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Comprehensive management of student scientific events in Higher Education: a case study in the Civil Engineering program

Gestión integral de eventos científicos estudiantiles en la Educación Superior: estudio de caso en la carrera Ingeniería Civil

Gestão integral de eventos científicos estudantis na Educação Superior: estudo de caso na carreira de Engenharia Civil

Abstract

Introduction: research training of university students constitutes a priority in Cuban higher education. However, shortcomings were identified in the management of student scientific events within the Civil Engineering program at the Central University "Marta Abreu" of Las Villas, limiting knowledge dissemination and the development of research competencies. **Objective:** to propose a methodological guide for the comprehensive management of the planning, organization, implementation, and evaluation stages of student scientific events in the Civil Engineering program. **Method:** a mixed-methods study was conducted using a case study design. Theoretical methods included analytical-synthetic, historical-logical, and inductive-deductive approaches. Empirical methods comprised document analysis, virtual observation, student surveys, and faculty interviews. **Results:** the diagnostic assessment revealed methodological, organizational, and evaluation-related shortcomings in the student scientific events. Based on these findings, a methodological guide structured around the four stages of the student scientific event life cycle was designed and subsequently validated by experts. **Conclusion:** the proposed methodological guide enhances the strategic planning of student scientific events. It also systematizes management processes and indicator-based evaluation, thereby contributing to the quality of the Civil Engineering program.

Keywords: higher education, student scientific events, university management, methodological guide, civil engineerin

Resumen

Introducción: la formación investigativa del estudiantado universitario constituye una prioridad en la Educación Superior cubana. Sin embargo, en la carrera Ingeniería Civil de la Universidad Central "Marta Abreu" de Las Villas se identificaron insuficiencias en la gestión de los eventos científicos estudiantiles, lo que limita la socialización del conocimiento y el desarrollo de competencias investigativas.

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Objetivo: proponer una Guía metodológica para la gestión integral de las etapas de planificación, organización, ejecución y evaluación de los eventos científicos estudiantiles en la carrera Ingeniería Civil. **Método:** se desarrolló una investigación con enfoque mixto, mediante un diseño de estudio de caso. Se emplearon métodos teóricos como el analítico-sintético, histórico-lógico e inductivo-deductivo y empíricos como el análisis documental, la observación virtual, las encuestas a estudiantes y las entrevistas a profesores. **Resultados:** el diagnóstico destacó insuficiencias metodológicas, organizativas y de evaluación en los eventos. A partir de ellas se diseñó una Guía metodológica con las cuatro etapas del ciclo de vida de los eventos científicos estudiantiles, validada por especialistas. **Conclusión:** la Guía metodológica propuesta favorece la planificación estratégica de los eventos. También sistematiza los procesos de gestión y la evaluación basada en indicadores, lo cual contribuye a la calidad de la carrera Ingeniería Civil.

Palabras clave: educación superior, eventos científicos estudiantiles, gestión universitaria, guía metodológica, ingeniería civil

Resumo

Introdução: a formação em pesquisa dos estudantes universitários constitui uma prioridade na educação superior cubana. Entretanto, foram identificadas insuficiências na gestão dos eventos científicos estudantis do curso de Engenharia Civil da Universidade Central "Marta Abreu" de Las Villas, o que limita a socialização do conhecimento e o desenvolvimento de competências investigativas. **Objetivo:** propor um guia metodológico para a gestão integral das etapas de planejamento, organização, execução e avaliação dos eventos científicos estudantis no curso de Engenharia Civil. **Método:** foi realizada uma pesquisa com abordagem mista, por meio de um delineamento de estudo de caso. Foram empregados métodos teóricos, como o analítico-sintético, histórico-lógico e indutivo-dedutivo, e métodos empíricos, como análise documental, observação virtual, aplicação de questionários aos estudantes e entrevistas com professores. **Resultados:** o diagnóstico evidenciou insuficiências metodológicas, organizacionais e avaliativas nos eventos científicos estudantis. Com base nesses resultados, foi elaborado um guia metodológico estruturado nas quatro etapas do ciclo de vida desses eventos, posteriormente validado por especialistas. **Conclusão:** o guia metodológico proposto favorece o planejamento estratégico dos eventos científicos estudantis. Além disso, sistematiza os processos de gestão e a avaliação baseada em indicadores, contribuindo para a qualidade do curso de Engenharia Civil.

