Development and implementation of the MobILcaps application for the teaching and development of information literacy in Higher Education

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ABSTRACT

This paper aims at develop, implement and evaluate the effectiveness of the MobIlCaps mobile application. On the basis of cognitive, constructivist and connectivist theories, it has been developed on an instructional design model, based on the user experience. In the context of mobile teaching in higher education, an innovative application is proposed for the self-learning of information literacy by students of Social Sciences. With the collaboration of both teachers and students, the application was developed, following the ADDIE model, through the phases of analysis, design, development, implementation and evaluation. The last phase provided the improvement proposals for the optimization of the final version of the tool, a progressive open access website. The application is organized into six capsules that follow the framework of ACRL (2015): learn, search, evaluate, create, research and disseminate. It includes multimedia resources in the form of microcontents that highlight readability, organization and visualization as characteristics. The app focuses on the user and is a relevant instrument to facilitate teaching The different analyses, followed by proposals for improvement and revisions, led to the achievement of a very useful application for students, teachers and library.

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1. Introduction

In recent decades, there has been a gradual and ongoing digital transformation within universities. This transformation is marked by a series of interconnected changes in culture, workforce dynamics, and technology adoption. These changes collectively facilitate the emergence of novel educational and operational frameworks, fundamentally altering an institution's business model, strategic orientations, and inherent value proposition [1]. These contemporary digital paradigms have exerted a profound influence across all facets of the university ecosystem, encompassing teaching, learning, research methodologies, and service delivery. As a consequence, a diverse array of stakeholders, notably including students, faculty members, librarians, and administrative personnel, have necessitated an adjustment to accommodate and align with these transformative shifts. "the migration to remote and online learning during the COVID-19 pandemic had lasting effects on students', institutions', and society's perceptions of higher education" [2]. In this context, a special relevance is gained, understood as "the set of integrated abilities encompassing the reflective discovery of information, the understanding of how information is produced and valued" [3]. It entails changes in learning environments, in teacher-student relationships, and in the information itself. Students,

predominantly digital natives, tend toward mobile forms of engaging with information. The need to adapt these systems to hybrid and virtual modalities reinforces the value of mobile devices and applications. This resource optimizes the potential for interaction and work optimization.

Cognitive Load Theory (CLT) plays a fundamental role in learning. Based on evolutionary theories, it considers the architecture of the human cognitive structure fundamental [4]. Learning is effective if its priority aspect is cognitive architecture. This implies the main characteristics of human cognition [5]. According to this theory, the processing of cognitive structures is organized from sensory memory, working memory, and long-term memory. It applies to different areas of knowledge, including information literacy. One of the first studies in this field addressed the relevance of CLT to measure the effectiveness of microlearning in the acquisition of informational competences [6]. The research focused on training through the use of a massive open online resource (MOOC) for the optimization and assimilation of content.

Likewise, both [7] and [8] influence this approach to measure the effectiveness of mobile applications for learning and the acquisition of basic informational skills, bearing in mind the triple perspective of teachers, students and librarians. Similarly, [9] investigated the influences of interest and motivation on the acquisition of informational competences in the framework of libraries, taking into account virtual reality and motivation. The review by [5] showed that mobile technology and its implementation in higher education contexts contributed to the improvement in the acquisition of information skills, connecting students with resources, teachers, library experts, and their peers. [10] itself, compared traditional methods and flipped lessons. Advantages were shown in favor of those who used mobile applications. Other studies [11]–[14] underlined the relevance of CLT in the implementation of mobile applications for the acquisition of basic skills. It was shown that training by librarians can incorporate principles of cognitive load theory [15]. Cognitive Theory in Multimedia Learning (CTML) links constructivist theory, mobile technologies, and microlearning. CTML is based on three elements on which the cognitive process is based: separate channels of visual and auditory information processing; limited information, processed in each of the channels at the same time; and significant learning success in the selection, organization and integration of information [16]. Special emphasis is given to the use of smartphones and their applications [17]. This combination of approach, mobile technologies and different visual resources contributes to the optimization of teaching-learning processes and the interest in the acquisition of information skills. In this case, the role of librarians in teaching resources that encourage interest in research and continuous training [18], [19].

