Outcomes and Challenges of Offering an Information Literacy Compulsory Undergraduate Credit Course: A Mexican Case

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Abstract. The aim in this paper is to report the learning experience evaluation of an information literacy (IL) undergraduate compulsory credit course in a country where information and research skilled lecturers are scarce. Students should begin to develop information competencies during their K-12 education; however, this is seldom the case in the Mexican educational system where students enroll at universities with limited IL training. CETYS University, whose IL evolution has been previously reported in the ECIL Conference Series, made the decision to offer a compulsory eight-credit course for all first-year students. The implementation of the course had the challenge of hiring faculty who did not have, in most cases, IL facilitation experience. The outcome of the first cohort of 17 groups that included 361 students was that the students did have a positive learning outcome, according to the two technique-assessment study but did identify important opportunities to improve the course and the facilitation process.

Keywords: Information literacy credit courses
Information competencies credit courses
Information literacy credit course assessment · Information skills teaching
Information competencies lecturer assessment
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1 Introduction

As stated in the abstract, the aim of this paper is to report the evaluation of an information literacy (IL) undergraduate compulsory credit course in a country where information-skilled lecturers are generally scarce [1]. The subject is discussed addressing the information competencies (info-competencies) challenges at the high school level, followed by a description of the CETYS University case, and the strategies taken to enhance info-competencies of newly-registered students, among them the adoption of an eight-credit face-to-face IL course titled "Management of Information (MI)" for all new university entrants. The adoption of the course had the aim of helping students develop basic information skills as they start their undergraduate programs. Students who enroll in

higher education tend to have limited information skills [2], apparently, an international trend [3]. According to PISA (Program for International Student Assessment) evaluation results, Mexican students rank among those from nations with the lowest reading scores, a basic skill for information competency attainment. Mexican students received 423 points compared to the OECD average of 493 points. However, the outcome is more or less similar to other developing economies such as those of Brazil and Colombia [4]. CETYS requires high school candidates to take the admission College Board Examination, but only two factors: verbal and mathematics, a fact that makes it difficult to identify student info-competencies qualifications as they enter the institution that is the largest private university in Baja California, the Northernmost Mexican state that borders California, USA. As reported in previous ECIL Series Publications [5], the university has over 7,500 students and holds the Western Association of School and Colleges accreditation (WASC), a major achievement, as one of only six institutions with American accreditation in Mexico. Since 2007, CETYS has identified and adopted a set of desirable qualities that students ought to achieve before they graduate. These profile characteristics are understood as special education elements that make CETYS different from of other institutions of higher education [6]. One element is Information Culture, understood as a set of information, technology and communication related competencies. The ultimate goal of this element is to graduate students with abilities to access, evaluate, and use information with support of both traditional and technological resources to respond and solve their personal and professional needs within their discipline and level of education [6]. The strategy to deploy the Information Culture "element" has several actions, among them IL studies to assess information competencies and faculty information demands, development of an IL rubric for undergraduate syllabus, and the use of iSkills, Sails and an in-house instrument to monitor IL competencies of students; outcomes that have also mostly been reported in previous ECIL Series Publications [5]. A follow up to these strategies is the creation of the cited management of information (MI) course in 2016 that all new students take during their first two semesters.

2   How the Course Content Evolved

In 2014, when the curriculum of all programs of the University underwent evaluation to update them according to changes in the job market and the disciplines they covered, a criterion was agreed upon by college committee participants that 20% of the courses of all degree-granting programs should contribute to the development of core skill characteristics of the generic graduate profile, among them, information culture, i.e., information competencies [6]. The set criteria pivoted on the resolution to offer an IL course to all students. The decision meant the creation of an eight-credit course (4 h per week) that was called, as stated, Management of Information (MI). The course is compulsory and has to be taken during the first year at university. The syllabus was developed by a team of three humanities faculty members who submitted the proposal for discussion and input to the heads of the three campus libraries that make up the University Library System. It must be mentioned that other Mexican universities who offer IL credit course

do not seem to have documented their experiences. A quick social network media question to IL colleagues reported a handful of universities offering credit courses as optional or compulsory.

