, was developed at York University (Canada) by Cannon (1994). One of the few published cases of research collaboration between faculty and librarian is that of Leckie and Fullerton (1999), who spoke of the "complexity of the information literacy equation" (p. 27). Used as the main reference the Cannon's survey and research, focussed their efforts on science and engineering undergraduate education, and complained that "lack of communication between librarians and faculty has implications when meeting the mission of their institutions" (p. 10). They concluded that "whether or not an individual faculty member will become more proactive in integrating information literacy into his or her courses depends on the interplay among a number of complex variables that drive the educational process" (p. 26). Bury (2011) has continued research in a similar vein. She believes that we are faced with a "field of enquiry where a research deficit has been identified, especially in terms of survey-based studies" (p. 45). Among the various objectives of the research are some quite similar to ours, such as the uncovering of disciplinary differences in the opinions of faculties in the domain of IL instruction. However, their goals are much wider and therefore the results are not quite comparable.

Gonzales (2001) conducted a survey to identify which factors impacted University of Southern Colorado (USC) faculty members' attitudes toward library research instruction. Singh (2005) assesses the perceptions of faculty teaching in programs accredited by the Accrediting Council on Education in Journalism and Mass Communications as to their students' competencies. Tigelaar *et al.* (2004) have found different approaches to the role of the faculty, but it does not expressly address the

phenomenon of IL or the faculty perceptions. Gullikson (2006), from a librarian perspective, attempted to find out what the teaching faculty think about ACRL IL competency standards, concluded that integration of IL in the curriculum usually means that IL will be taught over the course of a disciplinary program, building on skills over time. The research is quite similar to this but, given that the IL competencies are restricted to the ACRL standards, some vital competencies could be lost, as the author himself recognizes. In this way Michaelsen *et al.* (2007, p. 73), from the library, began a regional ACRL IL Immersion Program because they believed that "shifting the focus of IL programs from the library to faculty would reach more students and students would have more opportunities to develop IL in multiple contexts and at different levels."

Dacosta (2010), from a librarian point of view, conducted respective surveys of faculty at two higher education institutions in England and the USA to ascertain their perceptions of IL. Similarities were found across the two institutions, both in the importance that faculty attached to information skills and in what they actually did to incorporate the skills within curricula. Vander Meer *et al.* (2012) also attempted to uncover faculty opinions on the incorporation of technological formats. From a librarian perspective, Nilsen (2012) explored perceptions and attitudes toward academic librarians and IL instruction of instructional faculty at post-secondary institutions, finding that most instructors rated IL skills and instruction as very important to their students. Similarly, Dubicki (2013) explored faculty perceptions of students' IL competencies, and more specifically the success that librarians have had in familiarizing faculty with IL standards, discovering how faculty have incorporated these IL skills into their learning outcomes.

From the academic perspective, Boon *et al.* (2007, pp. 206-207) acknowledge the "key role of academics in producing information literate students," adding that "academics' conceptions of IL have been given little attention in the research literature." The project "involves academics in four disciplines, each within one of four Higher Education disciplinary contexts: English (Soft Pure), Marketing (Soft Applied), Chemistry (Hard Pure), and Civil Engineering (Hard Applied), etc." The same authors compared, from a phenomenographic perspective, IL conceptions of faculty in two specific disciplines (English and Marketing) concluding that a meaningful difference exists among them (Webber *et al.*, 2005, p. 14).

The research of Saunders (2012) appears to have objectives closer to the present investigation, since they focus precisely on its three main points: understanding IL, assessing faculty's awareness of the importance of IL competencies and checking its potential interdisciplinary differences.

The field of education on IL is a constantly developing topic, partly due to its heavy reliance on technological advances. The profile of IL competencies is increasingly related to technological skills, although the literature on these specific competencies in the realm of faculty is, again, rather scarce. Regarding the increasing role of ICT, McGee and Diaz (2007) argue that higher education has at last actually designed technologies for teaching and learning, and that both institutions and faculty need to assess these tools and determine the best learning support. Markauskaite (2007) recognizes that the interaction of cognitive and technical competencies could help universities in designing the most effective stimuli for faculty.

One of the most sweeping conclusions we have encountered in the different studies referenced is the enormous consensus about the centrality of academic-librarian collaboration in promoting the agenda of IL in higher education (Bury, 2011). In conclusion,

this section recognizes that the number of works specifically devoted to the attitudes and perceptions of IL of faculty is rather scarce. This topic, shared by librarians and faculty, requires further and deeper research.

Methods

Instruments

The survey, based on the questionnaire IL-HUMASS, was specifically designed for faculty in order to explore their perceptions about the phenomenon of IL. The aim was to find out the holistic view that faculty members had about IL and, above all, the importance they gave to a set of basic information competencies. With these assumptions in mind the survey was developed. It was felt that this simplified version of IL-HUMASS, including 16 competencies, was better adapted to faculty profile (Table I). Needless to say that the four categories of the base questionnaire were respected, the details of which, its design and development, can be seen in Pinto (2010). Case studies ensure its reliability and validity (Pinto and Sales, 2015; Pinto, 2011). The survey was composed in both print and online format (http://infocompetencias.com/il-humass-profesores/). It could be completed either via e-mail (through a link to the website), or in person (by prior appointment with the faculty member), and all forms were collected by the same research team to ensure consistency. To get an overview of the different conceptions of faculty about IL, the survey first posed a subjective question about the nature of IL with three possible responses – the authentic conception and two misconceptions. The survey's core element evaluated the importance assigned by the respondent to four primary IL categories, or macro-competencies: searching, evaluation, processing and communication and dissemination. The aim was to find out how important each of these competency categories was for faculty, in line with the "performance indicators" of ALA standards (Table I). Finally, a group of four questions regarding

Category	Information competency
Searching	S2 Accessing bibliographic sources
	S3 Accessing electronic sources
	S4 Knowledge of specific terminology
	S5 Knowledge of searching strategies
Evaluation	E2 Recognition of the main ideas in a text
	E3 Quality assessment and updating of information sources
	E4 Knowledge of the leading authors and institutions in your particular field
	E5 Knowledge of the different types of information sources in your particular field
Processing	P2 Text structure recognition
	P3 Use of reference managers
	P4 Schematization and abstracting of information sources
	P5 Installation and use of computer and statistical programs
Communication dissemination	C2 Public speaking and foreign languages spoken
	C3 Text writing
	C4 Ethics and legal knowledge regarding information use
	C5 Developing academic presentations and information dissemination on the internet

Table I.
IL categories and competencies of the survey

the perceived importance of four possible learning improvement initiatives on IL competencies was included.