Constructivism has become one of the most relevant theories for learning. Social construction as the basis of learning is at the core of this theory. Both cooperative work and significance form the foundation of self-learning [20]. For the acquisition of basic skills, motivation and the deployment of critical thinking are fundamental aspects [21]. In this sense, the theory of scaffolding, allows modeling, support in the construction of learning and motivation in the face of difficulties [22], [23]. Their direct and active participation guarantees the significance of teaching-learning processes [24]. The constructivist approach involves reflective, critical, analytical, interpretive, collaborative, interactive and motivating learning [25]. As noted, these theories are interrelated, since they show that there is a link between autonomous learning, self-learning and motivation. The student, as the main protagonist of his own learning process, builds solid knowledge that serves as a basis for future learning. In other words, it gradually develops the basic competence of learning to learn. Simple learning tools and technologies with which the student is familiar contribute both to motivation and to this development of competences.

Mobile applications have become a relevant element in HE environments. However, the huge amount of information immediately accessible requires the priority development of instruments and resources that contribute to its essential selection and filtering [26]. The library is an indispensable part of the university community, in the acquisition and development of informational skills. That is why they have taken seriously the development of open resources at the service of teachers and students. Ultimately, users (teachers, librarians, and students) must be trained in IL and technologies. mobile for proper information management. Thus, the use of mobile applications based on microlearning could contribute to this task. However, it should be resources that include three basic characteristics: accessibility, attractiveness and open access [27], [28]. This is one of the properties that are most taken into consideration for the optimization of basic skills. The free applications have been incorporated into the classrooms progressively and for academic purposes. There is a need to

strengthen applications that, from libraries, are a bridge of information and training for teachers and students [29], [30]. Some researches have addressed the issue of mobile applications on IL If we take into account those theories we have described, applications are linked to the acquisition nad development of IL. [31], [32] indicated the multiple possibilities of apps thanks to resources through simple and direct microcontent. As [33] emphasizes, "a systematic and integrative approach for building effective pedagogical and performance support." In this line, [34] addressed mobile teaching in the university context through applications based on microcontent. They concluded that motivation for the use of apps contributes to the acquisition of IL knowledge/skills in university students. [35] focused on the role of university libraries in instructional processes, and in the development of resources, media and content. Studies by [36] and [37] shifted responsibility for learning to the teacher and the educational structure itself, including libraries. [38] investigated the use of a specific university platform (WeChat).

The platform contributed to the IL training of university students, through a mobile application with simple, direct and entertaining content, Other recent studies in this stage of the health pandemic [38]–[40] have highlighted the need to develop resources that are easy to use, affordable and, at the same time, comprehensive and rigorous. In a similar vein, the works of [41] and [42] are situated. Access, processing and dissemination of information continue to be a priority in the field of higher education. The presence of mobile devices and applications for the acquisition of IL in higher education is increasingly common, although it is still insufficient. The agents involved (teachers, librarians, students) must be prepared for this mobile reality. Next, we will delve into the methods employed in the design, development, and evaluation processes of the application, describing the final version with a special emphasis on its structure, content, and functionalities.

An increase is observed in the number of academic applications related to information management and learning. Numerous applications are dedicated to information searching in libraries, although there are few focused on academic work completion. A priority need among students is related to knowing how to research, produce, and disseminate results. Precisely, the overall objective of this work is to present the MobILcaps application, an open-access mobile technology resource for supporting teaching and self-directed IL (Information Literacy) learning in higher education environments. The specific objectives are as follows:

O1. Design a prototype application for mobile IL (Information Literacy) learning targeted at students in the Social Sciences field.

O2. Pilot and evaluate prototype versions - alpha and beta - based on user experience using a set of quality criteria.

O3. Develop a final version of the app describing its features.

2. Method

A predominantly qualitative methodology was employed to design this prototype application aimed at university students in the Social Sciences field. After evaluation by experts and students, the final version was obtained, named MobILcaps. Thus, this methodological section unfolds in two subsections: prototype research design and pilot evaluation.

The prototype design took into account theoretical-practical contributions from the following models: constructivism and connectivism [43], which contributed to defining the different learning capsules; cognitivism, particularly cognitive load theory [4], in line with microlearning principles; the ADDIE instructional design model [33], [44], [45] used to develop the app through phases of analysis, design, development, implementation, and evaluation; and user-centered models. Results from focus groups conducted with students and teachers were also considered [46].

The team consisted of eight professors from Information Sciences, Business Administration, and Education, affiliated with four Spanish public universities.

2.1. Research Design

Primarily based on the ADDIE model, this research is structured around the following phases: analysis, design, development, and implementation/evaluation. Analysis was grounded in student and teacher perceptions, as well as existing literature. Design defined the sequence, planning, and

organization of content, activities, and resources to be included in the app. Thus, objectives, thematic categories, content, and structure were determined. Development translated the previously structured content from the design phase into the digital approach. Implementation involved temporarily hosting the app on a web portal, which, once evaluated, led to the final version.