The syllabus was organized into five thematic units. The first focused on the discussion of information society and culture, the second covered information literacy standards in Mexico, the third was on how to conduct information research, and finally, the fourth and fifth were devoted to bibliographic resources management. The learning goal of the course was the development of the eight core competencies stated in the Mexican Information Literacy Standards [7] through the selection of a research topic by students, according to their discipline. Students selected a topic and identified all possible information resources in preparing an end-of-term paper, applying research methodology and following the APA citation style (American Psychological Association).

3   Implementation of the Course

The implementation period was brief because the plan was approved shortly before the beginning of the following academic year. The biggest challenge was the administrative recruitment of several lecturers. Faculty members were invited by academic coordinators from each campus. Prospective instructors needed to have had at least a Master's Degree and the subject qualifications, a hurdle that was difficult to overcome because there were 17 subject area groups to teach at the three university campuses. CETYS had only four professional librarians at the time. They were invited to teach the IL course at all the campuses, along with lecturers from other disciplines. Some of project faculty agreed to teach more than one group.

All lecturers hired at the Tijuana Campus had a Master's Degree, except two who had Ph.Ds., among them two were librarians, the campus library director and a reference librarian. Three of the faculty had some publication experience and none of them were members of the National System of Researchers, a Mexican (SNI) government body that certifies and awards recognition to those who publish their research output. According to this body, Mexico had 18,500 SNI members in 2012, among 369,000 faculty, although only 89,000 (24%) were full-time and assumed to have research skills, because they devoted all their working time to universities [1]. However, academic coordinators who carried out the lecturer recruitment did not require the SNI designation for the MI facilitation.

Recruited lecturers were invited to attend a two-hour teaching introduction to the course, where, in addition to a talk, they received a copy of all teaching materials (an e-Booklet of nearly 200 pages) for the IL course taught at Universidad Veracruzana: "Information Competencies for Learning" by Jesus Lau that included 40 learning exercises [8]. They also received a copy of the institutional APA style manual, and the booklet on how to prepare of academic papers, both publications edited by CETYS [9, 10]. The facilitation of the course kicked off, as stated, with 17 groups with an enrollment of 361 students. After the course began, lecturers had occasional meetings at each campus during the semester to share and improve their MI experiences. Unfortunately, there was no library leadership to provide faculty IL training one of the campuses.

4 Course Overall Evaluation

The exploratory overall evaluation was conducted after the first semester concluded. For convenience, the assessment was conducted at the Tijuana campus, where one of the researchers teaches and where more professors were hired, a total of nine. The selected campus is similar in size to the one at Mexicali but with twice the number of students as Ensenada. The process included three research techniques, the first one a questionnaire with 27 closed questions to identify the knowledge and skills gained by students during the IL course. The survey also included three open-ended questions designed to (1) help understand what students had done to learn; (2) identify the learning activities the lecturer used to promote learning; and (3) to identify the main student learning experiences in the different MI lessons. There were 315 out of a potential of 361 answers from students who had attended one of the 17 MI courses. The results of the survey are not part of this report but they will be used as part of a planned longitudinal assessment. The second technique was the organization of a discussion group held with seven of the nine lecturers who facilitated one or more courses at the Tijuana campus. The objective of the MI faculty focus group was to analyze their teaching experience, what they had achieved, what was missing in the course, and what should be done in subsequent learning experiences. Finally, the third technique was an exploratory analysis of IL skills developed by students. They were asked to share, on a voluntarily basis, two papers they wrote: the end-of-term MI paper and one completed near the end of their previous high school year.

5 The Voice of Lecturers – Faculty Focus Group

IL lecturers, as the key actors of this new course, were invited to have a meeting at the library during the final week of the semester. The meeting was attended by seven out of nine faculty who were part of the initial team. The goals of having this focus group were to learn and record the teaching experience, and to gather data to document and publish the results for the sake of improving future developments in the course. The session was video recorded with the permission of the participants. Four sets of basic questions comprised the assessment dynamic: (1) How did you feel during the facilitation of the course? What did you feel went right and what did not? (2) How did you feel about training for MI teaching? What would you suggest for other new lecturers? (3) What are the skills required to facilitate the MI course?, and (4) What syllabus improvements did you identify? The discussion lasted an hour and a half, as programed. The video was transcribed for qualitative inductive analysis to identify content categories. The main qualitative results are summarized as follows:

(1) **Course – Right Decision.** Lecturers agreed that the institutional decision to offer this course as a compulsory requirement was the proper decision and was beneficial to students. They enjoyed this new teaching experience.