The content of the self-assessment survey has been especially designed for faculty in higher education, but is somewhat similar to other questionnaires that were developed previously in this same genre (Pinto, 2010, 2011).

Participants and procedure

The data gathering process was laborious, given the sample size and the diversity of disciplines involved. However, we have generally relied on the generous support of faculty. To collect the sample of faculty individuals the official website of the Vice President for Graduate and Post-graduate Degrees of the University of Granada (UGR) was used as starting source (http://grados.ugr.es/). UGR covers 64 degrees through 116 departments (www.ugr.es/pages/departamentos). In total, 18 degrees belonging to the five areas of knowledge were selected. For the selection of this sample of faculty members the following conditions needed to be met: to be among the tenured/tenure-track and non-tenured professors, and to have participated in teaching innovation programs related mainly with the incorporation of ICT into teaching and learning processes. A database of faculty candidates was drawn up. During the 2012-2013 academic year the number of faculty members was 3,701, of which 2,207 were tenured or tenure-track, and 1,494 were non-tenured. They were contacted individually in order to facilitate a clear explanation of the project, and were subsequently invited to participate. It was established that the sample of faculty for each degree subject should range between 25-30 individuals. In all, 479 faculty members from 58 university departments participated. We regard this sample as being usefully representative as it covers 12.94 percent of the faculty (total), and 26 percent in terms of the number of different degrees offered by the university.

From a descriptive statistical perspective, the first thing to do was to understand the distribution of the survey population by area of study and degree course (Table II).

The academic categories of the sampled faculty were divided as follows: 62 non-tenured PhD (12.9 percent), 334 senior lecturers (69.7 percent) and 83 university full professors (17.3 percent). En cuanto a sexo By sex, the group represents 264 men (55.1 percent) and 215 women (44.9 percent).

Data analysis

After data gathering, statistical analysis was carried out. Two types of analysis were conducted. One was descriptive, and allowed us to understand both the essential characteristics of the sample, and also the answers' most representative parameters. The other analysis was deeper, and sought to understand the internal consistency of the results through an analysis of the correlations and significant differences that appear after a comparison of results between the five areas under consideration. From a statistical perspective, and with regard to the 16 information competencies taken into account, the starting hypothesis is that there are no significant differences between perceptions of faculty members within the five areas considered in this research. In both cases, we have made use of IBM SPSS Statistics 20 and Microsoft Office Excel 2007 software.

Results

The survey starts by asking faculty who is an information literate person, with three options to choose from: "One with a set of skills needed to find, retrieve, analyze and use information"; "One with an ability to carry out independent and ongoing learning"; or,

Area	Degree	Freq.	%
Arts and humanities		133	27.8
	Spanish philology	23	
	English studies	35	
	History	36	
	Translation and interpretation	39	
Sciences		62	12.9
	Mathematics	20	
	Environmental sciences	20	
	Biology	22	
Social and legal sciences		137	28.6
	Information and documentation	27	
	Law studies	28	
	Psychology	26	
	Childhood education	22	
	Primary education	34	
Health sciences		77	16.1
	Medical studies	34	
	Dentistry	20	
	Pharmacy	23	
Technical disciplines		70	14.6
	Computer engineering	26	
	Building engineering	21	
	Civil engineering	23	
Total		479	100.0

Table II.
Faculty participation by degree and area of study

"One who masters Information and Communication Technology (ICT)." The first choice is the more conventional, comprehensive and also more academic of the three responses. The other two options are misconceptions, as they are partial, biased and perhaps erroneous from the conceptual perspective of IL – they refer either to the domain of ICT, or to independent and lifelong learning.

As can be seen, most of the faculty – more than half in each discipline – matched the academic view of IL (Figure 1). In the area of Science, the number of responses advocating this view was the maximum. However, the role of the two partial views that were proposed was fairly significant in the other subject areas, and as such these misconceptions should be taken into account.

Concerning the normality of the distribution (Gaussian) of the data, the presence of outliers has been noted. Consequently, the analysis process should take this fact into account.

To begin with, the survey provides four questions concerning the importance of the main IL categories: searching, evaluation, processing and communication and dissemination (Figure 2). Faculty members assign their own perceived importance to each of these macro-competencies. The resulting scores from the respondent's perceived importance of each item are interpreted and categorized as follows: up to 5 (not important); between 5 and 6 (scarcely important); between 6 and 7 (moderately important); between 7 and 8 (important); more than 8 (very important).

According to the results obtained, the IL categories of communication and dissemination and searching may be considered by most of faculty to be "very important." The other two categories, processing and evaluating, may be estimated as "important."

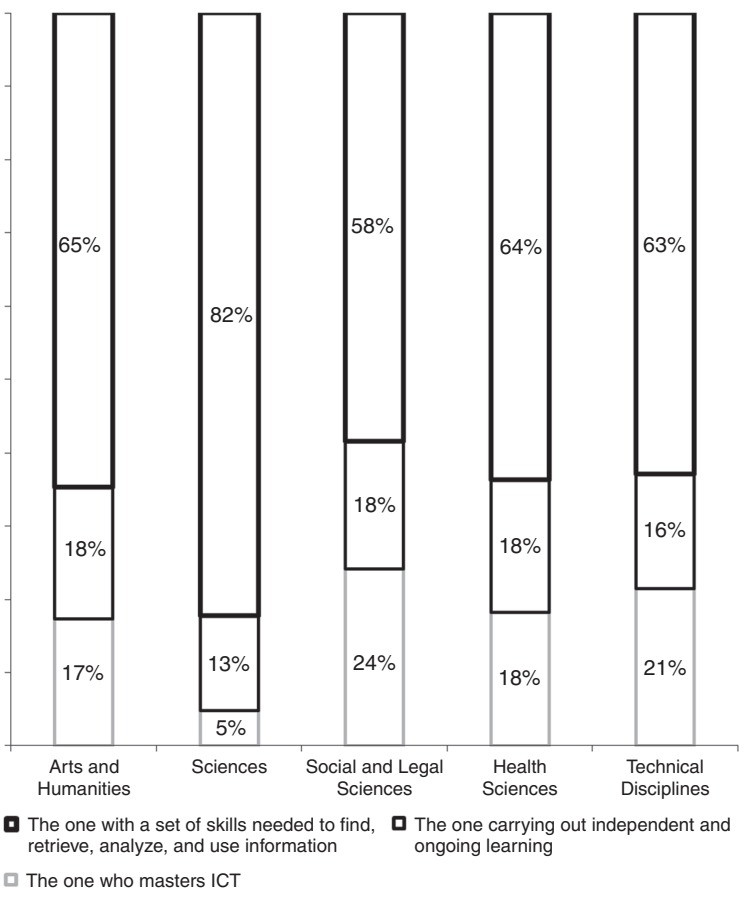

Figure 1.
Distribution by area of faculty's conceptions of IL

As can be seen, the mean scores of each macro-competency are very similar if we compare the five areas under examination.