Palavras-chave: educação superior, eventos científicos estudantis, gestão universitária, guia metodológico, engenharia civil



Introduction

Managing scientific activity in higher education institutions is a strategic part of strengthening their core functions and extending their results into academic, productive, and social spheres. Within this framework, student scientific events are among the best-established vehicles for sharing the knowledge students generate, linking research with training, and giving the results achieved some institutional visibility (Getz & Page, 2024). Internationally, these academic venues have changed considerably, adding in-person, virtual, and hybrid formats that have widened both participation and scientific exchange (Díaz Blanca et al., 2024).

Several authors have approached the management of scientific events from different angles. Castro-Rodríguez (2025) examined student scientific societies in terms of their achievements and impact and found that they served as key settings for promoting undergraduate research and building academic collaboration networks. Ishak et al. (2024) traced how conference management systems have evolved and concluded that a well-structured allocation of responsibilities and processes largely determines how efficiently such events run. Along similar lines, Adaile Benítez et al. (2025) proposed a web platform for managing university academic events and stressed that the planning, analysis, design, and construction phases need to be structured as a coordinated whole.

In Latin America, managing student scientific events has gained weight as an indicator of institutional development and of the quality of academic processes. The United Nations Educational, Scientific and Cultural Organization recognized the need to strengthen the mechanisms through which students take part in science, noting that these venues helped build research capacity in younger generations and spread scientific output more widely (Organización de las Naciones Unidas para la Educación, la Ciencia y la Cultura [UNESCO], 2022). Consistent with this view, the 2030 Agenda for Sustainable Development, and Goal 4 in particular, set specific targets for promoting scientific research as an essential element of quality education (Organización de las Naciones Unidas [ONU], 2015).

In Cuba, the management of science and innovation has become a pillar of public administration and institutional development (Díaz-Canel, 2022), and student scientific activity has grown stronger as well. Suárez Fernández et al. (2024) documented this in a bibliometric study of the University of Moa, where they characterized student scientific output through productivity and institutional management indicators. Under these policies, Cuban universities hold student scientific events every year at several levels: program, faculty, university, territory, and nation.

At the institutional level, the Central University “Marta Abreu” of Las Villas established the Integrated Policy for Science, Technology, Innovation, and Graduate Education (PICTIyPG, from its Spanish name; Universidad Central “Marta Abreu” de Las Villas [UCLV], 2022). The policy defined an organizational model that links student scientific activity, from the Student Scientific Work Groups (GTCE) up to the highest research levels, with the processes of science and innovation management. It also acknowledges the strategic role of student scientific events, which serve both to share knowledge and to connect student research with institutional priorities.

Engineering programs bring their own features to the management of student scientific events: the research is applied and tied to strategic sectors of the economy. Quintero-Dávila (2026) examined the epistemic priorities that should guide research training for Latin American engineers and pointed to the importance of connecting research with the sustainable development goals, a link that is central to strengthening university management in programs of this kind. At UCLV, the Civil Engineering program has built a solid record of scientific activity. Its research reaches national and international audiences; one example is the work on adding calcined clays to concrete to produce sustainable construction materials, together with contributions from the structural analysis area (Martirena Hernández, 2025).

Even so, several shortcomings were identified in the Civil Engineering program at UCLV regarding the comprehensive management of student scientific events, specifically in methodological planning, the systematic organization of activities, and the evaluation of results. Without structured methodological guidance, the research potential of the student body goes underused, and these events struggle to establish themselves as tools for managing science (UCLV, 2022).

These conditions pointed to a clear need for management instruments that would organize the processes involved and guide decisions at each stage of an event, from planning through evaluation. Methodological guides are documents that give procedural direction for carrying out particular activities by laying out stages, procedures, and criteria in order, as the development of guides for evaluation processes in Cuba shows (Pérez Rodríguez & Colas Chavez, 2022). Applied to the management of scientific events, they help standardize practices, make better use of resources, and keep the quality of outcomes at an adequate level (Getz & Page, 2024).

