

Assessment strategies and instruments in university contexts: an approach from academic practice

Estrategias e instrumentos de evaluación en contextos universitarios: un enfoque desde la práctica académica

Received: 28/03/2025 - Accepted: 02/07/2025

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Abstract

This research examines the use of assessment instruments in higher education, focusing on the Catholic University of Santa María during the first semester of 2024. The main objective was to analyze the type, frequency, and effectiveness of these instruments in the teaching-learning process. To this end, a mixed-method approach was adopted, using the historical-logical method to collect data. A quantitative analysis of institutional syllabi was conducted, complemented by a critical review of recent scientific literature. The findings reveal a predominant use of traditional instruments, with a significant emphasis on written exams (23%) and oral participation (12%), although with notable variations between faculties. Structural deficiencies were identified, such as ambiguity in assessment criteria (reported by 74% of students) and considerable faculty resistance to innovative approaches (85%). However, the pedagogical value of tools such as rubrics and portfolios is recognized, as they foster more objective, reflective processes consistent with a competency-based approach. In conclusion, universities need to implement ongoing teacher training strategies, foster a culture of authentic and diverse assessment, and harness the potential of emerging technologies such as artificial intelligence to modernize assessment processes, thereby ensuring greater equity and educational relevance.

Keywords: educational assessment, assessment instruments, higher education.

Resumen

La presente investigación examina la aplicación de instrumentos de evaluación en la educación superior, centrándose en la Universidad Católica de Santa María durante el primer semestre de 2024. El objetivo principal fue analizar el tipo, la frecuencia y la efectividad de dichos instrumentos en el proceso de enseñanza-aprendizaje. Para ello, se adoptó un enfoque mixto, utilizando el método histórico-lógico para recopilar datos. Se realizó un análisis cuantitativo de sílabos institucionales, complementado con una revisión crítica de literatura científica reciente. Los hallazgos revelan un uso predominante de instrumentos tradicionales, con un énfasis significativo en exámenes escritos (23 %) y participación oral (12 %), aunque con variaciones notables entre facultades. Se identificaron deficiencias estructurales, como la ambigüedad en los criterios de evaluación (reportada por el 74 % de los estudiantes) y una resistencia considerable del profesorado hacia enfoques innovadores (85 %). Sin embargo, se reconoce el valor pedagógico de herramientas como rúbricas y portafolios, ya que favorecen procesos más objetivos, reflexivos y coherentes con un enfoque por competencias. En conclusión, la universidad necesita implementar estrategias de formación docente continua, fomentar una cultura de evaluación auténtica y diversificada, y aprovechar el potencial de tecnologías emergentes como la inteligencia artificial para modernizar los procesos evaluativos, garantizando así mayor equidad y pertinencia educativa.

Palabras clave: evaluación educativa, instrumentos de evaluación, educación superior.

Introduction

Evaluation is a fundamental component of the teaching-learning process in higher education, as it allows for the assessment not only of knowledge acquisition but also of the development of skills, attitudes, and professional competencies. In this regard, evaluation instruments play a crucial role, as their appropriate selection and application directly impact the quality of learning.

In recent years, competency-based approaches have driven the need to diversify evaluative methods and instruments, promoting a more formative, contextualized, and evidence-based evaluation. However, in many university contexts, traditional methods such as written exams and oral participation continue to dominate, limiting the capacity to assess complex learning outcomes.

This study focuses on analyzing the evaluation instruments applied at the Universidad Católica de Santa María, referencing the odd semester of the 2024 academic year. The purpose is to identify the instruments used, examine their practical application across various academic programs, and propose recommendations for their improvement, aligned with a competency-based approach.

To achieve this, a mixed-methods methodology was employed, combining quantitative analysis of data extracted from the institutional syllabus system with a bibliographic review of relevant studies published between 2010 and 2024. The methodological framework was grounded in the historical-logical method, and bibliographic searches were conducted in recognized academic databases such as Scopus, IEEE Xplore, Springer Link, and Science Direct.

One of the key axes in university evaluation is justice and inclusion in teaching practices. Ucan et al. (2025) identify that educators adopt rational, intuitive, and dependent decision-making styles to select evaluative methods that promote equity. This concern is also reflected in studies such as that of David (2025), who proposes an environmental evaluation model that balances theory and practice through formative and summative strategies oriented towards sustainability. Similarly, Rodríguez-Ferrer et al. (2025) argue that playful methodologies, such as game-based learning and escape rooms, enhance student motivation and create more inclusive evaluative contexts.