As for the 16 basic IL competences of the questionnaire, mean scores of the four IL competencies specifically related to the searching category move within the range of "important" in all the areas studied, with the only exceptions of the competences on "knowledge of specific terminology" – very important in health sciences (8.08) and moderately important in sciences (6.97) – and "accessing bibliographic sources" – very important in arts and humanities (8.14) (Figure 3).

In the evaluation category, two of the competencies, those for "Recognition of the main ideas in a text" and "Quality assessment and updating of information sources," stand out significantly in all areas. The other two competencies are those of "Knowledge of the leading authors and institutions in your particular field" and "Knowledge of the different types of information sources in your particular field." Their scores are slightly lower in all areas (Figure 4).

With respect to processing, two of the four IL competencies within this category are considered "important" by a majority of the faculty in all areas. "Schematization and abstracting of information sources" and "Text structure recognition" (Figure 5). Both of

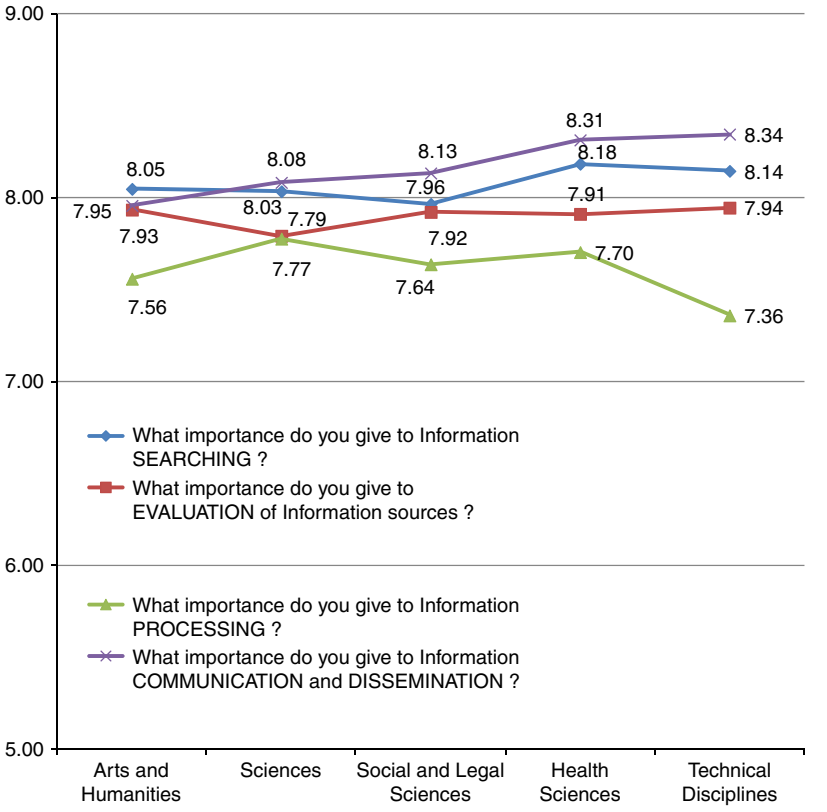

Figure 2.
Importance given by faculty to the four IL macro-competencies: mean scores by area

these competencies are cognitive in nature. The two remaining competencies in this category are directly related to the use of ICT technologies, offer lower scores, and have been considered only "moderately important."

Among the four IL competencies within the category of communication and dissemination, one in particular was considered to be "very important" by faculty from all areas of study: "Text writing" (Figure 6), except for technical disciplines where one score (7.94) falls below the very important rating. Conversely, the importance given by faculty to "Ethics and legal knowledge regarding information use" demonstrates the lowest score, somewhere between "moderately important" and "important."

In a second stage of research, the null hypothesis of a possible relationship among the importance given by faculty within each of the five areas of knowledge to the various core competencies of the questionnaire is proposed. In order to test this relational hypothesis between result pairs (of importance given to a competency), an analysis of correlations, type non-parametric, was undertaken in order to determine the Spearman's Rank Correlation Coefficient between all possible pairs. The correlation of ranks introduced by Spearman is one of the oldest and best known of non-parametric procedures (Zar, 1972).

Two distinct categories of results have been found. On the one hand, we see the areas of health sciences, social and legal sciences and arts and humanities forming the first group of results. Here we find correlations, or degrees of relationship, that are

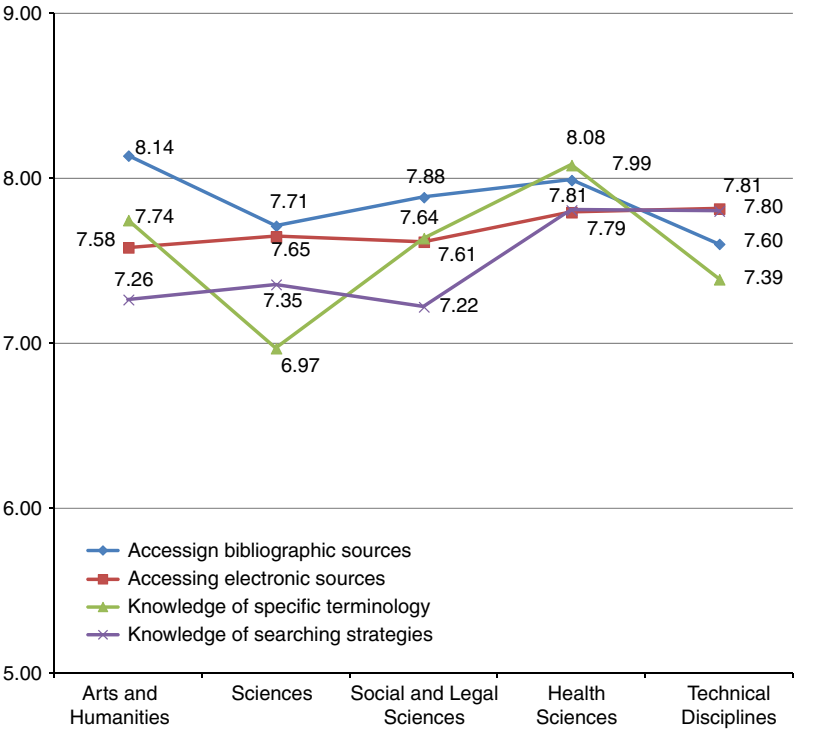

Figure 3.
Importance given by faculty to information searching competencies: mean scores by area

statistically significant (but at a moderate level, between 0.400 and 0.699) in a major ratio of possible pairs made from the 16 basic IL competencies in the survey. We offer, as an example, the correlation matrix from the area of health sciences, in which the percentage of moderately correlated pairs rises to 37.36 percent of total. These pairs appear highlighted, below (Table III).