Against this background, the present study aimed to propose a methodological guide for the comprehensive management of the planning, organization, execution, and evaluation stages of student scientific events in the Civil Engineering program at UCLV. The proposal drew on the findings of a diagnostic assessment and on the theoretical references that explain how scientific events are managed in higher education today. It seeks to improve university management and, more specifically, to align student scientific activity with the program's own research lines.

Methods and materials

This study used a mixed-methods approach that combined qualitative and quantitative techniques, and it was built as a case study of the Civil Engineering program at UCLV. According to Cabascango Camuendo and Berrios Rivas (2024), this choice makes it possible to contextualize an institutional setting and analyze it in depth. The design was descriptive and propositional, since the aim was both to characterize the current situation and to ground a proposal for improvement (Hernández Sampieri & Mendoza Torres, 2023).

Dialectical materialism served as the general scientific method and provided

the theoretical and methodological basis for the study. This method "establishes the systemic interrelation between the facts and phenomena of reality itself" (Valdes et al., 2022, p. 6). It allowed student scientific activity and the management of scientific events to be analyzed as parts of a complex, integrated system shaped by institutional and organizational factors. The study drew on theoretical methods, used to process information, and empirical methods, used to collect it. The former supported the analysis, interpretation, and synthesis of the theoretical references and the data obtained; the latter yielded firsthand information from the setting through specific instruments and techniques.

Among the theoretical methods, the historical-logical method traced how the management of scientific events has evolved in higher education and supported the current trends under study. The analytical-synthetic method was used to examine the theoretical literature on student scientific activity and academic event management and to identify the essential components of the process. The inductive-deductive method made it possible to move from observing particular situations in the Civil Engineering program to identifying regularities and methodological requirements for the proposal.

The empirical methods comprised document analysis, virtual observation, interviews, and a survey. Together they made it possible to investigate the object of study, learn its current and contextual reality, and gather the information needed to build a result and reach conclusions (Valdes & Capote, 2023). The document analysis covered eight documents: Study Plan E for the Civil Engineering program; the scientific program and brochure of the Fifth International Scientific Convention of UCLV (2025); the program of the student scientific event at the University of Camagüey; the program of the First Student Scientific Forum, held as part of the Third International Scientific Convention of the University of Cienfuegos; and three calls for the 2025 Student Scientific Forum at the base, university, and national levels.

Observation was conducted virtually because of the energy and connectivity constraints in the country, which have moved many academic activities online. Two virtual scientific events were observed: "Caridad Julia In Memoriam," held at the University of Havana, and the webinar "Gobernanza Universitaria al Día" (University Governance Today). These observations helped identify strengths and weaknesses in managing events in digital settings.

Interviews were held with five UCLV professors who had direct experience organizing and running student scientific events. They were selected for their involvement in planning, evaluating, and coordinating these activities in different faculties. All held the rank of Full or Associate Professor and a Doctor of Science degree, with professional experience ranging from 10 to 42 years, which lent weight and reliability to their assessments. The interviews gathered their views on how systematically student scientific events were run, how well the units involved coordinated with one another, how clear the processes for issuing calls and evaluating papers were, and the main organizational difficulties that limit the quality of these academic venues.

The survey was administered to all 38 fourth-year Civil Engineering students at UCLV for the 2025-2026 academic year, a population chosen because these

students are familiar with all of the program's main research lines. Participation reached 100% of the sample. The instrument was built in digital format on Google Forms, selected for its accessibility, ease of use, and compatibility with the technological conditions of Cuban universities. It contained seven questions on participation in scientific events, types of events, channels of information, awareness of institutional incentives, and the relevance of the proposed methodological guide.

To diagnose how student scientific events were managed, the study defined variables that structured data collection: students' level of participation, the types of events they had taken part in, the channels they used to learn about calls, their awareness of institutional incentives such as the Scientific Merit Award, and the perceived relevance of a methodological guide. These variables were analyzed with a mixed approach. Quantitative data, such as participation percentages, came from the survey, while qualitative input came from the professor interviews and virtual observation. The instruments are available as supplementary files to this article to ensure methodological transparency.

