# Information literacy: implications for Mexican and Spanish university students

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**Abstract**

A growing concern for universities is developing a new educational model in which the student is educated both for future social responsibilities, and where information literacy is viewed as a lifelong learning requirement. Thus, there is a pressing need for empirical analyses to identify the extent to which university students are information-literate. Therefore, an investigation of university students from two institutions in the USA and Europe was carried out in order to determine how they use their libraries, information and computers. It was found that there were similarities and differences between the two groups of students from the University of Murcia, Spain, and the National University of Mexico.

## Introduction

Studies of users and their use of information are a library and information science basic line of research and are undertaken for a variety of different purposes. In the main, they help to inform us about the effectiveness and efficiency of library services, the achievement of their goals regarding users, and the level of user satisfaction with services, all of which provide indicators in quality assessment processes. In Spain, research on university library users has been encouraged through the National University Quality Assessment Plan (Ciudad Universitaria, 1999). A great number of Spanish university libraries have been assessed and one of the elements used for this purpose has been the surveying of students and faculty, such as that carried out by the Spanish Universities Council (Consejo de Universidades, 2002). In Mexico, assessment processes are still on the waiting list and furthermore, so is any knowledge of how information is used by university students.

From the information literacy (IL) point of view, user studies help to design programmes for users that acknowledge users' existing deficiencies and expertise. That is to say, it is necessary to carry out an assessment of their existing skills and difficulties, and from that to design learning activities (Manchester Metropolitan University Library/Leeds University Library, 2002). In the university world, user studies attempt to show levels of awareness of library services, the nature of their use, the information access skills of students and university staff, in order to identify the skills and deficiencies which will ultimately affect future academic performance. The purpose, for the most part, is to propose measures by which the university library can help make students information literate – which includes the acquisition of wider knowledge literacies – and which in turn facilitates new, improved teaching and learning outcomes among the university community.

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In order for students to achieve IL**,** there is a need for an educational model which focuses more on their active role in problem-solving, and which is based on searching for, evaluating and using information. Unesco (1998), in both the Delors Report (Unesco, 1996) and the Bologna Declaration (European Ministers of Education, 1999), established that the core of education should be the student's activity and training for lifelong learning. Other documents such as the Bricall report by the Conference of Chancellors of Spanish Universities (Bricall, 2000) support a new higher-education model focused on the student, who should be educated to have a critical mind, to analyse the problems of society, and to look for solutions, applying them and assuming social responsibilities. All this must be from a lifelong learning orientation, something which goes beyond a traditional, initial or continuing education (European Commission, 2003).

Meanwhile, many universities experience a variety of difficulties with this vision, due to outdated educational models and teaching approaches favour memorisation and repetition. We can see this when in exam time, libraries are packed with students memorising their notes taken at lectures, which proves that the grades they are given depend, in great measure, on a good memory. Throughout most of the rest of the term, use of the library is much lower, and therefore so is their use of information. There is evidence that students are inclined to take the easiest road to pass their courses. But it is also urgent for faculty to change in order that excessive reliance on memorisation – usually of inappropriate data that does not engender intellectual curiosity and stimulation in their students – can be eliminated.

Librarians, on the other hand, must also assume their responsibility as participants in accomplishing their university's mission: they must warn and advise about the use given to libraries and their collections, among other serious issues. Therefore, it is the faculty's and librarians' responsibility to rethink their role in the education of intellectually critical students through the development of skills in information use.

All this places emphasis on the growing relevance of IL, both as a research problem and as a service issue, especially in the library sector of educational institutions – including primary and secondary schools, and universities. Although concern about the use of information in university libraries is not new, and is present in classic texts such as those written by Wilson and Tauber (1956) or Knapp (1956), recent years have witnessed a genuine flood of papers targeted at achieving enhanced IL in students. Reviews are increasing, so are the number of documents being reviewed

(Gómez Hernández and Licea de Arenas, 2002; Virkus, 2003).