2.1.1. Analysis

To proceed with the prototype design, it was necessary to understand and specify information related to the functions and objectives of the application. This information was sourced from various channels: student focus groups and interviews; teacher focus groups [46] and relevant topics from literature on the use of mobile technologies for ALFIN training [47]–[49]. Key aspects emerged from student-focused information :

- Smartphones and apps are becoming integral to their academic lives.
- They consider ALFIN crucial in their education and professional development, particularly information search, evaluation, and communication.
- Limited mastery of initiation-to-research skills, assignment preparation, and academic presentation.
- A need for new methodologies and tools

Regarding teacher-contributed insights from focus groups on student use of mobile technologies [46], certain aspects stood out:

- General use of smartphones (interpersonal communication, social life, and information retrieval).
- Students seem adept at adapting to new tools and technologies based on personal interest and motivation.
- They express a low level of information literacy competence, especially in information search, analysis, and dissemination.
- Academic work quality has suffered

Findings from these diagnostic analyses, based on evidence from students and teachers, were contextualized and reinforced with key ideas derived from the reviewed literature :

- IL as a key competency for university students [50].
- Information literacy and the creation of new knowledge are linked to ALFIN levels.
- Mobile devices serve as instruments for learning and accessing knowledge [51], [38].
- Connectivism facilitates continuous learning.
- Microcontents are effective for meaningful learning [23].
- Developing new tools to connect concepts, ideas, and fields of knowledge plays an important role in learning processes [38].

2.1.2. Design

Objectives, thematic categorization, structure, and content were defined, along with the digital design (computational requirements and functionalities).

- Objective Definition: These were specified based on students' ALFIN experiences, needs, and motivations for using mobile apps for learning.
- Thematic Categorization: Brainstorming among team members was used to agree upon the main thematic categories, aligned with the latest trends identified in the literature. Six thematic categories were established in line with the ACRL Framework (2015) [3]: Search, Evaluate, Create, Share, Disseminate, and Investigate.
- Conceptual Structure and Content: An initial matrix template (APPENDIX I) was proposed for designing the app's structure and content. This involved creating networks of meaning and relationships between the six categories and their corresponding threshold

competencies/concepts. Aspects related to target users, format, structure, and content were also addressed. The app was designed for undergraduate students in the Social Sciences field, specifically those in their final years, with the purpose of being an online resource to contribute to their learning. A progressive web app (PWA) was chosen for development due to its versatility across devices, lack of installation requirement, compatibility, and user-friendliness. As for the structure, emphasis was placed on user-friendliness, intuitiveness, clarity, and internal coherence across dimensions. Six capsules were proposed, each including microcontents, summaries, diagrams, maps, resources, and motivational micro-videos. These were based on cognitive load theory (CLT) principles. Educational software PowToon (2020 version) and Inspiration 9 were used for creating multimedia content and concept maps.

- Digital Design: Once the conceptual and structural parts of the app were defined, and after several working sessions with the IT team, the initial draft design (wireframe) of the application was developed. It was conceived for mobile devices (Android or iOS), defining its main requirements and functionalities, as well as its operation, to achieve maximum ease of use. Draft design show as Fig. 1.

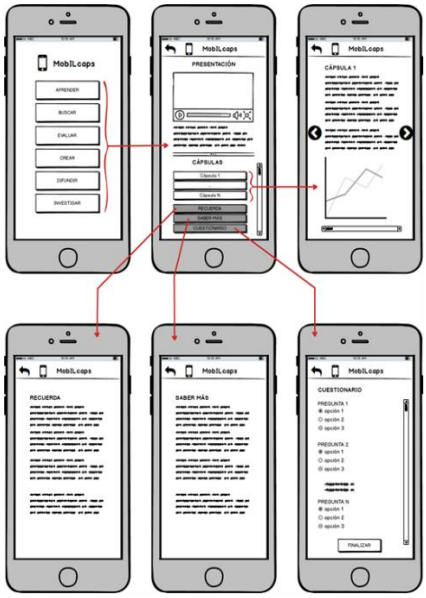

Fig. 1. First draft design After this initial draft was accepted, visual design and its graphical elements were developed, and the first prototype was implemented.

For graphic design, a logo, elements, typography, and colors were proposed and revised until the final design was achieved. Logo show as Fig. 2.