Data were processed using percentage analysis as the statistical-mathematical method, which supported quantitative interpretation of the results from the various instruments. Cross-checking the data across instruments confirmed the regularities that had emerged in the diagnostic assessment and strengthened the conclusions. This triangulation of sources allowed the information to be interpreted rigorously and gave the need for the proposal empirical support.

The proposed methodological guide was assessed through expert judgment. Specialists were selected for their training in Civil Engineering or related construction fields, their years of university teaching, and their involvement in managing student scientific events. A survey was administered to five specialists whose professional careers or work experience spanned 9 to 46 years. They rated the methodological coherence, scientific quality, and relevance of the guide.

Results and discussion

The diagnostic assessment revealed significant weaknesses in how student scientific events are managed in the Civil Engineering program at UCLV. Study Plan E acknowledges that student scientific work is part of training, but it gives no guidelines on how to organize and carry out such events, nor on the methodological steps involved in designing, planning, and holding them (Ministerio de Educación Superior [MES], 2018). The same pattern appeared in the calls for competitions and events that were reviewed: they were broad in scope and did not break the stages of the event life cycle down in any depth.

As for educational relevance, all the professors agreed that student scientific events play an important part in building research skills such as scientific communication, critical thinking, and teamwork. This is consistent with Castro-Rodríguez (2025), who described student scientific activity as a cornerstone of university education. González et al. (2026) similarly described a model in which

students take primary responsibility for building their own knowledge and developing research skills. The diagnostic assessment nevertheless showed that evaluations are not carried out systematically and that the results need greater visibility.

The survey covered all 38 fourth-year Civil Engineering students, and the results were telling: only 39.5% (14 students) had taken part in student scientific events, while 60.5% (24 students) had not. Such low participation hinders the development of research competencies in the program. The problem is not unique to Cuba; recent studies confirm that student involvement in research depends on mentoring, time devoted to research, and institutional funding (Krungkraipetch et al., 2026). Hsu et al. (2025) likewise showed that virtual conferences can level the playing field for scholars with fewer resources and make room for early-career researchers.

Regarding types of events, every participating student had taken part in the Student Scientific Day of the Faculty of Construction, while presence at national or international events was practically nil. This concentration in a single type of event points to little diversity in participation and suggests that students are not making use of other scientific venues that could enrich their training. Among the outcomes obtained, participation and mention categories predominated, and higher-level awards were scarce. The authors consider this evidence of difficulties in both the quality of the papers presented and the prior methodological preparation. These findings agree with Rodrigues da Silva et al. (2021) on the need to diversify the venues for scientific dissemination in order to strengthen research training.

Information about calls reached students mainly through direct contact with professors, social media apps such as WhatsApp and Telegram, and the guidelines or brochures issued by the Office of the Associate Dean for Research and Graduate Studies. Formal institutional channels, including the MES offerings plan and the university's events platform, were left aside, which reflects weaknesses in the institution's strategy for communicating science. Phogat et al. (2025) described the same challenge in recent studies of science communication in the digital age. Research on organizational climate in universities has likewise shown that effective institutional communication through formal channels strengthens the commitment and participation of the academic community (Escobar & Toasa, 2026).

Another notable finding was that 97.4% of the students (37) knew about the Scientific Merit Award, the highest research distinction the university grants. This rules out lack of information about its benefits as the reason for low participation in scientific events. The problem appears to lie instead in how these venues are managed, organized, and publicized. Among the research lines that students regarded as indispensable, construction materials, structures, roads, and technology stood out, which reflects a preference for the profession's core lines.