But, beyond theoretical studies, this increasing preoccupation with IL is related to a greater proactive dimension of library services that seeks to use collections and information products to contribute to the success of the student and faculty community, and also seeks to integrate within their library mission the challenge of creating citizens with a capacity for lifelong learning. Thus, for Spanish university libraries it is a strategic aim, as defined by the Spanish University Libraries Network (Red de Bibliotecas Universitarias Españolas, 2003):

> [to] encourage the construction of a new university library model, conceived as an active and essential part of a system of resources for learning and research …

Libraries, as a resource centre for learning, turn to other areas (for example, focussed on information technology, pedagogy, or audio-visual services) to achieve the mission that has already been reflected in the redefinition of library services by Spanish university librarians. The library is a resource centre for learning and teaching, for research and activities associated with the management of the university as a whole. The library has as a mission to facilitate the access and dissemination of information resources and to collaborate in the process of knowledge production, in order to contribute to the attainment of the university's goals. Gómez Hernández and Pasadas Ureña (2003) have reviewed the efforts made in Spain in this regard.

Likewise, it is important to highlight that most of the effort to promote IL nevertheless does come from information professionals (O'Sullivan, 2002), and less so from frontline educators. Therefore, it appears that one of the conclusions offered by all studies on IL and IL programs – that they should be the product of cooperation between teachers and librarians, and linked to the curriculum (Oberman, 2002) – has seemingly not yet been achieved.

The most direct precedent to this investigation at the University of Murcia (UM) is the study undertaken by Gómez Hernández (1996a, b) in early 1994, on a sample of 2,400 university students across all courses and careers. Of all its conclusions, the student's poor awareness of the meaning of library services stands out in particular. Likewise, there was scarce contact with specialised library personnel, and user education was nonexistent.

Information resources such as theses, patents, reports, serial publications, bibliographies, and databases were absolutely unknown to students, from which a very poor educational experience

based on notes and textbooks was inferred. Only at the beginning of doctoral studies were students introduced to scientific information retrieval through brief courses – this demonstrated the absence of such material prior to this.

Regarding the educational style of professors and the use of library services, students answered that, in order to master a subject, their main activities were to rely on notes taken at lectures and on a basic textbook. This was an overwhelming restriction on students as library users, somewhat redeemed by the fact that the faculty did also recommended "complementary" further readings.

In Mexico, Licea de Arenas (1983) studied 75 per cent of the agronomy and veterinary medicine faculty at the Department of Agriculture and Animal Production at the Autonomous Metropolitan University, Xochimilco Campus. Among her conclusions, the following stands out: information was considered of greater importance for research than for teaching. Therefore, books were the ideal source for teaching; scientific journals and relationships with colleagues were preferred for research purposes. Those who spent more time gathering information browsed literature published in the prior five years, and even when they said that they were able to read in languages other than Spanish, this was not reflected when they were asked to quote the titles of the journals they used regularly.

Although later studies such as Román Haza (1986) have surveyed chemistry and physics students from the University of Mexico, university authorities are not yet in a position to determine the reasons why the library did not fulfil its goals. Therefore, because of the lack of previous empirical studies, we attempted to find out if students show similar or different behaviour in different information environments. We questioned where, how and for what purpose students use libraries, library services, information in general and ICT (information and computer technology).

Two universities separated by an ocean were selected: the University of Murcia and the National University of Mexico (UNAM). The first university located in the east of Spain, in the region of Murcia, has a population of close to 40,000 students. The University of Mexico, located in the country's capital, is the public higher education institution with the greatest national presence and with the largest number of students, over 134,000. They are two universities with significant differences: location, size, number of students and available resources.

## Methods

A questionnaire was distributed to 434 students from 48 majors taught at the University of Murcia, and to 973 students from 37 majors taught at the University of Mexico. The questionnaire used at the University of Murcia consisted of 38 questions, while the one used at the UNAM had four questions fewer. Two of these related to conditions unique to Spanish students, which therefore did not apply to the Mexican context, and two others were considered inapplicable due to their reference to matters of social class and political position.

Thus, for the purposes of this study, only those results that allowed a comparison between the students of both universities were considered. Also, it is important to stress that in a great number of cases the percentage of returns do not correspond to 100 per cent, though not to the extent that statistical validity is undermined.