Fig. 2. Logo proposals

3. Results and Discussion

3.1. Development

A Progressive Web Application using HTML, JavaScript, CSS, and PHP technologies, along with a MySQL database, was employed for development. Once installed, it behaves similarly to a native app. This development approach was chosen due to its advantages: cross-platform execution, faster loading times, automatic updates, and adaptability to different resolutions (responsive), ensuring the desired outcome. MySQL, a freely available and open-source database management system under GPL license, which doesn't require high-performance hardware or software for execution, was deemed suitable for this project.

Concerning to the difficulties we run into during the development of the application, we can highlight the following :

- The choice of the target audience. Although this is usually one of the main problems encountered, it can be noted that in our case, it was based on a very specific audience, but at the same time, very broad. The degrees that make up the social sciences are diverse and the knowledge that students have about information and communication technologies is also very broad. Similarly, the development of the app had to take into account the varied age of the students and the relationship between this and technology skills.
- In addition, the team of researchers that developed the application was composed by professors belonging to diverse areas of knowledge. To develop the app, it was necessary to simplify the learning of programming languages to homogenize content and formats.
- During the technical development of the application, in addition, some initial difficulties were encountered. On the one hand, at the beginning, we had to proceed to review the visual saturation of texts and images. This was solved through the simplification of contents and the adequacy of graphics, images and figures. On the other hand, and in relation to the previous one, there was slowness in the download of content. This issue was revised for optimization. Finally, it was intended to develop a WAP, but there were compatibility problems with different devices, which slowed down access and use. Following a structural review, these technical aspects were corrected.
- Although there were initial connection problems with the MySQL database, which required revision, these were solved by correcting the errors that occurred as a result of the corruption of some data

3.2. Implementation

The IT implementation process involved continuous feedback between the professors responsible for the app design and the IT team responsible for its development. Decisions were made to align the prototype with the intended objective. This version was provisionally hosted on a web portal with an SSL security certificate, ensuring encrypted communication and preventing content requests from being intercepted. The prototype was evaluated by team members and participating students.

3.3. Evaluation

Once the prototype was available, an Alpha testing was initially conducted with five team members to test its features and ensure quality in a virtual environment similar to real use. Evaluators highlighted some strengths of the prototype, centered around categorization, conceptual structure, microcontent usage, and especially the use of diagrams and summaries. They also provided feedback on aspects such as format improvement, design, navigability, figure legibility, and content synthesis. After implementing improvements, a Beta testing of the prototype was carried out with two groups of final-year undergraduate students. A user experience (UX)-based method was employed, using a rubric comprising thirteen functional, formal, and content-related criteria, and a Likert scale of four points, where 1 = inadequate, 2 = adequate, 3 = very suitable, and 4 = excellent. Students were provided with the app's URL and QR code to access through their mobile devices over a two-week period. To ensure process quality, two tests were conducted with senior students from Education and Information-Communication degrees (N=46) and (N=43). The selection of this sample, a priori, reduced, was due to the possibility of carrying out a direct follow-up that included the possibility of performing other complementary techniques of a qualitative nature such as the focus group to show

the effectiveness in the development and implementation of the application. In both cases, students were provided with the app URL and rubric and asked to assess the app overall, its content, and functionalities. SPSS 24 software was used for data processing. Qualitative analysis was applied to rubric comments. The prototype's evaluations in its Beta1 and Beta2 versions are presented.

The first evaluation of the prototype in its Beta1 version took place on December 9 and 11, 2022. After obtaining the necessary administrative permissions, two researchers and two collaborators introduced the prototype and the evaluation rubric to the participating students. This first test phase involved 46 students, aged between 21 and 46 years (average age = 24.13). In terms of gender, 21 were female and 25 were male. Regarding degrees, 27 were from Education and 19 were from Information-Communication. After providing access links to the app and the evaluation rubric, students were asked to rate the instrument across its dimensions and add relevant comments. From a functional perspective, they found this version to be very suitable (3.18), with relevance, clarity, and currency being highlighted criteria. The homogeneity in responses to different criteria was acceptable, with standard deviations less than 0.8. From a formal perspective (design, readability, and organization), students considered this version to be very suitable (2.96), with high homogeneity (Dev. E = 0.69). While organization was the best-rated criterion (3.28), design obtained a slightly lower score (2.72).