(2) **Achievement.** They were quite certain that students achieved good learning levels, even in some subjects that may sound "simple and familiar," such as how to evaluate information and go beyond simple Google searches.

(3) **Benefits.** Most students benefited from the MI course, especially those with a certificate from the so-called National High School (standard program in Spanish) and the Bilingual High School (half of the standard program in English), who had fewer information competencies. However, students who were accepted in the International High School certification (standard program in English with extra courses taught by teachers from other parts of the world) were more information-qualified.

(4) **Concern.** Lecturers stressed that the information skills learned in MI are likely to be lost if they are not practiced in other undergraduate program courses.

(5) **Syllabus Complexity.** Lecturers made it clear that it took more effort than expected to understand the structure and logic of the syllabus. They found it complicated to devote a unit to the subject of the knowledge society and then work separately on the many (eight) information competencies. They recognized that they did not cover all the info-competencies because of time limitations and their own limited lecturer IL skills.

(6) **Training – Team Work.** A common statement from participants was that there was not enough training to grasp the scope of the course. One of them stated that any MI facilitator should master research methods, IL, and information and communication technologies (ICT). Participants stated that the facilitator should approach this course as a workshop where they ought to play a coaching role. They recognized that their strengths, some were strong in IL (librarians) or others were strong in research methods (lecturers with doctoral degrees). Their suggestion was to employ team teaching where these strengths could be pulled together for the benefit of students.

(7) **Discipline Focus.** A challenge that they expressed was the difficulty and, in some cases, the impossibility of focusing on the discipline-specific needs of the different undergraduate programs, such as use of style manuals that differed from APA and the mastering of databases in fields unknown to lecturers.

(8) **Opportunity to Seize.** The MI course should capitalize on the wide and rich variety of information resources across the border with California, USA, such as universities and research centers located in nearby San Diego. Thus, librarians ought to build cooperative library bridges to benefit the MI course.

(9) **Limited Knowledge Construction.** Lecturers assumed that the students read digital formats, including note-taking using pictures, was a limiting factor for knowledge construction because students spent a rather short time reasoning and doing metacognition, thus limiting memory retention. Elaboration of posters, note-taking exercises, and plain bibliographic notes were used to induce students to devote more time to MI understanding and learning.

6   Student Information Competencies Evaluation

A request was sent to all Tijuana Campus MI students to voluntarily participate in the evaluation process by sending a copy of their MI end-of-term paper along with a paper they completed during their last semester of high school. An electronic repository was

established so that they could upload the papers. Of the 122 students who responded to the request only 52 sent both papers. An alphabetic list was compiled (104 papers in total, half from high school and the rest MI essays). The 52 students represented all groups. The papers were reviewed in terms of ten variables where each variable had an arbitrary value of 10 points so that the highest positive outcome would yield 100 points. The variables had therefore no weight related to the required effort, difficulty, or time spent by students.

The comparison of both papers showed positive results but with room to improve. The variable, "Table of contents", had limited growth because it went from 37% to 40%; "Structure of the Paper" increased from 69% to a significant 96%; "Writing Composition (Argument)" and "Citations" had dramatic jumps, the first from 54% to 81% and the second from 46% to 98%; "Paraphrasing" also had increase from 69% to 100%; "Academic Information Sources", and "Information Sources in other Languages" (mainly English) went up, the first from 35% to a high of 81%, and 29% to 67% doubling the high school score compared to the first year MI university course. "References" had, on the other hand, from 69% to 100%; "Advanced Use of Word Processing" had early 100% progress, but it was still low, reaching the bottom figure of 21%. "Use of Graphics and Tables" had limited growth from 17% to 21% (See Table 1).