## Results and discussion

In both cases, the students surveyed were within the age groups 17 to 22 years old (Table I) and a majority were women (Table II). In terms of their year of study, UM students had a more homogeneous distribution, while UNAM students were concentrated in the first and last years – in the Mexican university courses are organised per semester and therefore two semesters are equivalent to a year at the University of Murcia (Table III). The financial conditions of university students are revealed in Table IV. Mexican students are forced to enter the workplace at an early age, in spite of the fact that close to

**Table I** Age groups

| Groups | UM (%) | UNAM (%) |
|---|---|---|
| **17/18** | 14.75 | 22.40 |
| **19/20** | 30.18 | 20.96 |
| **21/22** | 25.34 | 19.32 |
| **23/24** | 16.59 | 16.03 |
| **25/26** | 6.68 | 10.48 |
| **27/28** | 3.68 | 4.93 |
| **29/30** | 0.92 | 2.46 |
| **More than 30** | 1.61 | 3.18 |
| **No answer** | 0.23 | 0.21 |

**Table II** Sex of respondents

| Sex | UM (%) | UNAM (%) |
|---|---|---|
| **Male** | 32.72 | 43.58 |
| **Female** | 66.82 | 55.50 |
| **No answer** | 0.46 | 0.92 |

**Table III** Current academic year of registration

| Year | UM (%) | UNAM (%) |
|------|--------|----------|
| 1 | 29.95 | 40.49 |
| 2 | 23.96 | 3.29 |
| 3 | 20.97 | 4.42 |
| 4 | 14.98 | 21.07 |
| 5 | 9.91 | 17.78 |
| 6 | 0.23 | 0.31 |
| No answer | | 12.64 |

**Table IV** Employment data of students

| Employment | UM (%) | UNAM (%) |
|------------|--------|----------|
| One job | 18.66 | 30.52 |
| No job | 70.97 | 67.73 |
| No answer | 10.37 | 1.75 |

20 per cent stated having conducted their pre-university studies in a private institution (Table V).

## Library use

A majority of students from both institutions were library users before beginning their university studies (Table VI), and a majority of students from both institutions had gone on to become users of university libraries on a daily or weekly basis (Table VII). It is important to stress that having reading skills is one of the prerequisites for using libraries. However, the riches of a library will only be revealed to those who have a systematic strategy for

**Table V** Type of pre-university institution

| TYPE | UM (%) | UNAM (%) |
|------|--------|----------|
| Public | 87.33 | 78.93 |
| Private | 10.60 | 17.78 |
| No answer | 2.07 | 3.29 |

**Table VI** Library user before joining university education

| | UM (%) | UNAM (%) |
|------|--------|----------|
| Yes | 56.68 | 55.50 |
| No | 42.17 | 43.47 |
| No answer | 1.15 | 1.03 |

**Table VII** Frequency of library use before university enrolment

| Frequency | UM (%) | UNAM (%) |
|-----------|--------|----------|
| Daily | 18.89 | 18.71 |
| Several times a week | 33.18 | 53.65 |
| Several times a month | 13.36 | 15.21 |
| Occasionally | 22.81 | 10.38 |
| During exams only | 5.07 | 1.34 |
| No answer | 6.68 | 0.72 |

exploiting it. The autodidact, described by Sartre (1981) is one who attempts their self-education by reading all the books in the library, following the alphabetic sequence of authors; or who reads an encyclopaedia starting from the first volume, expecting to reach the last volume. But both these cases refer to the products of educational systems that only "educate" beings narrowly with a type of common sense – those who were taught that the first letter in the alphabet is A, followed by B, C, and so forth. Thus, in order for students to become information literate, they must encounter information in an *ad hoc* fashion but also actively locate, evaluate and classify such information to relate it to other information and be able to use it properly.

This therefore raises the question, what is the nature of the activity carried out by the majority of students who are frequent library users? There are differences between both groups in terms of the most frequently performed activities undertaken at their university libraries: UM students stated they read their notes taken at lectures, while UNAM students read library books (Table VIII). These are traditional activities suggesting transmission-based pedagogy.