The content evaluation of the capsules covered five criteria: quality of thematic content, appropriateness of visual content, originality, quality of resources, and consistency of questionnaires (Table 1). The average scores given by students approached excellence (3.74), with an acceptable level of consistency (Dev. E. = 0.49). The scores assigned to each capsule and criteria are displayed. Rubrics suggested some improvement proposals. Finally, students were asked to provide personal and overall ratings of this version on a 1-10 scale. The average score awarded to the prototype was 8.51, with a standard deviation of 0.57.

Table 1. Evaluation of capsules according to criteria and contents

		Criteria					
Capsules		***Thematic content***	***Visual Content***	***Originality***	***Quality of resources***	***Questionnaire consistency***	***Total Score***
Learn							
	Meand	3.84	3.79	3.84	3.95	3.91	3.87
	SD	0.37	0.41	0.37	0.21	0.29	0.33
Search							
	Mean	3.49	3.74	3.84	3.79	3.84	3.74
	SD	0.51	0.44	0.37	0.41	0.37	0.42
Evaluate							
	Mean	3.40	3.67	3.77	3.70	3.88	3.68
	SD	0.49	0.47	0.43	0.46	0.32	0.43
Create							
	Mean	3.93	3.98	3.95	3.95	3.98	3.96
	SD	0.25	0.15	0.21	0.21	0.15	0.19
Disseminate							
	Mean	3.91	3.86	3.98	3.91	3.98	3.93
	SD	0.29	0.35	0.15	0.29	0.15	0.25
Research							
	Mean	3.74	3.91	3.93	3.88	3.98	3.89
	SD	0.49	0.29	0.26	0.32	0.15	0.30
						Total score	3.84
						Mean	
						SD	0.32

After incorporating suggestions from students, agreed upon by the working team, Beta2 version was obtained (Table 2). This version was evaluated by the same sample of senior students during May 25-27, 2021, following the previously described procedure. The sample comprised 43 students, aged between 22 and 33 years (average age = 23.6), 20 females and 23 males. Regarding degrees, 26 were from Education and 17 were from Information-Communication. Results indicate that the prototype's functional aspects received a score of 3.91, with currency (update), navigability, and relevance being the best-rated criteria. Homogeneity among criteria was also observed, with a standard deviation of 0.27.

Table 2. Functional evaluation by students of the Beta2 version

	Criteria					
	Update	***Clarity***	***Navigability***	***Relevance***	***Use / Satisfaction***	***Total***
Mean	3.98	3.79	3.95	3.95	3.86	**3.91**
SD	0.15	0.41	0.21	0.21	0.35	**0.27**
	Design		***Readability***	***Organization***		***Total***
Mean	3.67		3.95	3.88		3.83
SD	0.71		0.21	0.32		0.41

Finally, the student was requested to provide a final evaluation of this Beta2 version, using a scoring range from 1 to 10. The average score given is 9.28 with a standard deviation of 0.66. Between the results obtained before and after implementing the proposed improvements, the score increased by more than one point, reaching an outstanding level.

3.4. Results

After incorporating the proposed improvements and technical adjustments, the MobiLcaps application was presented by hosting it on the website (https://infocompetencias.org/mobilcaps/instalacion.php). The product is considered stable and relatively error-free, suitable for user utilization. Below, we will address key aspects related to its objectives and contents, structure, applicability, and accessibility.

3.5. Objective and Contents

Given that Information Literacy (IL) is a key competence for students, MobILcaps aims for the following objectives :

- Contribute to self-directed IL learning through mobile learning.
- Foster a critical attitude in selecting information sources.
- Provide an innovative and open-access educational resource to assist in advanced information searching, evaluation, and dissemination.
- Offer basic tools for academic paper creation, including the final degree project.

The content proposal is based on the philosophy of microlearning, focusing on small interconnected content fragments, forming concise learning units. Pillars, or educational capsules, were designed to create multiple individual content fragments, which can be combined to form a topic. These capsules are characterized by their brevity (ranging from a few minutes to a maximum of 15 minutes) and granularity. They center around a single theme, concept, or idea. Their nature is multimedia and informal in learning pace. In this regard, the MobILcaps app show as Fig. 3, consists of accessible, brief, and suitable content for students' self-directed IL learning. They are organized into six capsules corresponding to the ACRL framework for information literacy education (2015) [3]. Each capsule includes a central concept, as well as practical questions.

When developing the app's content, contributions from Cognitive Load Theory (CLT) were taken into account. Its two fundamental components are working memory and long-term memory [52], [53]. These structures help overcome potential limitations of cognitive construction processes by utilizing interconnected fragments of information, forming a cohesive, simple unit [4]. Thus, the creation of different learning capsules was guided by breaking down knowledge into fragments and building up a unified, coherent, useful, and applicable understanding.