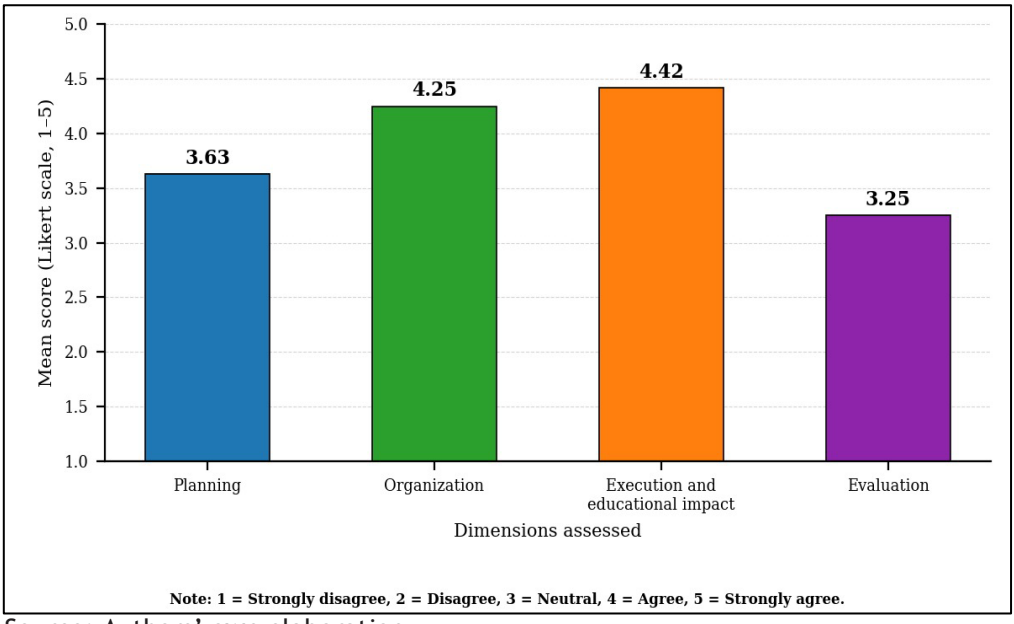
Agreement on the relevance of developing a methodological guide was unanimous: 100% of respondents believed that implementing one would help student scientific events in the program. This unanimous support carries real empirical weight, because it confirms that students recognize current limitations and want instruments that bring order to how these venues are organized. The diagnostic results from the student survey (see Figure 1) reinforce the institutional relevance of the guide as a tool for improving the planning, organization, execution, and

evaluation of student scientific events in the Civil Engineering program.

With the diagnostic results in hand, the authors designed the methodological guide for the comprehensive management of student scientific events in the Civil Engineering program. The guide was defined as an organized document that brings together guidance, procedures, working tools, technological resources, and practical recommendations to facilitate the management of these events. Its structure comprised a cover designed in Adobe InDesign (see Figure 2), a foreword, a table of contents, an introduction, three main chapters, a glossary, and a bibliography.

Figure 1

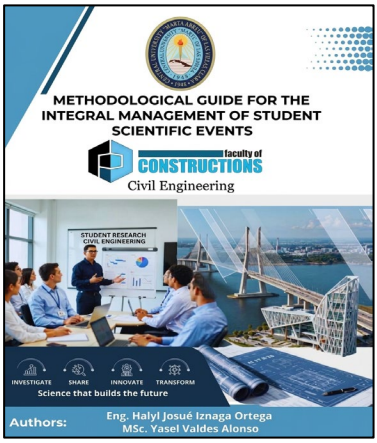
Summary of the Likert-scale survey of students by dimension



Source: Authors' own elaboration.