Another relevant aspect is the integration of emerging technologies in evaluative processes. Abbas et al. (2025) highlight the role of large language models (LLMs) as efficient tools for generating automated feedback, improving the quality of evaluations without replacing teacher intervention. Additionally, Castillo-Manzano et al. (2024) demonstrate that continuous digital evaluation through virtual tests contributes to reducing dropout rates and increasing student participation. Concurrently, Annamalai et al. (2025) emphasize how Gardner's theory of multiple intelligences can be successfully integrated into LMS platforms to diversify evaluative instruments.

Finally, the construction of specific and culturally sensitive evaluation instruments emerges as a transversal axis. Mandasari et al. (2024) develop an oral evaluation model based on Indonesian culture, reinforcing the communicative competence of students learning English as a foreign language. In this regard, Yu et al. (2025) appreciate the use of portfolios as a means of formative evaluation, highlighting their acceptance among students of Japanese as a foreign language. Other studies, such as that by Gumeta (2025), document the challenges of implementing authentic evaluation methods in virtual contexts, particularly in culturally conservative environments like China. Complementarily, Kusmawan and Sukmayadi (2024) propose a validated scale for students to self-assess their digital competencies, aligning evaluative methods with the demands of virtual learning environments.

This article aims to provide empirical and reflective evidence on the current use of evaluation instruments in the university context, highlighting strengths, limitations, and their potential to contribute to a more just, innovative, and learner-centered evaluative culture.

To this end, the following general objective is proposed: to analyze the application of evaluation instruments at the Universidad Católica de Santa María, in order to assess their effectiveness, relevance, and alignment with a competency-based approach in higher education. Additionally, specific objectives are established: (1) to identify the types of evaluation instruments used in undergraduate courses during the odd semester of the 2024 academic year; (2) to evaluate the frequency and practical application of these instruments across different faculties and academic programs; (3) to determine the strengths and limitations of the instruments employed based on quantitative analysis and a review of previous studies; and (4) to propose recommendations aimed at improving the quality of the evaluative process and promoting the use of innovative evidence-based methodologies.

Methodology

To analyze the evolution and current state of evaluation instruments in higher education, the historical-logical method proposed by Torres (2020) was employed, considering sources published between 2010 and 2024. The bibliographic search was conducted in recognized scientific databases such as Scopus, IEEE Xplore, Springer Link, and Science Direct, focusing on studies related to evaluation instruments in higher education.

Research published in both Spanish and English addressing topics linked to methodology, evaluation instruments, higher education, and competencies was included. Keywords were defined by the authors based on the study's objectives, prioritizing publications in high-impact journals and reports of recognized relevance.

The research adopted a mixed-methods approach, integrating qualitative and quantitative methods for data collection and analysis regarding the current state of evaluation instruments in higher education and their relation to competency development.

Quantitative analysis was conducted using data from the syllabus system encompassing all faculty, courses, and professional schools at the Universidad Católica de Santa María for the odd semester of the 2024 academic year. This allowed for the identification of trends and patterns in the application of evaluative instruments.

Conversely, the review of previous research facilitated the understanding of educators' perceptions regarding the effectiveness of these instruments. Data extracted from selected studies were organized and analyzed using synthesis techniques, allowing for a narrative synthesis of the results. Among the evaluated topics were the main types of evaluation instruments utilized.

Results

The analysis of the use of evaluation instruments by faculty at the Universidad Católica de Santa María reveals that the written exam is the most commonly used instrument, followed by a variety of evaluative practices that reflect the pedagogical particularities of each discipline.

Regarding evidence-based product instruments, in the Faculty of Architecture, Civil and Environmental Engineering, for example, the practice report predominates (41%) and projects (22%), suggesting a strong orientation towards experiential learning and real problem-solving, consistent with the competency-based approach (Bazán, 2024). This pattern is echoed in faculties such as Physical and Formal Sciences and Engineering, where reports (39%) and projects (26%) also hold significant weight. In contrast, in faculties like Economic-Administrative Sciences, a more balanced use is observed between practice reports (22%) and projects (29%), indicating a more diversified strategy, even if not necessarily innovative (Hamodi, 2015; Chisag et al., 2019).