Fig. 3. Capsules in the MobILcaps app

3.6. Capsule Structure

The capsules followed an internal structure that was schematic, coherent, and synthetic. It included their title, a brief introductory microvideo, a summary, key concepts, microcontents, maps, and specific resources.

To ensure effectiveness and quality, a user-friendly and complete internal structure was chosen, based on students' expressed perceptions :

- Capsule name, grounded in the ACRL framework.
- Brief and schematic introductory clip. Microcontents for presentation.
- Theoretical content for each dimension.
- Practical resources relevant to students' competency needs.
- Basic bibliography.
- Graphic synthesis using idea maps (Don't forget...).
- Additional content and resources for knowledge expansion.
- Self-assessment quiz to review learning (Quick-quiz).

The internal structure of MobILcaps is based on the interrelation among its capsules. However, each capsule represents a distinct dimension within the app's framework, and its content and resources can be used independently. We are aware of the varying importance of IL in different Social Sciences degree programs.

3.7. Applicability

The application's results demonstrate its fundamentally practical nature. One of MoILcaps' most significant characteristics is its versatility. Regarding students and academic programs, the application is primarily intended for Social Sciences students, specifically those pursuing degrees in Education, Information and Communication, Economics, and Business Administration. However, due to its applicability for digital and mobile literacy development, it can be used in other programs as well as by postgraduate students.

3.8. Accessibility

The advantage of a Progressive Web App (PWA) lies in its accessibility and ease of installation. Access to the application is achieved through this URL www.infocompetencias.org/mobilcaps/app, both for Android systems (via the Google Chrome browser) and iPhones (via Safari).

Following the implementation of the provisional version of the application, students' perception was highly positive, highlighting the utility and value of the MoILCaps app for complementing and reinforcing knowledge, as well as systematizing fundamental aspects of academic paper development. The use of the application aligns with the sector's needs and current cultural trends in mobile education. The expansion features and the gamified assessment feedback for each capsule were highly regarded. Similarly, the PWA format helps mitigate compatibility issues and facilitates installation

and use. In any case, the use of a PWA, although it has multiple advantages, is still a challenge because its use among university students has not yet become widespread. One of the challenges is to show its advantages and ease of use. Another is to teach that it has accessibility advantages in relation to ubiquity and immediacy. However, and although it is a common aspect of apps and PWA, connectivity must be guaranteed for its correct use. In that sense, and although this is not a different element to the applications, students associate the use of the PWA more to the similarities they present with the classic web than with the applications themselves. Nevertheless, despite the success of the initial pilot, proposed improvements were integrated, and a re-evaluation was conducted. The second evaluation demonstrated the tool's effectiveness, applicability, utility, and value. Thus, it stands as a useful instrument for optimizing self-directed learning through microcontents and expansion materials.

4. Conclusion

Throughout this work, it is evident that despite universities offering resources to support students in their academic activities, these resources fall short. As a resource, MobILcaps serves as a simple and engaging tool for acquiring the necessary IL competencies required by students. It also promotes meta-learning in a user-friendly yet rigorous manner. It is, therefore, an optimizer of teaching and learning processes, helping address students' limitations in higher education environments. In this context, information search, access, selection, and management are fundamental challenges for students. Additionally, the necessary role of educators and particularly libraries in competency acquisition and development, fostering self-learning and autonomy, is emphasized. The value of this application lies, to a large extent, in the ease of use and the intuitive nature of its handling. On the other hand, and although it was conceived for university students of Social Sciences, the contents and its practical nature make it applicable to the different areas of knowledge. This is not only because information literacy is a core competency in higher education; In addition, it is increasingly necessary adequate access, management and dissemination of information for academic works. Furthermore, the application guarantees proper functionality and compatibility across different devices. Given the scarcity of applications focused on ACRL's new Framework-centered IL education (2015), it is recommended that libraries distribute both the application's Apk and the content portal. It should be noted that this application can be adapted for other contexts, with its content, structure, and form serving as a foundation for developing new applications. Thanks to the ease of use and versatility, since its publication, this application has been widely used by students. Its success has been ratified by the number of downloads it has had since it was released and in the adaptation to the English and Portuguese languages, which is taking place at the moment due to the interest of various universities

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Data and Software Availability Statements

https://infocompetencias.org/mobilcaps/instalacion.php

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