Figure 2

Cover page of the proposed methodological guide

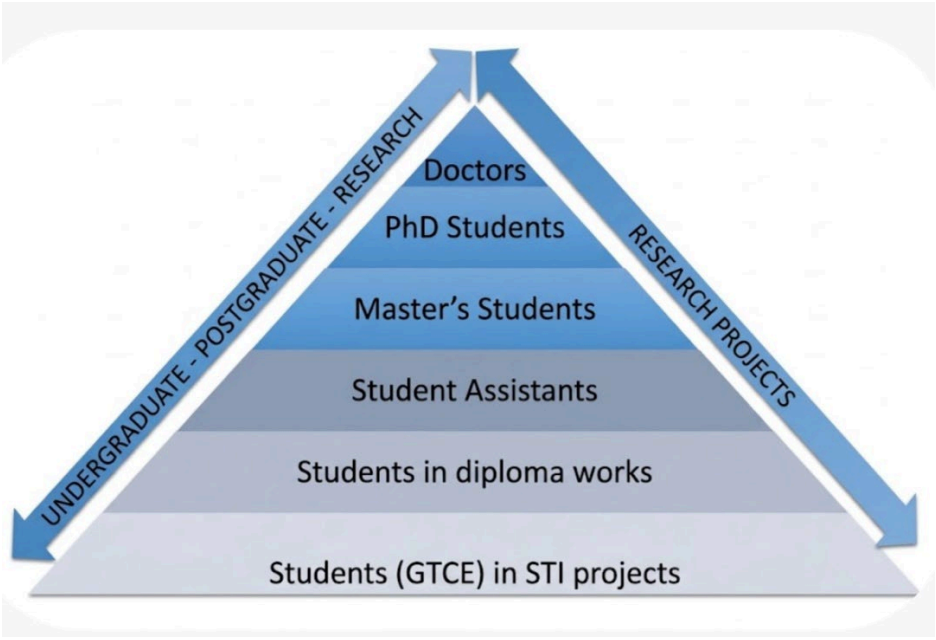


Source: Authors' own elaboration.

The first chapter was titled "Fundamentals of Student Scientific Events." It covered student scientific activity in Cuban higher education, the importance of these formative venues, their particular features in Civil Engineering, and the program's research lines. It gave special attention to the GTCE, regarded as the main organizational structure for students' research training in Cuban universities. At UCLV, the PICTIyPG was adopted as the governing instrument for organizing, directing, and evaluating scientific activity at the institution (UCLV, 2022). A defining feature of this policy was its representation as a pyramid model of scientific training, which depicted how research development progresses from the early stages in the GTCE to the most advanced levels of academic research (see Figure 3).

Figure 3

Structure of the integrated STI and PG policy of UCLV



Source: Adapted from UCLV (2022).

The second chapter, "Comprehensive Management of Student Scientific Events," broke down the four stages of the event life cycle: planning, organization, execution, and closing and evaluation. The third chapter, "Modalities for Holding Student Scientific Events," presented the three main formats for events (in-person, virtual, and hybrid) along with technological tools for managing them comprehensively. These tools included communication tools, beginning with the national promotion of events (see Figure 4), tools for receiving and evaluating papers, videoconferencing tools, and tools for storing and backing up information. The chapter closed with specific recommendations for managing student scientific events well.

Figure 4

Cover of the Cuban Scientific Events Calendar



Source: Ministerio del Turismo (2026).

The planning stage included forming the organizing committee, defining objectives and scope, drawing up the scientific program and its internal schedule, and managing resources. The guide recommended that the organizing committee consist of a chair, an executive secretary, a scientific committee, a technical-logistics committee, and a publicity committee, with clearly defined duties for each. Organizing the committee this way helped distribute responsibilities more evenly and coordinate teamwork, in line with Ishak et al. (2024), who insist on structuring planning within academic management processes.

The organization stage spanned several fronts: preparing calls for papers, promotion and outreach, managing registrations, and receiving and evaluating submissions. For each of these processes, the methodological guide set out specific guidance, such as the elements every call must include, the main recommended communication channels, and criteria for scientifically evaluating each paper. Institutional platforms are given priority. Moodle is an accessible option familiar to both students and professors, and Rodríguez Hernández and Alberteris Rodríguez (2026) found it a suitable choice for virtual scientific events.

The execution stage centers on holding the scientific sessions and on moderating and monitoring activities. It stresses the importance of fostering high-quality academic debate, conducting sessions well, and managing time properly. The guide recognizes that the quality of a scientific event depends not only on the number of studies presented but also on the depth of the analyses and the relevance of the discussions they generate, in keeping with Castro-Rodríguez (2025).

Finally, the closing and evaluation stage covered issuing certificates and announcing awards, such as the Student Scientific Merit Award (see Table 1), writing

the event report, compiling the scientific proceedings, and assessing impact indicators. The guide proposes quantitative indicators, such as the number of papers received and accepted, student participation, and representation of research lines, along with qualitative ones, such as the relevance of the research, the quality of the debates, and participant satisfaction. This agrees with Leak et al. (2025) on the need for evidence-based evaluation processes.