The moderately positive relationships among the responses from the faculty members of health sciences are obvious in the correlation matrix (Table III). Most score results are broadly balanced within the chart; however, it is striking how the relationship levels between the four IL competencies of the evaluation category show a moderate positive correlation.

On the other hand, in the areas of sciences and technical disciplines we see significantly lower levels of correlation. We offer the example of the sciences area, where the percentage of significant correlations (moderate) rises only to 4.21 percent of the total (Table IV). Most of the correlations are weak ($\leqslant$0.399). Results in the area of technical disciplines provides a similar rate. Here we find the two areas in which the whole of the 16 IL competencies show the greatest weakness in correlation. The overall relationship among the descriptions of importance attached to the respective IL competencies, though statistically significant in a number of cases, demonstrate unquestionable levels of weakness. The presence of moderately positive correlations is minimal (Table IV). These results correspond quite precisely with those found by Leckie and Fullerton (1999), who reported, "It may be that the incorporation of IL into science and engineering education is linked to the attitudes

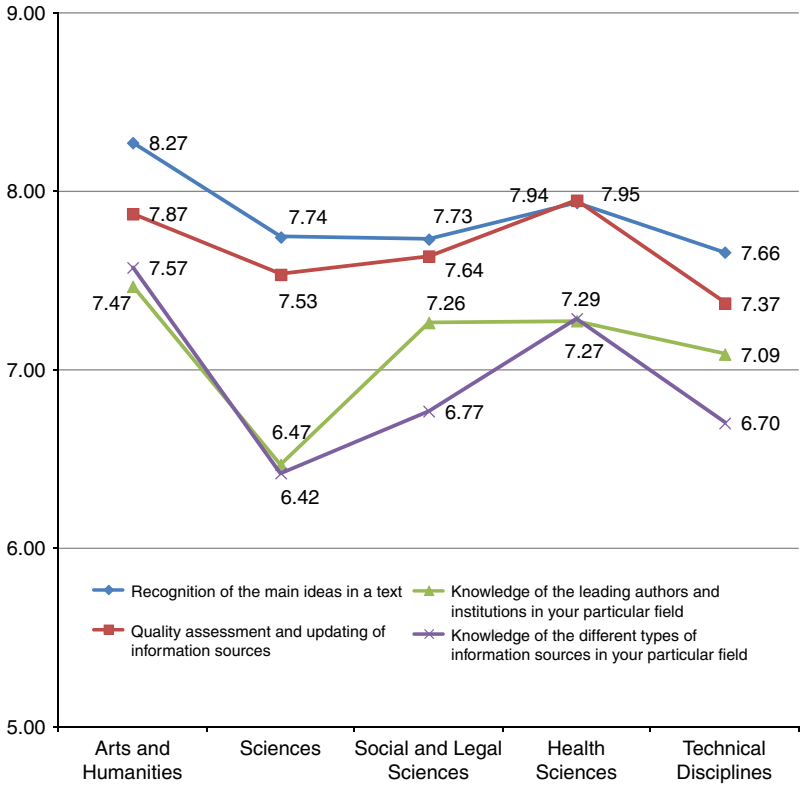

Figure 4. Importance given by faculty to information evaluation competencies: mean scores by area

and practices of the faculty, many of whom have been found to be more indifferent to the role of the library in undergraduate education than their colleagues in the social sciences and humanities."

The end of the survey suggests four possible initiatives whereby faculty members may improve their level of instruction, and that of their students, with regard to IL: specific tutorials, case studies, online courses and library support. From the analysis of the data provided by the faculty, it is clear that the first two initiatives (specific tutorials and case studies) are considered "important," while the other two (online courses and library support) are assessed as "moderately important" (Figure 7).

Comparing the responses for the four learning improvement initiatives, we found that their correlations are positive, but weak.

These results confirm that the aggregate data set obtained from our questionnaire, particularly the faculty's assessments of these competency categories, form a consistent and coherent whole, albeit only moderately related. After confirming the consistency and coherence of the sample, we have attempted to find statistically significant differences in the importance assigned to each information competency among the various areas under examination. Since the sample does not meet the normality test, non-parametric tests (Kruskal-Wallis, Mann-Whitney test) have been used. For each of the 16 IL competencies, comparisons

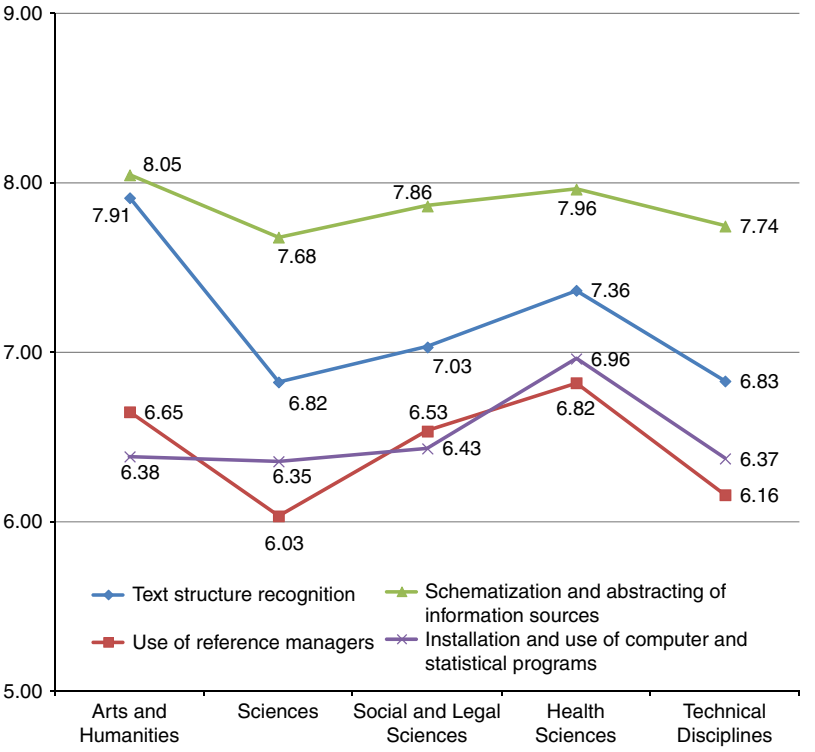

Figure 5.
Importance given by faculty to information processing competencies: mean scores by area

between all possible pairs have been performed with the goal of finding whether or not there are significant differences among academic areas of study. Such differences have been found for most IL categories, helping to identify the areas in which faculty members can share improvement initiatives, as well as those that require specific training or awareness (Table V).