For more than two-thirds of UNAM students, reference and circulation services are very useful services, but one of the most popular services is photocopying, because photocopies make up for lack of availability of titles and volumes in the library collection. Regarding study facilities, their usefulness may be lessened due to students depending more on such photocopying services (Table IX), which enable students to take away

**Table VIII** Frequent activities performed by students in the university library

| Activity | UM (%) | UNAM (%) |
|----------|--------|----------|
| Read the newspapers | 12.67 | 8.12 |
| Read library books | 51.15 | 92.09 |
| Read/browse journals | 12.44 | 35.15 |
| Read own books | 39.40 | 37.31 |
| Read notes taken at lectures | 77.42 | 51.49 |
| Use reference sources | 28.57 | 54.37 |
| Search OPAC | 16.59 | 27.44 |
| Search databases | 12.44 | 43.37 |
| Access electronic journals | 1.84 | 10.48 |

**Table IX** Very useful library services

| Service | UM (%) | UNAM (%) |
|---------|--------|----------|
| Reference | 41.94 | 84.99 |
| Circulation | 39.63 | 66.29 |
| Week-end loan | 33.87 | 45.63 |
| Interlibrary loan | 9.68 | 27.24 |
| 24-hours loan | 17.97 | 26.93 |
| Photocopying | 25.58 | 70.50 |
| Study rooms/carrels | 58.29 | 53.34 |

materials for study elsewhere. For UM students, just over a third find circulation services very useful, and fewer than a third find them moderately so (Tables X and XI), while a variety of forms of other lending services are interest only to a smaller minority (Table XII).

A majority of students stated that the provision of books, reference sources and databases (Tables XIII and XIV) is either good or adequate in both institutions. However, there is a deficiency of magazines, scientific journals and popular science

**Table X** Moderately useful library services

| Service | UM (%) | UNAM (%) |
| --- | --- | --- |
| Reference | 28.80 | 11.82 |
| Circulation | 31.11 | 20.76 |
| Week-end loan | 23.96 | 23.84 |
| Interlibrary loan | 18.89 | 24.36 |
| 24-hours loan | 27.88 | 24.87 |
| Photocopying | 14.98 | 23.95 |
| Study rooms/carrels | 24.19 | 25.80 |

**Table XI** Less useful library services

| Service | UM (%) | UNAM (%) |
| --- | --- | --- |
| Reference | 3.0 | 0.21 |
| Circulation | 2.76 | 3.19 |
| Week-end loan | 7.14 | 6.78 |
| Interlibrary loan | 8.29 | 12.33 |
| 24-hours loan | 8.06 | 14.08 |
| Photocopying | 10.14 | 2.57 |
| Study rooms/carrels | 1.84 | 6.17 |

**Table XII** Library services not used by students

| Service | UM (%) | UNAM (%) |
| --- | --- | --- |
| Reference | 15.21 | 1.34 |
| Circulation | 16.36 | 9.04 |
| Week-end loan | 21.66 | 18.60 |
| Interlibrary loan | 42.86 | 32.37 |
| 24-hours loan | 30.88 | 27.75 |
| Photocopying | 32.49 | 2.67 |
| Study rooms/carrels | 6.22 | 12.95 |

**Table XIII** Good stock of information resources in the university library

| Type of resource | UM (%) | UNAM (%) |
| --- | --- | --- |
| Books | 33.64 | 40.18 |
| Reference sources | 30.41 | 28.16 |
| Magazines | 7.83 | 11.31 |
| Newspapers | 12.44 | 10.89 |
| Scientific journals | 10.83 | 18.19 |
| Popular science magazines | 10.60 | 16.96 |
| Databases | 18.66 | 27.13 |
| Indexes and abstracts – print | 12.67 | 27.65 |
| Audiovisuals | 3.23 | 9.25 |

**Table XIV** Adequate information resources in the university library

| Type of resource | UM (%) | UNAM (%) |
| --- | --- | --- |
| Books | 43.55 | 38.34 |
| Reference sources | 42.86 | 49.43 |
| Magazines | 32.03 | 37.0 |
| Newspapers | 37.56 | 31.86 |
| Scientific journals | 28.11 | 32.58 |
| Popular science magazines | 21.89 | 32.27 |
| Databases | 35.71 | 43.68 |
| Indexes and abstracts – print | 34.56 | 41.32 |
| Audiovisuals | 10.60 | 20.25 |

magazines, while some materials are unused by a large number of students due to low levels of provision, e.g. printed indexes at UM (Tables XV and XVI).