Table 1

Scoring for participation in scientific events toward the Student Scientific Merit Award

Events (results by level)	Relevant Award	Outstanding Award	Mention	Participation
International	10	10	10	8
National	6	5	4	2
Provincial	5	4	3	1
University	4	3	2	1
Faculties	3	2	1	0.5

Source: Adapted from UCLV (2023).

The specialists' assessment of the methodological guide was highly favorable. Recent literature highlights the value of methodological guides as instruments for innovation and for improving teaching practice in higher education (Vélez Bravo & Santana Sardi, 2023). The specialists agreed that the guide has a sound methodological structure, since it organizes the management of student scientific events through a logical, systemic sequence of stages. They argued that one of the proposal's strengths is its direct link to the program's main research lines, which, in their view, ensures the academic relevance of the events and makes it possible to set up effective scientific commissions.

The specialists also viewed the guide's flexibility favorably: it adapts to different types of student scientific events and to in-person, virtual, and hybrid formats. This assessment matches Luna (2025), who notes that expert judgment supplies criteria on the relevance and applicability of methodological and scientific proposals. The specialists also offered recommendations for a future edition and refinement of the proposal. Among them were adding procedures for managing sponsorships and strategic alliances with external organizations and extending the guide to other programs in the strategic construction sector.

These results can be compared with earlier studies. Adaile Benítez et al. (2025) argue that managing academic events at universities requires a methodological structure with iterative phases of planning, analysis, design, and construction. The proposed guide follows those lines by breaking down the stages of the event life cycle. Ishak et al. (2024), for their part, stress the importance of academic management systems for improving organizational processes, which the guide also addresses by proposing institutional platforms such as Moodle.

Rodrigues da Silva et al. (2021) showed, in the same vein, that event

management is a growing field of research worldwide, with most studies concentrated in Australia, the United Kingdom, and the United States. Lourenço et al. (2026) described how the State University of Campinas created a manual for managing academic, scientific, and cultural events that promotes accessibility and inclusion in in-person, hybrid, and virtual formats and standardizes good practices. Unlike that manual, which is general in scope and meant for the whole university, the guide proposed here is tailored to the Civil Engineering program at UCLV and incorporates the faculty's own research lines and the technological conditions of the Cuban context.

Scientific literature on this topic is scarce in Latin America, which reinforces the value of context-specific proposals like the one presented in this study. The results agree with UNESCO (2022) on the need to strengthen student participation in science at universities: every workshop, colloquium, or conference helps spread scientific output and build research skills from the first years of study. The proposed guide follows these international orientations. It also fits UCLV policy, as it organizes the management of student scientific events according to the PICTIyPG guidelines. This consistency with the regulatory frameworks that govern scientific activity in Cuban higher education supports its institutional relevance and its direct application in the Civil Engineering program.

The findings also show that methodological tools cannot be applied uniformly and must be adjusted to the actual conditions of each university. In the case of the methodological guide, the technological solutions it proposes are expected to be viable in Cuba, relying on accessible platforms that work even under the country's connectivity limitations. This context-sensitive approach is a meaningful contribution compared with generic proposals that overlook the particulars of the settings where they are implemented. It also responds to the need to address institutional readiness and digital equity in higher education (Pasi & Dhamak, 2026).

Conclusions

The theoretical and methodological foundations examined show that comprehensive management of student scientific events is a key process in Cuban higher education. It builds students' research, communication, and professional competencies and strengthens their scientific culture. The data collection methods also confirmed that the Civil Engineering program at UCLV has shortcomings in the planning, organization, and evaluation of these events. This points to the need for well-structured methodological guidance so that events can be run systematically and tied to the program's research lines.

The methodological guide is relevant, coherent, and applicable. It is organized around the four stages of the student scientific event life cycle and includes practical guidance, organizational procedures, and technological recommendations suited to the institutional conditions of the Civil Engineering program. The specialists' assessment confirmed that the guide can be applied, that it contributes to strengthening student scientific activity, and that it has methodological quality. They also recognized its value as a support instrument for

the comprehensive management of scientific events in Cuban higher education.

Implementing the methodological guide in the Hydraulic Engineering and Architecture and Urbanism programs of the Faculty of Construction is recommended as a future line of applied research. As a next step, the study suggests evaluating the impact of implementing the guide on student scientific events in the Civil Engineering program during the current academic year.