However, despite this variety, there remains a limited use of resources that promote self-regulation, critical thinking, and collaborative work—key aspects of authentic assessment (Varela & Álvarez de Sotomayor, 2023). Tools such as rubrics and portfolios, widely recognized for their ability to measure higher-order competencies (Cisneros-Cohernour et al., 2012), continue to be underutilized in most faculties. Moreover, the category "Other" accounts for considerable percentages in several academic units, which may indicate a lack of systematization or clarity in the classification of instruments. These findings reinforce the need to implement institutional policies that standardize evaluation criteria, strengthen teacher training in innovative practices, and ensure greater coherence between learning objectives and the instruments used (Barros et al., 2019).

Application of artificial intelligence in evaluation

The future of university evaluation will be automated, personalized, and online, focusing on both theoretical and practical knowledge, as well as the development of key competencies such as critical thinking, creativity, and proficiency in artificial intelligence (Hernández-León, 2024). In response to this technology, educators adopt diverse stances: from prohibition and adherence to traditional methods to integration as a pedagogical resource. It is recommended to diversify evaluation instruments and encourage continuous feedback for ethical and formative use of artificial intelligence (Sánchez, 2023).

Evidence-based evaluation

According to Huerta (2018), evidence-based evaluation is structured into four types: knowledge (theoretical), doing (skills), being (attitudes and values), and product (tangible results), utilizing instruments such as rubrics, portfolios, field diaries, essays, and presentations. In this context, the model proposed by Tejedor de León and Tejedor de León (2024) presents an authentic and contextualized evaluation, articulated with curricular planning and oriented towards competency development. Nardoni (2022) emphasizes that formative evaluation provides continuous feedback and aligns pedagogical strategies with learning objectives, strengthening its validity. Furthermore, Ahumada (2005) highlights that authentic evaluation focuses on real processes and contexts through

self-assessment, peer assessment, and hetero-evaluation, differentiating itself from traditional approaches by promoting meaningful activities with practical application.

Evaluation criteria at the Universidad Católica de Santa María

The evaluation of learning is structured around three types of evidence: knowledge, performance, and product, aligned with the competency-based approach. Knowledge evaluation assesses conceptual mastery through written tests and oral participation; performance evidence measures practical application in real contexts through checklists and rubrics; and product evidence collects tangible results such as reports and projects, reflecting the student’s ability to apply what has been learned (Tobón, 2013).

Application of evaluation instruments at the Universidad Católica de Santa María

The quantitative analysis of the use of evaluation instruments was conducted using data from the university’s syllabus system corresponding to the odd semester of the 2024 academic year. The results show that the most commonly used instruments are the written exam and oral participation, while the least employed include practice guides, reports, and exercise resolutions, as detailed in Table 1.

Table 1
Usage of evaluation instruments at the Universidad Católica de Santa María

Instrument	Percentage (%)
Written exam	23%
Oral participation	12%
Checklists	11%
Practice report	10%
Rubrics	9%
Questionnaires	9%
Project	5%
Monographs	3%
Practice guide	2%
Reports	2%
Exercise resolutions	1%
Others	13%

Analysis of the use of evaluation instruments by faculty at the Universidad Católica de Santa María

The following results were obtained: the most commonly used instruments are the written exam and oral participation, as shown in Table 2.

Table 2
Use of evaluation instruments by faculty

Faculty	Questionnaire %	Written Exam %	Practice Guide %	Practice Report %	Checklists %	Oral Participation %	Rubrics %	Others %
Architecture, Civil and Environmental Engineering		21%		12%	16%			51%
Accounting and Financial Sciences		29%			8%	15%		53%

Biological and Chemical Sciences and Engineering		22%		17%	12%		49%	
Physical and Formal Sciences and Engineering		22%		11%	14%		48%	
Economic-Administrative Sciences	11%	24%				12%	53%	
Pharmaceutical, Biochemical, and Biotechnological Sciences		24%		15%	16%		45%	
Legal and Political Sciences		27%				19%	10%	44%
Social Sciences and Humanities		24%				16%	11%	49%
Nursing	17%	22%					10%	51%
Human Medicine		20%		12%		15%		53%
Obstetrics and Child Care		23%	9%			16%		52%
Dentistry		20%				14%	18%	48%

Analysis of the use of evidence-based evaluation instruments at the Universidad Católica de Santa María

For the quantitative analysis of the use of evaluation instruments by type of evidence, data from the syllabus system of all faculties was utilized. The following results were obtained:

Knowledge evaluation

The most commonly used instruments are the written exam and oral participation, as evidenced in Table 3.