These results were recently presented at the IBERSID Congress (September 30, October 2, 2015, Zaragoza, Spain).

Discussion

Regarding the three proposed views of IL, one of which had to be chosen by the faculty surveyed, the percentage of those having a skewed interpretation of the concept is highly significant. This circumstance simply reflects the conceptual gap with regard to IL among a considerable number of faculty members, and this misconception should be tackled as soon as possible.

From the results obtained, the high level of awareness among the University of Granada's faculty members on the importance of IL competencies is evident. These results are similar to those obtained by Gullikson (2006, p. 588), where 61/87 of faculty members rate the importance of IL higher than 3.25/4. Dubicki (2013, p. 3) also reinforces these same outcomes: "a review of the literature on faculty views of IL reveals that academic faculty overwhelmingly believe that IL is important for their students." In the same vein Bury (2011, p. 59) acknowledges "almost unanimous agreement about the importance of developing IL skills among students."

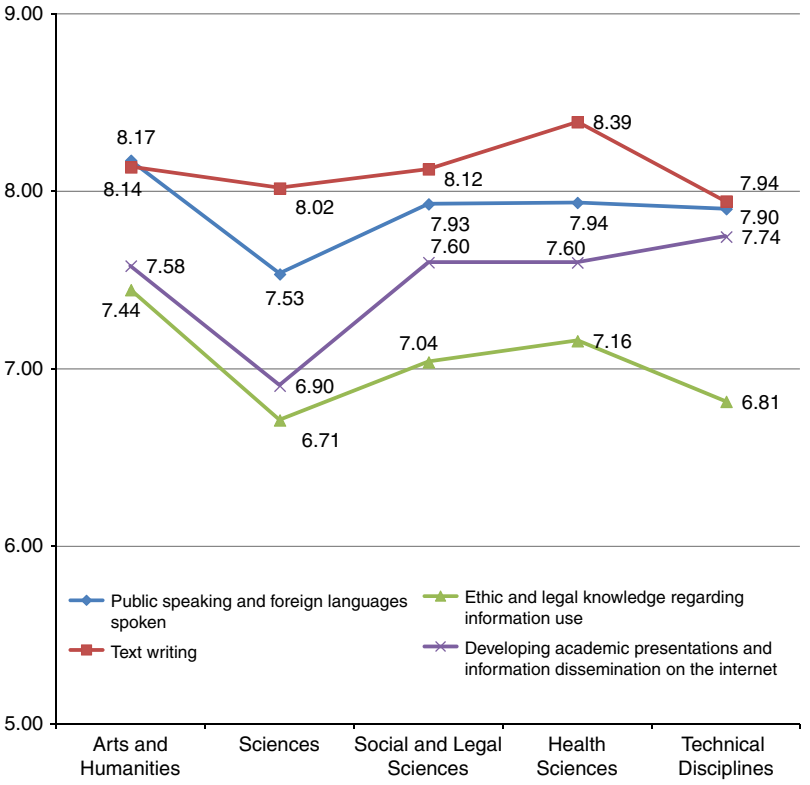

Figure 6. Importance given by faculty to information communication-dissemination competencies: mean scores by area

In the work of Singh (2005) the methodology employed is similar to ours but the variables under consideration are different, so we are unable to establish a reasonable comparison with this research. Dubicki (2013) has a multi-institutional research, as opposed to ours that relates to one institution. In the case of the sources of learning for IL there is some similarity on the approaches, but a clear difference in the outcomes is found, with a remarkable evaluation of the library, which is much larger than that arising from this work.

Bury (2011) raises similar questions to ours but their goals and results appear to be more scattered. Within three broad subject areas (sciences and engineering, social sciences and humanities and core professional schools) one of the goals consists of understanding faculty perceptions of the value of IL instruction, ranking the importance of individual IL competencies. In total, 12 broad sets of competencies, although different from those used in this investigation, are viewed by faculty as being extremely important. Regarded as a whole, the importance attached to competencies by faculty is slightly higher than that found in this research. This reflects a higher state of awareness of the importance of IL, and this appears to be logical if we take into account that the phenomenon of IL is older and consequently more established in the Canadian context where Bury's work is developed. In the case of the University of Granada, in view of the obtained scores, we feel that there is still room for improvement with regard to the faculty's awareness of the importance of IL competencies.

Table III.
Correlations matrix of the importance of IL competencies among faculty members within health sciences area

Spearman's Correlations

		Searching					Evaluation					Processing					Communication				
		S1	S2	S3	S4	S5	E1	E2	E3	E4	E5	P1	P2	P3	P4	P5	C1	C2	C3	C4	C5
Searching	S1		0.268*	0.473**	0.265*	0.336**	0.454**	0.265*	0.227*	0.246*	0.332**	0.441**	0.199	0.242*	0.099	0.131	0.607**	0.241*	0.142	0.355**	0.191
	S2			0.341**	0.504**	0.183	0.426**	0.503**	0.413**	0.540**	0.446**	0.202	0.490**	0.245*	0.428**	0.174	0.220	0.382**	0.456**	0.400**	0.254*
	S3				0.238*	0.241*	0.322**	0.223	0.151	0.165	0.186	0.236*	0.141	0.038	0.039	0.167	0.469**	0.309**	0.179	0.256*	0.202
	S4					0.299**	0.376**	0.329**	0.316**	0.607**	0.460**	0.159	0.457**	0.289*	0.453**	0.308**	0.241*	0.393**	0.581**	0.402**	0.420**
	S5						0.271*	0.315**	0.222	0.152	0.312**	0.289*	0.131	0.423**	0.201	0.243*	0.319**	0.271*	0.217	0.313**	0.232*
Evaluation	E1							0.502**	0.618**	0.592**	0.582**	0.431**	0.478**	0.276*	0.323**	0.238*	0.426**	0.398**	0.284*	0.396**	0.239*
	E2								0.407**	0.476**	0.483**	0.265*	0.565**	0.329**	0.508**	0.271*	0.334**	0.455**	0.469**	0.545**	0.204
	E3									0.507**	0.473**	0.116	0.424**	0.297**	0.346**	0.130	0.137	0.234*	0.273*	0.428**	0.155
	E4										0.731**	0.222	0.610**	0.384**	0.571**	0.432**	0.271*	0.443**	0.482**	0.594**	0.503**
	E5											0.352**	0.550**	0.397**	0.429**	0.420**	0.270*	0.423**	0.408**	0.534**	0.421**
Processing	P1												0.155	0.517**	0.237*	0.442**	0.308**	0.197	0.168	0.122	0.056
	P2													0.362**	0.567**	0.309**	0.086	0.300**	0.457**	0.426**	0.291*
	P3														0.285*	0.345**	0.202	0.262*	0.355**	0.211	0.185
	P4															0.314**	0.139	0.418**	0.451**	0.632**	0.344**
	P5																0.175	0.360**	0.295**	0.390**	0.279*
Communication	C1																	0.521**	0.172	0.387**	0.383**
	C2																		0.609**	0.571**	0.545**
	C3																			0.436**	0.526**
	C4																				0.449**
	C5																				