Turning to problems that are a constant brake on information use, the most significant of such persistent problems appeared to be the lack of recent titles – for example, this was experienced by nearly a third of UNAM students (Table XVII). This was also the leading occasional cause of problems for both UM and UNAM students in using information efficiently (Table XVIII).

The relationship between library staff and the majority of students can be problematic according to the students' answers, particularly the Mexican ones, where little more than a third state that, in their experience, communication problems with library staff do not exist (that is, are never a problem – Table XIX). Students did not seem to

**Table XV** Insufficient information resources in the university library

| Type of resource | UM (%) | UNAM (%) |
| --- | --- | --- |
| Books | 14.06 | 19.53 |
| Reference sources | 7.37 | 15.83 |
| Magazines | 20.74 | 23.43 |
| Newspapers | 12.44 | 23.95 |
| Scientific journals | 18.20 | 26.10 |
| Popular science magazines | 19.82 | 24.97 |
| Databases | 10.14 | 15.83 |
| Indexes and abstracts – print | 10.60 | 14.39 |
| Audiovisuals | 23.50 | 21.27 |

**Table XVI** Unused information resources in the university library

| Type of resource | UM (%) | UNAM (%) |
| --- | --- | --- |
| Books | 2.07 | 0.72 |
| Reference sources | 10.60 | 5.34 |
| Magazines | 27.88 | 23.43 |
| Newspapers | 26.27 | 31.45 |
| Scientific journals | 32.26 | 20.76 |
| Popular science magazines | 36.64 | 23.33 |
| Databases | 23.50 | 11.41 |
| Indexes and abstracts – print | 93.72 | 13.98 |
| Audiovisuals | 51.84 | 46.97 |

**Table XVII** Perceived negative aspects of libraries that constantly limit their use by students

|  | UM (%) | UNAM (%) |
|---|---|---|
| Lack of recent titles | 7.83 | 29.09 |
| Incomplete or cancelled journal titles | 5.30 | 15.21 |
| Difficulty in ommunicating with library staff | 7.60 | 16.34 |
| Backlog | 6.22 | 23.95 |
| Strict library rules | 12.67 | 13.16 |
| Books and journals in other languages than Spanish | 10.14 | 16.14 |
| Short loan periods | 28.34 | 15.21 |
| Books on loan for long periods | 26.96 | 31.04 |

**Table XVIII** Perceived negative aspects of libraries that sometimes limit their use by students

|  | UM (%) | UNAM (%) |
|---|---|---|
| Lack of recent titles | 55.76 | 56.63 |
| Incomplete or cancelled journal titles | 28.34 | 55.91 |
| Difficulty in communicating with library staff | 26.73 | 41.11 |
| Backlog | 38.94 | 48.51 |
| Strict library rules | 26.96 | 33.92 |
| Books and journals in other languages than Spanish | 32.26 | 50.46 |
| Short loan periods | 29.03 | 37.20 |
| Books on loan for long periods | 50.0 | 55.50 |

**Table XIX** Perceived negative aspects of libraries which never inhibit their use by students

|  | UM (%) | UNAM (%) |
|---|---|---|
| Lack of recent titles | 14.75 | 9.56 |
| Incomplete or cancelled journal titles | 31.80 | 24.36 |
| Difficulty in communicating with library staff | 42.83 | 38.75 |
| Backlog | 24.65 | 22.61 |
| Strict library rules | 30.41 | 46.25 |
| Books and journals in languages other than Spanish | 26.27 | 27.75 |
| Short loan periods | 17.97 | 41.42 |
| Books on loan for long periods | 6.45 | 10.28 |

be convinced of the worth of library instruction courses: a high proportion of students indicated that they did not have an interest in them (Table XX). This makes one suspect that the students in both institutions are not yet aware that using libraries is not an easy task, and that they are not experts but in fact do need support.