Table 3

Use of evaluation instruments by knowledge evidence

Instrument	Percentage (%)
Written exam	46%
Oral participation	25%
Questionnaires	18%
Oral exam	3%
Others	9%

Performance evidence

The most commonly used instruments are checklists and rubrics, as shown in Table 4.

Table 4*Use of evaluation instruments by performance evidence*

Instrument	Percentage (%)
Checklists	48%
Rubrics	38%
Reports	7%
Observation Sheets	3%
Oral Evaluation	1%
Others	3%

Product evidence

The most commonly used instruments are the practice report and project, as shown in Table 5.

Table 5*Use of evaluation instruments by product evidence*

Instrument	Percentage (%)
Practice Report	38%
Project	17%
Monographs	10%
Practice Guide	7%
Exercise Resolutions	6%
Clinical Cases	3%
Model	2%
Others	16%

Analysis of the use of evaluation instruments at the Universidad Católica de Santa María by faculty

This analysis is based on data from the syllabus system of all faculties and courses. The results obtained were:

Instruments for knowledge evidence evaluation

The most commonly used instruments are the written exam and oral participation, as shown in Table 6.

Table 6*Use of evaluation instruments by knowledge evidence and faculty*

Faculty	Questionnaires %	Written Exam %	Oral Participation %	Others %
Architecture, Civil and Environmental Engineering	19%	44%	20%	17%
Accounting and Financial Sciences	25%	47%	13%	35%
Biological and Chemical Sciences and Engineering	20%	47%	21%	12%
Physical and Formal Sciences and Engineering	21%	47%	19%	13%
Economic-Administrative Sciences	20%	45%	22%	13%

Pharmaceutical, Biochemical, and Biotechnological Sciences	20%	47%	27%	6%
Legal and Political Sciences		45%	31%	24%
Social Sciences and Humanities	15%	45%	30%	10%
Nursing	34%	45%	17%	4%
Human Medicine	15%	44%	34%	7%
Obstetrics and Child Care	16%	45%	31%	8%
Dentistry	18%	42%	29%	11%

Instruments for performance evidence evaluation

The most commonly used instruments are checklists and rubrics, as shown in Table 7.

Table 7

Use of evaluation instruments by performance evidence and faculty

Faculty	Observation Sheets %	Reports %	Checklists %	Rubrics %	Others %
Architecture, Civil and Environmental Engineering		3%	68%	26%	3%
Accounting and Financial Sciences		7%	44%	41%	8%
Biological and Chemical Sciences and Engineering		6%	47%	43%	4%
Physical and Formal Sciences and Engineering		14%	56%	30%	12%
Economic-Administrative Sciences		5%	44%	46%	5%
Pharmaceutical, Biochemical, and Biotechnological Sciences		9%	65%	17%	9%
Legal and Political Sciences		14%	18%	50%	18%
Social Sciences and Humanities		6%	42%	49%	3%
Nursing		15%	38%	39%	8%
Human Medicine	11%		42%	33%	14%
Obstetrics and Child Care	26%		35%	30%	8%
Dentistry		3%	14%	83%	

Instruments for product evidence evaluation

The most commonly used instruments are the practice report and project, as shown in Table 8.

Table 8*Use of evaluation instruments by product evidence and faculty*

Faculty	Clinical Cases %	Practice Guide %	Practice Report %	Monographs %	Project %	Others %
Architecture, Civil and Environmental Engineering			41%	10%	22%	27%
Accounting and Financial Sciences			36%	11%	5%	48%
Biological and Chemical Sciences and Engineering			57%	16%	9%	18%
Physical and Formal Sciences and Engineering			39%		26%	35%
Economic-Administrative Sciences			22%	20%	29%	29%
Pharmaceutical, Biochemical, and Biotechnological Sciences		12%	60%		8%	20%
Legal and Political Sciences			31%	16%		53%
Social Sciences and Humanities			31%	8%	23%	38%
Nursing	11%		29%		11%	49%
Human Medicine	12%	11%	38%			39%
Obstetrics and Child Care		32%	21%	13%		34%
Dentistry		14%	35%	16%		35%