Notes: *,**Correlation is significant at the 0.05, 0.01 levels (two-tailed), respectively

Spearman's Correlations

		Searching					Evaluation					Processing					Communication				
		S1	S2	S3	S4	S5	E1	E2	E3	E4	E5	P1	P2	P3	P4	P5	C1	C2	C3	C4	C5
Searching	S1		0.383**	0.299*	0.231	0.134	0.506**	0.143	0.207	0.182	0.177	0.580**	0.006	0.191	0.060	0.224	0.498**	0.370**	0.169	0.158	0.187
	S2			0.049	0.017	0.056	0.139	0.246	0.223	–0.151	–0.073	0.113	0.017	–0.054	0.018	-0.201	0.188	0.195	0.161	0.051	0.018
	S3				–0.040	0.246	0.020	0.200	0.125	0.071	–0.085	0.037	0.197	0.170	0.179	0.357**	0.237	0.156	0.238	0.235	0.289*
	S4					0.316*	0.342**	0.138	0.213	0.289*	0.328**	0.374**	0.285*	0.320*	0.173	0.265*	0.095	0.038	0.081	0.374**	0.234
	S5						0.252*	0.093	–0.183	0.140	0.162	0.292*	0.217	0.222	0.443**	0.126	0.304*	0.135	0.099	0.334**	0.358**
Evaluation	E1							0.301*	0.140	0.214	0.321*	0.492**	0.086	0.225	0.167	0.166	0.346**	0.302*	0.238	0.241	0.249
	E2								0.210	0.068	0.124	0.033	0.246	0.113	0.133	0.168	–0.005	0.246	0.365**	0.124	0.108
	E3									0.199	0.210	0.273*	0.315*	0.170	0.132	0.253*	0.213	0.176	0.091	0.254**	0.116
	E4										0.595**	0.299*	0.352**	0.260*	0.129	0.337**	0.166	0.072	–0.096	0.326**	0.035
	E5											0.406**	0.325**	0.133	0.066	0.352**	0.100	0.032	–0.004	0.305*	0.169
Processing	P1												0.365**	0.240	0.292*	0.340**	0.552**	0.310*	0.222	0.354**	0.261*
	P2													0.388**	0.329**	0.264*	0.241	–0.002	0.009	0.389**	0.257*
	P3														0.277*	0.275*	0.345**	–0.093	0.148	0.341**	0.178
	P4															0.050	0.126	0.023	0.275*	0.148	0.319*
	P5																0.157	0.147	0.166	0.443**	0.319*
Communication	C1																	0.236	0.090	0.314*	0.331**
	C2																		0.241	0.196	0.116
	C3																			0.037	0.240
	C4																				0.295*
	C5																				

Notes: *,**Correlation is significant at the 0.05, 0.01 levels (two-tailed), respectively

Table IV.
Correlations matrix of the importance of IL competencies among faculty members within sciences area

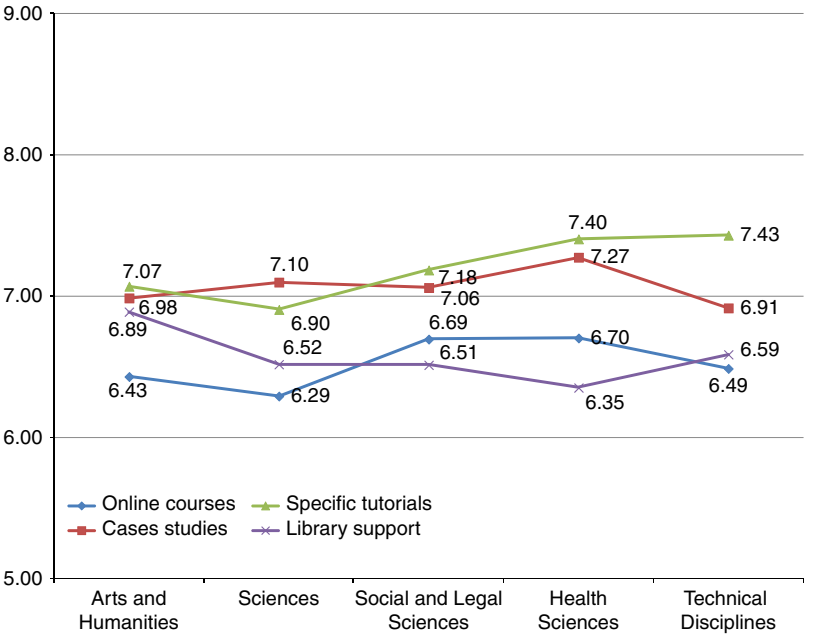

Figure 7.
Importance given by faculty to the four IL improvement initiatives: mean scores by area

From the disciplinary perspective, our results are quite similar to those of Saunders (2012, p. 231) when she states that "the consensus seems to be that information literacy consists of both a baseline set of competencies that are transferable or cross-disciplinary, as well as some knowledge and skills that are specific to each field." Seven IL competencies that may be regarded as baseline competencies – in Saunders's terminology – have been found here, but no significant differences among the surveyed disciplines were identified. Concerning these baseline competencies, faculty members in all areas may improve their IL awareness by sharing the same methods and/or instruction. At least one of these universal competencies is contained in each of the four categories. Three of the four competencies of the processing category belong to this group of universal competencies (Table V).