Table 1. High school versus undergraduate papers

Paper indicators fulfillment Value 10% each	High School 52 papers = 100%	Undergraduate 52 papers = 100%
1. Table of contents	37%	40%
2. Structure: introduction, discussion and conclusion	69%	96%
3. Writing composition (argument)	54%	81%
4. Citations	46%	98%
5. Paraphrasing	69%	100%
6. Academic information sources	35%	81%
7. Information sources in other languages	29%	67%
8. References – style	63%	100%
9. Use of advanced word processing	12%	21%
10. Use of graphics and tables	16%	28%
Total	**43% papers**	**71% papers**

Additional information about the paper comparison yielded that high school papers 11.4 pages in length compared to 24.2 pages for the undergraduate MI course. In other words, students showed excellent improvement in this quantitative indicator. "Information Sources in Other Languages", mostly in English jumped from 4.5 to 13.9. The overall results show information competencies for the 52 high school papers was 43% for the ten indicators with a value score for each, while the first year undergraduate MI increased to 71%. The qualitative evaluation of the MI 52 student papers gave an indication that the MI course and the lecturer facilitation were successful. However, there

was room for improvement, mainly for the elements "Table of Contents", "Use of Advanced Word Processing", and "Use of Graphics and Tables".

7   Conclusion

The decision to create and offer a compulsory IL course to all undergraduate students regardless of the program they attended was a positive step in the curricular development of CETYS University, certainly promising in terms of the information culture qualification of future graduates. The requirement of this IL eight-credit course enabled the institution to pave the way to accomplish its strategic information culture goal as a graduate profile element. The aim of the course syllabus was to foster eight information competencies [7]. The implementation of the course, however, had the challenge of recruiting professors with solid information competencies, that is, faculty with experience in accessing, retrieving, evaluating, and using information for research beyond their use in teaching. This CETYS MI course is one of the few ventures in Mexico that required the course for all students. Unfortunately, no literature was found that documented previous cases with such courses. Although this study was only valid for the studied cases, the sample evaluation of the first deployment of the MI course in Tijuana yielded important results that will potentially help the university to improve the MI syllabus and the recruiting and selection of lecturers, the outcome of the evaluation of the Tijuana Campus MI courses, using a lecturer focus group, and the comparison of high school and MI final papers provided indicators to conclude that:

(1)   The overall outcome of the course was highly positive for several paper assessment variables or elements. Students made progress in the qualitative comparison of the papers written in the last high school semester compared to those completed during the MI undergraduate course, especially in the core IL indicators. The weaker skills were mostly noted for those indicators related to ICT (See Table 1).

(2)   The course program may need to be adjusted to focus more on information competencies and less on the theoretical knowledge society unit, according to lecturer focus group feedback.

(3)   The lecturer profile needs to be more specifically defined. Because it is too general for recruitment ideally SNI qualifications should be required. Even though the student-learning outcome was the hiring of better information and research-skill qualified professors may still improve the course learning performance.

(4)   The teaching MI team of nine lecturers had uneven qualifications –only two had a doctoral degree and the rest had no publication experience –and had information skills than library lecturers, who in turn also lacked publication experience crucial for information communication. These factors need to be further evaluated. Team-embedded IL is an option to be considered to complement and benefit from the individual strengths of lecturers.

(5)   The focus group results showed that lecturers were unaware of their own IL skills limitations and were generally satisfied with their IL facilitation performance.

(6)   Training of lecturers is needed especially training in use of databases, search strategies, and the drafting of student learning exercises.

(7) Although students did improve their information skills, further study is needed to assess additional factors in regard to the library role and lecturers' IL skills impact, mainly among those whose lecturers whose information competencies were higher because they held a Ph.D.

(8) The study results will be forwarded to the university authorities for potential IL course implementation improvement.

The CETYS experience requiring every incoming student to take the MI eight-credit course was a welcome decision by faculty. It will potentially be useful for future graduates who may have a solid information culture and be able to benefit from and contribute to the wealth of information available within reach of most computers and ICT tools.

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