**Table XX** Opinion on the convenience of library instruction courses

|  | UM (%) | UNAM (%) |
|---|---|---|
| Interested | 36.87 | 53.55 |
| Uninterested | 57.60 | 45.63 |
| No answer | 5.53 | 0.82 |

## Usage of information

Books and reference sources together with the Internet are the preferred, regularly used sources of support for the university studies of both Spanish and Mexican students. UNAM students reported higher levels of regular use of (for example) databases and scientific information than the students at Murcia (Table XXI), though the amount spent by both universities on information resources is similarly large. Generally, resources that are not reported to be regularly used, have greater percentages reporting occasional use or no use (Table XXII and XXIII).

When in difficulty with their studies, UM students report that classmates, faculty, the library and Internet are the best options to turn to, while Mexican students ask their teacher, go to the library or use the Internet as a source of solving questions (Table XXIV). Students thus depend greatly on informal sources, not taking advantage of the information resources their institutions are equipped with. However, the lack of respect some students have for library staff expertise stands out. Certain students' opinions marginalise librarians,

**Table XXI** Sources used regularly for supporting studies

| Type of source | UM (%) | UNAM (%) |
|---|---|---|
| Books | 69.12 | 92.70 |
| Reference sources | 28.57 | 42.96 |
| Magazines | 5.99 | 12.44 |
| Popular science magazines | 2.30 | 20.66 |
| Newspapers | 10.60 | 15.11 |
| Scientific papers | 3.92 | 25.90 |
| Databases | 12.21 | 37.62 |
| Indexing and abstracting services | 10.60 | 33.50 |
| Internet | 42.86 | 57.35 |

**Table XXII** Sources used occasionally for supporting studies

| Type of source | UM (%) | UNAM (%) |
|---|---|---|
| Books | 29.49 | 5.76 |
| Reference sources | 49.54 | 50.77 |
| Magazines | 36.41 | 52.0 |
| Popular science magazines | 32.95 | 50.36 |
| Newspapers | 39.40 | 46.25 |
| Scientific papers | 35.25 | 48.20 |
| Databases | 42.86 | 41.83 |
| Indexing and abstracting services | 38.25 | 44.81 |
| Internet | 42.86 | 30.11 |

**Table XXIII** Information sources never used for supporting studies

| Type of source | UM (%) | UNAM (%) |
|---|---|---|
| Books | 0.46 | 0.82 |
| Reference sources | 17.97 | 5.34 |
| Magazines | 51.15 | 31.76 |
| Popular science magazines | 57.83 | 27.85 |
| Newspapers | 44.24 | 37.41 |
| Scientific papers | 54.38 | 24.77 |
| Databases | 38.71 | 19.12 |
| Indexing and abstracting services | 43.09 | 19.84 |
| Internet | 12.21 | 11.41 |

**Table XXIV** Options taken when educational support problems arise

| Options | UM (%) | UNAM (%) |
|---|---|---|
| Ask classmates | 70.05 | 40.60 |
| Seek faculty assistance | 61.52 | 64.23 |
| Use the university library | 52.76 | 58.27 |
| Surf Internet | 50.69 | 57.04 |
| Ask library staff | 8.29 | 5.86 |
| Use notes taken at lectures | 6.91 | 6.78 |
| Use own books | 6.91 | 4.21 |

considering them as peripheral, without the attributes necessary for taking charge of teaching. The weight university students give to both personal books and notes leads us to believe that it reflects the educational models that predominate in the institutions (Table XXV).

Thus, as to the student/faculty relationship, the latter decide their way of teaching by following a traditional model and then set students to work in this fashion, though students will seek interaction with their teachers when they have problems in their educational activities (see Table XXIV). It is appropriate to ask whether the teachers direct students to relevant sources of information when this happens, or if they limit themselves to explaining any unclear points without reference to a quality information source. Could librarians offer help at this point with greater effect? This is an important part of the debate on the role of faculty versus librarians in the education of university students (Grafstein, 2002; Owusu-Ansah, 2004; Zabel, 2004).