The prominence of the disciplinary area with regard to IL perceptions among faculty members appears undeniable. As stated previously, this research specifically devoted to faculty's IL perceptions dates back to Cannon's (1994) work, where noticeable differences by discipline were found. Concerning the five academic disciplines under examination at the University of Granada, the faculty members' state of awareness regarding the importance of IL, as a whole, can be grouped into two recognizable levels. Faculty being surveyed in the areas of health sciences, social and legal sciences and arts and humanities show a higher state of IL awareness to that shown by their counterparts in sciences and technical disciplines. This conclusion is consistent with that obtained by Leckie and Fullerton (1999, p. 10): "it may be that the incorporation of information literacy into science and engineering education is linked to the attitudes and practices of the faculty, many of whom have been found to be more indifferent to the role of the library in undergraduate education than their colleagues in the social sciences and humanities." One of the possible reasons for these differences could be related to the common circumstance that the students in the sciences rely less

Category		Information competency	Meaningful differences between pairs of areas	Areas that may share awareness sessions	Areas for specific awareness sessions
Searching	S2	Accessing bibliographic sources	No	All	
	S3	Accessing electronic sources	No	All	
	S4	Knowledge of specific terminology	(1-2), (2-3), (2-4), (4-5)	(1-3-4) (2-5)	
	S5	Knowledge of searching strategies	(3-5)	(1-2-3-4)	5
Evaluation	E2	Recognition of the main ideas in a text	(1-5), (1-2), (1-3)	(2-3-4-5)	1
	E3	Quality assessment and updating of information sources	No	All	
	E4	Knowledge of the leading authors and institutions in your particular field	(1-2), (2-3), (2-4)	(1-3-4-5)	2
	E5	Knowledge of the different types of information sources in your particular field	(1-5), (1-2), (1-3), (2-4)	(3-4-5)	1 and 2
Processing	P2	Text structure recognition	(1-5), (1-2), (1-3)	(2-3-4-5)	1
	P3	Use of reference managers	No	All	
	P4	Schematization and abstracting of information sources	No	All	
	P5	Installation and use of computer and statistical programs	No	All	
Communication dissemination	C2	Public speaking and foreign languages spoken	(1-2)	(1-3-4-5)	2
	C3	Text writing	No	All	
	C4	Ethics and legal knowledge regarding information use	(1-5), (1-2)	(2-3-4-5)	1
	C5	Developing academic presentations and information dissemination on the internet	(1-2), (2-3), (2-4), (2-5)	(1-3-4-5)	2

Notes: Areas: 1, arts and humanities; 2, sciences; 3, social and legal sciences; 4, health sciences; 5, technical disciplines

Table V. Meaningful differences between pairs of areas of the importance attached to IL competencies. Generic and specific awareness/ instruction sessions according to areas

on the use of library resources and more on the gathering of data – so the faculty in the sciences perceive the importance of aspects of IL differently from faculty in the arts and humanities. From the above, we could infer that the manner in which the basic knowledge of different disciplines is provided is more or less influenced by the actual faculty's levels of information literacy. As a consequence, "a library research instructional program will not succeed if it is kept generic. Librarians involved in instructional activities must come to know individual disciplines" (Leckie and Fullerton, 1999, p. 27).

We contend that there is scope to develop IL instruction, taking variation in academics' conceptions as a key element in reviewing course design. As stated by Webber *et al.* (2005, p. 14), "it makes more sense for librarians (and sponsoring agencies) to engage with the language and social discourse of the discipline, in order to create more effective working relationships with academics."

According to our results, we feel that arts and humanities and sciences are the areas with the greatest need for specific instruction and/or increased awareness among the faculty regarding some of the specific IL competencies (Table V). These competencies are: "Recognition of the main ideas in text," "Knowledge of the different types of information sources in your particular field," "Text structure recognition," and "Ethical and legal knowledge regarding information use." In the area of sciences the competencies that need further improvement are: "Knowledge of the leading authors and institutions in your particular field," "Knowledge of the different types of information sources in your particular field," "Public speaking and foreign languages spoken" and "Developing academic presentations and information dissemination on the Internet." Lastly, the area of technical disciplines requires specific training and/or increased faculty awareness in the IL competency of "Knowledge of searching strategies."

Regarding the use of the competences related to ICT technologies, whose role is high in our survey (5/16 = 31.25 percent), we echo the words of Leckie and Fullerton (1999, p. 28) when they state that "faculty could use some assistance in deciding how to handle the growing demand from undergraduates to allow them to use the Internet."

Concerning learning instruction initiatives, our results are consistent with those of Leckie and Fullerton (1999, p. 27) when they state that "hands-on review sessions and workshops for faculty should be a priority in the library instructional program." However we should not forget one of its findings: "faculty perceives that more self-directed learning is useful, for both themselves and their students." In this sense, online courses ought to be encouraged among faculty.

Conclusions

As for the various conceptual perceptions of IL among faculty of Granada's University, the results demonstrate the primacy of the academic concept of IL, as the set of skills needed to find, retrieve, analyze and use the information. But there is also a significant percentage of faculty members who have a misconception of IL, as their ideas about the topic are biased and erroneous. The implementation of appealing courses aimed exclusively at faculty with the idea of increasing and channeling its understanding of IL as a comprehensive set of key tools in the handling of information is proposed.

From an overall perspective, we believe that the average scores for the respective IL competencies provided by faculty of the University of Granada are more than acceptable, although they may be improved. We have found two categories of competencies that stand out with respect to the faculty's awareness of their importance. These are that of searching and communication and dissemination of information, in which the mean scores are classified as "important," with some "very important" competencies. These two categories shape what could be understood as the "shallow" side of IL. However, the awareness of the importance of specific competencies decreases in the case of the evaluation and information processing categories, with "moderately important" mean scores. On the basis of these two other categories, a type of literacy, which could be interpreted as the "deep" side of IL, could be inferred. Subsequently, we feel that it is necessary to try to improve the faculty's opinion of the importance of skills related to both of these categories. Be that as it may, specific improvement initiatives should be fostered in the competencies and areas discussed previously (Table V).

With regard to the five subject areas considered, we have detected two clearly different groups where the importance granted to IL competencies by the faculty is concerned. The levels of consistency, or correlation between these valuations of IL competencies, determine two faculty groups; on the one hand, faculty in the areas of

arts and humanities, social and legal sciences and health sciences show a significant but moderate correlation between the importance they attach to most information competencies. In the case of teachers of sciences and technical disciplines, the correlation between pairs of competencies is very low. Therefore, there is a greater need to improve the states of awareness of the importance of IL competencies among faculty belonging to these two, latter, disciplinary areas, sciences and technical disciplines.