Discussion

The results obtained from this research confirm well-documented trends in previous studies on university evaluation practices, where a clear predominance of traditional methods is evident, particularly the use of the written exam as the primary instrument. Research by Barros, Casquete, and Vera (2019) reveals that 76% of educators opt for this type of evaluation, which limits the assessment of complex competencies such as problem-solving, critical thinking, and autonomy. This preference is reinforced by a marked resistance to change, as 85% of faculty members do not explore innovative evaluative alternatives, reflecting a significant gap between the rhetoric of competency-based approaches and their actual application in university classrooms.

In the specific case of the Universidad Católica de Santa María, the quantitative analysis of syllabi shows that the most frequently used instruments are the written exam (23%), oral participation (12%), and checklists (11%). This selection responds to traditional logics focused on content reproduction rather than on demonstrating skills or developing the student holistically. Although there is a progressive inclusion of practice reports (10%) and rubrics (9%), their use remains limited compared to formative methods that provide richer evidence of learning. Furthermore, the low implementation of technological tools and evaluative criteria centered on socio-emotional skills—as noted by Cisneros-Coheurnour et al. (2012)—weakens the capacity of evaluation to promote meaningful learning.

When disaggregating the data by faculty, a disparate distribution in the selection of instruments is observed. For example, the Faculty of Legal and Political Sciences favors the written exam (27%) and oral participation (19%), reproducing a traditional model. In contrast, faculties such as Dentistry and Nursing show greater openness to formative instruments, highlighting the use of rubrics (18%) and questionnaires (17%),

respectively, as means of continuous evaluation. These differences reflect not only disciplinary particularities but also diverse institutional attitudes toward methodological change, an aspect that should be considered in future strategies for teacher and curricular development.

Finally, when categorizing the instruments according to the type of evidence they collect, the preeminence of declarative knowledge evaluation is confirmed: the written exam (46%), oral participation (25%), and questionnaires (18%) represent the largest proportions. In contrast, instruments that assess performance (checklists: 48%, rubrics: 38%) and product evidence (practice reports: 38%, projects: 17%) are used more moderately. This landscape underscores the urgent need to strengthen the competency-based approach through the sustained incorporation of innovative instruments aligned with authentic learning evidence, as proposed by Bazán (2024), Hamodi (2015), and Varela and Álvarez de Sotomayor (2023), who highlight the transformative value of formative evaluation for achieving more equitable, meaningful, and professionally relevant higher education.

Conclusions

The results indicate a clear trend toward evaluation centered on declarative knowledge, primarily represented by the written exam (23%) and oral participation (12%). This traditional approach limits the assessment of complex skills such as critical thinking, problem-solving, and creativity. This prevalence is partly explained by insufficient teacher training in innovative evaluation: 85% of educators have not developed competencies in this area, restricting the incorporation of more formative and contextualized methods. Although students express an increasing demand for technologies and evaluative practices oriented toward competencies (55%), institutional responses are still insufficient to transform the current paradigm.

The analysis by faculty reveals a diversity of approaches aligned with disciplinary particularities. While the Faculty of Legal and Political Sciences predominantly uses the written exam (27%), in Dentistry both the written exam (20%) and the use of rubrics (18%) stand out, and in Nursing, a more balanced strategy is observed between the written exam (22%) and questionnaires (17%). However, this variety of instruments does not guarantee real innovation if it is not accompanied by a thorough review of evaluative criteria and the types of evidence collected. Despite the existence of tools such as portfolios and projects, their application remains marginal, and 74% of students report ambiguities in evaluation criteria, affecting the transparency and fairness of the process.

Finally, when classifying the instruments according to the type of evidence collected, a significant imbalance is observed: the majority measure knowledge (written exam 46%, oral participation 25%). Checklists (48%) and rubrics (38%) are relatively frequently used to assess performance, while practice reports (38%) and projects (17%) measure product evidence, representing an opportunity to strengthen more authentic practices aligned with professional objectives. Nonetheless, the limited attention to self-reflection, student autonomy, and the contextualized evaluation of learning demands a deeper transformation toward comprehensive models that articulate knowledge, action, and meaningful outcomes.

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