The information used both by UM and UNAM students is old, though UM students use information published after the year 2000 more than Mexican students (Table XXVI). Students from both institutions described the lecture as their preferred teaching option, although it does not develop the ability to use information – there is a preference for didactic aids that stimulate intellectual laziness. Mexican students' predilection for photocopies becomes evident once

**Table XXV** Use of notes taken at lectures by students and personal books

| | Notes | | Own books | |
|---|---|---|---|---|
| Frequency | UM (%) | UNAM (%) | UM (%) | UNAM (%) |
| Always | 7.14 | 10.38 | 4.38 | 4.62 |
| Sometimes | 73.96 | 59.51 | 62.90 | 53.65 |
| Never | 18.66 | 28.67 | 32.49 | 39.47 |
| No answer | 0.23 | 1.44 | 0.23 | 2.26 |

**Table XXVI** Distribution of information used by year of publication

| | UM (%) | UNAM (%) |
|---|---|---|
| Before 1970 | 6.45 | 8.74 |
| More than 30 years ago | 10.83 | 15.52 |
| More than 20 years ago | 27.19 | 41.52 |
| More than 10 years ago | 59.45 | 46.15 |
| After 2000 | 27.65 | 13.46 |

again (Table XXVII). Due to the deficiencies of (or absence of) school and public libraries, this service traditionally becomes the ideal substitute and so students learn to depend on the photocopy in their first years of primary education.

The majority of students from both universities seem to be competent in the English language (Table XXVIII), an ability they mainly apply to reading books for their studies (Table XXIX). Such an assertion could be proved if the end-of-the-degree studies or doctoral thesis were

**Table XXVII** Preferred teaching options

| Option | UM (%) | UNAM (%) |
|---|---|---|
| Lecture | 71.89 | 82.22 |
| Handout | 36.87 | 50.77 |
| Textbook or manual | 44.93 | 33.20 |
| Notes on WWW sites of faculty | 13.59 | 7.81 |

**Table XXVIII** Language skills

| Language | UM (%) | UNAM (%) |
|---|---|---|
| English | 52.76 | 63.62 |
| French | 11.06 | 11.0 |
| Italian | 2.53 | 3.08 |
| German | 1.38 | 1.23 |

**Table XXIX** Type of materials in foreign languages read by students

| Typology | UM (%) | UNAM (%) |
|---|---|---|
| Books for instruction | 28.57 | 44.91 |
| Scientific papers | 11.06 | 30.83 |
| Literature (fiction, non-fiction, poetry, drama . . .) | 18.89 | 21.69 |
| Newspapers | 9.91 | 11.92 |
| Magazines | 16.59 | 16.75 |

analysed, where we would see if the students really tend to avoid tasks and situations which they believe exceed their capabilities, but nevertheless they undertake and perform activities they judge capable of handling themselves, i.e. information literacy to accomplish lifelong learning has to be based on motivation, well-being and personal accomplishment (Kurbanoglu, 2003).

## Use of the computer

Most UM and UNAM students own a computer (Table XXX); UM students who do not have one mainly go to one of the university's facilities, while a large portion of Mexican students are cybercafé clients (Table XXXI).

There is a very similar, frequent level of use of computers by students of both universities (Table XXXII). However, this does mean that Mexican students who do not own a computer require a €1.5 per hour fixed income in order to cover the service of a cybercafé, possibly outside their class hours. This is because UNAM students, in contrast to those from other countries (Crook and Barrowcliff, 2001), do not have university accommodation, but live with their families or share a flat or rent a room.