We feel that there is a need for the promotion, at an institutional level, of a number of initiatives to raise the awareness of faculty regarding the importance of IL competencies. The implementation of these improvement initiatives should be targeted toward those competencies and disciplinary areas being suggested (Table V). It has been proved that faculty values more specific tutorials and case studies and fewer online courses and librarian support. The lack of appreciation of the library by faculty members at the University of Granada constitutes an actuality that contrasts with the results of other investigations. A similarity is observed with online courses, which are most valued in other environments. The presence of these online courses as well as the use of the library should be encouraged by the university organization.

Having completed this investigation, we reflect on the need for further research in this matter. A deeper understanding of faculty members' relationship with IL is required, especially from the point of view of their subjective values, perceptions and opinions. We are currently developing new research that, from a phenomenographic perspective, will allow more extensive awareness of these intrinsic values and how they may impact upon faculty reactions with respect to IL, and consequently to the respective competencies. However, two key circumstances should always be kept in mind: one is the dependence of IL concerning the various disciplines and areas of knowledge, a circumstance that appears to be intrinsically linked to this subject; the other, which is a consequence, refers to the essential collaboration between faculty and librarian.

References

Amstutz, D. and Whitson, D. (1997), "University faculty and information literacy: who teaches the students?", *Research Strategies*, Vol. 15 No. 1, pp. 18-25.

Badke, W. (2008), "Information literacy and faculty", *Online*, Vol. 32 No. 3 pp. 47-49.

Boon, S., Johnston, B. and Webber, S. (2007), "A phenomenographic study of English faculty's conceptions of information literacy", *Journal of Documentation*, Vol. 63 No. 2, pp. 204-228.

Bury, S. (2011), "Faculty attitudes, perceptions and experiences of information literacy: a study across multiple disciplines at York University, Canada", *Journal of Information Literacy*, Vol. 5 No. 1, pp. 45-64.

Cannon, A. (1994), "Faculty survey on library research instruction", *Reference & User Services Quarterly*, Vol. 33 No. 4, pp. 524-541.

Dacosta, J.W. (2010), "Is there an information literacy skills gap to be bridged? An examination of faculty perceptions and activities relating to information literacy in the United States and England", *College & Research Libraries*, Vol. 71 No. 3, pp. 203-222.

Dubicki, E. (2013), "Faculty perceptions of students information literacy skills competencies", *Journal of Information Literacy*, Vol. 7 No. 2, pp. 97-125.

Frier, R., Musgrave, C. and Zahner, J. (2001), "Information literacy in higher education: is there a gap?", *Annual Proceedings of Selected Research and Development Practice*, *Atlanta, GA*, pp. 487-493.

Gonzales, R. (2001), "Opinions and experiences of university faculty regarding library research instruction. Results of a web-based survey at the University of Southern Colorado", *Research Strategies*, Vol. 18 No. 3, pp. 191-201.

Gullikson, S. (2006), "Faculty perceptions of ACRL's information literacy competency standards for higher education", *The Journal of Academic Librarianship*, Vol. 32 No. 6, pp. 583-592.

Leckie, G.J. and Fullerton, A. (1999), "Information literacy in science and engineering undergraduate education : faculty attitudes and pedagogical practices", *College & Research Libraries*, Vol. 60 No. 1, pp. 9-29.

McGee, P. and Diaz, V. (2007), "Wikis and Podcasts and Blogs! Oh, My! What is a faculty member supposed to do?", *EDUCAUSE*, Vol. 42 No. 5, pp. 28-41.

McGuinness, C. (2006), "What faculty think – exploring the barriers to information literacy development in undergraduate education", *The Journal of Academic Librarianship*, Vol. 32 No. 6, pp. 573-582.

Markauskaite, L. (2007), "Exploring the structure of trainee teachers' ICT literacy: the main components of, and relationships between, general cognitive and technical capabilities", *Educational Technology Research and Development*, Vol. 55 No. 6, pp. 547-572.

Michaelsen, K., McHenry, K. and Sunde, E. (2007), *Taking Immersion Home: Developing Ownership of Information Literacy Among Faculty*, LOEX, EMU (Eastern Michigan University).

Miller, I.R. (2010), "Turning the tables: a faculty-centered approach to integrating information literacy", *Reference Services Review*, Vol. 38 No. 4, pp. 647-662.

Nilsen, C. (2012), "Faculty perceptions of librarian-led information literacy instruction in postsecondary education", *World Library and Information Congress: 78th IFLA General Conference and Assembly*, pp. 1-25.

Pinto, M. (2010), "Design of the IL-HUMASS survey on information literacy in higher education: a self-assessment approach", *Journal of Information Science*, Vol. 36 No. 1, pp. 86-103.

Pinto, M. (2011), "An approach to the internal facet of information literacy using the IL-HUMASS survey", *The Journal of Academic Librarianship*, Vol. 37 No. 2, pp. 145-154.

Pinto, M. and Sales, D. (2015), "Uncovering information literacy's disciplinary differences through students' attitudes: an empirical study", *Journal of Librarianship and Information Science*, Vol. 47 No. 3, pp. 204-215.

Saunders, L. (2012), "Faculty perspectives on information literacy as a student learning outcome", *The Journal of Academic Librarianship*, Vol. 38 No. 4, pp. 226-236.

Singh, A.B. (2005), "A report on faculty perceptions of students information literacy competencies in journalism and mass communication programs: the ACEJMC survey", *College & Research Libraries*, Vol. 66 No. 4, pp. 294-311.

Stanger, K. (2009), "Implementing information literacy in higher education: a perspective on the roles of librarians and disciplinary faculty", *Library & Information Science Research Electronic Journal*, Vol. 19 No. 1, pp. 1-6.

Tigelaar, D., Dolmans, D., Wolfhagen, I. and van der Vleuten, C. (2004), "The development and validation of a framework for teaching", *Higher Education*, Vol. 48 No. 2, pp. 253-268.

Van Helvoort, J. (2010), "A scoring rubric for performance assessment of information literacy in Dutch higher education", *Journal of Information Literacy*, Vol. 4 No. 1, pp. 22-39.

Vander Meer, P.F., Perez-Stable, M.A. and Sachs, D.E. (2012), "Framing a strategy. Exploring faculty attitudes toward library instruction and technology preferences to enhance information literacy", *Reference & User Services Quarterly*, Vol. 52 No. 2, pp. 109-122.

Webber, S., Boon, S.J. and Johnston, B.R. (2005), "A comparison of UK academics' conceptions of information literacy in two disciplines: English and marketing", *Library and Information Research*, Vol. 29 No. 93, pp. 4-15.

Zar, J.H. (1972), "Significance testing of the spearman rank correlation coefficient", *Journal of the American Statistical Association*, Vol. 67 No. 339, pp. 578-580.

Corresponding author
Maria Pinto can be contacted at: mpinto@ugr.es