Students surveyed considered their study was computer-mediated, though the possibility of becoming distracted by the computer scarcely

Table XXX Ownership of PC

|  | UM (%) | UNAM (%) |
| --- | --- | --- |
| Yes | 81.57 | 78.73 |
| No | 16.82 | 19.22 |
| No answer | 1.61 | 2.06 |

Table XXXI Access to a PC if it is not owned

|  | UM (%) | UNAM (%) |
| --- | --- | --- |
| In the library | 17.97 | 11.0 |
| In homes of friends or relatives | 18.20 | 8.84 |
| Cybercafé | 6.45 | 29.60 |
| In a university facility | 53.46 | 22.51 |

Table XXXII Computer use

|  | UM (%) | UNAM (%) |
| --- | --- | --- |
| Several times a day | 10.37 | 15.21 |
| Daily | 21.66 | 34.53 |
| Several times a week | 36.64 | 36.69 |
| Several times a month | 14.75 | 5.76 |
| Occasionally | 14.75 | 6.47 |
| Never | 0.69 | 0.21 |
| No answer | 1.15 | 1.13 |

figured: Mexican students use the computer to report or notes writing or to browse the Web; Spanish students also use it to write reports and for e-mail (Table XXXIII). However, true information literacy requires far more than mechanical access or retrieval via a computer. There needs to be a deeper understanding of the relationship between access, interpretation, application and learning (Brabazon, 2002). How valid is the information retrieved after browsing the Web through widely used browsers? At what point in time do students learn to distinguish pertinent information from trivial information? Do their teachers guide them regarding the requirements for retrieving quality information through the Web? Do students properly quote such electronic sources on their course and end-of-degree papers or thesis?

Our results, some of which show traditional pedagogy dominating library use (e.g. Table VIII), suggest that Mexican and Spanish students are still in the process of attaining digital literacy (Bawden, 2001), of reaching the fourth cultural competency that complements the other three: reading, writing and arithmetic (Böhme, 2002). The skills evidenced in survey feedback from students gives some evidence of a paradigm shift – that is to say, they are in the process of adjusting themselves to the future. Such a future will be owned by those who have a genuine and intelligent competence in knowledgeable computer use; and it will be one where the educational ideal is achieved when libraries are linked to the net while also playing an active, relevant role in helping students to attain such respective competencies.

Our results present evidence that educational practices do influence the way students conduct themselves even before they reach the universities. An example of this is the preference for notes, (outdated) books and the relative indifference towards electronic sources, resource to which institutions allocate a great part or their budget. Information literacy that includes the ability to write self-researched reports and scientific papers, is a set of skills which need to be developed early on in life and not be delayed until the doctorate level training which serves as the initiation of the scientific career of a few.

Table XXXIII Main uses of PCs

| Purpose | UM (%) | UNAM (%) |
| --- | --- | --- |
| E-mail | 71.66 | 33.40 |
| Chat | 0.46 | 7.40 |
| Report writing | 76.04 | 82.12 |
| Surfing the World Wide Web | 53.46 | 44.09 |
| Games/entertainment | 14.52 | 8.22 |
| Mailing lists | 3.46 | 2.77 |

Thus, it is the responsibility of university authorities to facilitate integration between the main agents promoting information literacy in universities – for example, by taking advantage of the presence of research-active academic staff who produce results which appear in mainstream journals. By harnessing the efforts of university centres engaged in internationally visible research, such authorities can plan the transformation of the university, encouraging innovative forms of teaching in order to eliminate a narrow dependence on lecturing, thus leading students towards learning rather than just short-term memorising. The promotion of such cooperation throughout so many different levels of management must include as one of its outcomes a change in the image of library staff, showing them to be learning enablers rather than low-status employees in the university hierarchy.

## Conclusions

Our results have revealed a number of factors that affect university students' information literacy or illiteracy. We infer that information illiteracy is attributable to educational bureaucracy, to anachronistic ways of teaching that validate reliance on note-taking by students, on textbook-based learning and on absorbing outdated information. Thus, in order for university students to become information literate a hybrid "teacher-librarian" approach must be established. This implies a commitment on the part of the teacher to the motivation of students so their learning can occur more naturally, by placing the activities of information use and information access in the context of realistic problem-solving exercises, and not in abstractions or in generalisations. The librarian, on the other hand, should abandon a passive position and push themselves forward actively into the educational environment, no longer underestimating their role and value, but committing themselves fully to the learning process hand in hand with the student.

And finally, if Mexico and Spain lack empirical investigations of patterns of information use which could be used prior to any information literacy initiative, our wish is that this analysis might act as the starting point for other similar studies, thus filling a void and leading to a strengthened line of research in both countries.

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