References

Adaile Benítez, N. T., Camacho Vázquez, M. R., Cárdenas Castellanos, J., Pérez Méndez, J., & Martínez García, J. E. (2025). Desarrollo De Aplicación Web Para Gestión De Eventos Académicos Mediante La Metodología RAD. *Revista multidisciplinaria voces de América y el Caribe*, 2(1), 585-616. http://doi.org/10.69821/REMUVAC.v2i1.145

Cabascango Camuendo, C., & Berrios Rivas, A. T. (2024). Proceso pedagógico de investigación acción para la educación superior en carreras técnicas y tecnológicas: Estudio de caso. *Espíritu Emprendedor TES*, 8(1), 1-18. https://doi.org/10.33970/eetes.v8.n1.2024.368

Castro-Rodríguez, Y. A. (2025). Logros e impacto de las sociedades científicas de estudiantes en las ciencias de la salud. *Revista Cubana de Información en Ciencias de la Salud*, *36*, e2431. https://rcics.sld.cu/index.php/acimed/article/view/2431

Díaz Blanca, L., Vargas Sira, M., & Menoni, G. (2024). Eventos científicos por WhatsApp: su importancia en la construcción colaborativa del conocimiento. *Revista Prefacio*, *8*(13), 39-59. https://doi.org/10.58312/2591.3905.v8.n13.47544

Díaz-Canel Bermúdez, M. (2022). Gestión de Gobierno basada en ciencia e innovación: avances y desafíos. *Anales de la Academia de Ciencias de Cuba*, *12*(2), e1235. https://revistaccuba.sld.cu/index.php/revacc/article/view/e1235

Doran, A. L., Dutch, V., Warren, B., Watson, R. A., Murphy, K., Aldis, A., Cooper, I., Cockram, C., Harp, D., Desmau, M., & Keppler, L. (2024). Planning virtual and hybrid events: Steps to improve inclusion and accessibility. *Geoscience Communication*, *7*, 227-244. https://doi.org/10.5194/gc-7-227-2024

Escobar, E., & Toasa, R. M. (2026). Strategies to improve organizational climate in higher education institutions: A systematized literature review using the SALSA framework. *Frontiers in Education*, *11*, Artículo 1932376. https://doi.org/10.3389/feduc.2026.1932376

Getz, D., & Page, S. J. (2024). *Event studies: Theory and management for planned events*. (5th ed.). Routledge. https://books.google.com.cu/books?id=677mEAAAQBAJ

González, B. O., Velázquez, A. J., & Valdes, Y. (2026). La inteligencia artificial en el contexto de la formación del ingeniero civil. *Congreso Universidad*, *12*(2), e92. https://revista.congresouniversidad.cu/article/view/92

Hernández Sampieri, R., & Mendoza Torres, C. P. (2023). *Metodología de la investigación: Las rutas cuantitativa, cualitativa y mixta* (2.ª ed.). McGraw-Hill Education. https://books.google.com.cu/books/about/Metodolog%C3%ADa_de_la_investigaci%C3%B3n.html?hl=es&id=xuGp0AEACAAJ&redir_esc=y

Hsu, Y. S., Chen, Y. P., Bastida, M., & Selmer, J. (2025). Attending virtual academic conferences: the roles of financial support from universities and researchers' career stage. *Higher Education Research & Development*, *45*(4), 1015-1031. https://doi.org/10.1080/07294360.2025.2564979

Ishak, W. H. W., Yamin, F. M., Mohsin, M. F. M., Mansor, M. F., & Husin, A. (2024). The transformative evolution of conference management systems. *Journal of Digital System Development*, *2*(2), 126-135. https://doi.org/10.32890/jdsd2024.2.2.9

Krungkraipetch, L., Krungkraipetch, K., Usimat, K., & Bookaew, S. (2026). Seeds of scholarship: A systematic review of research engagement in undergraduate medical education. *Perspectives on Medical Education*, *15*(1), 16-27. https://reference-global.com/article/10.5334/pme.2199

Leak, A. E., Lenaburg, L. A., Sciaky, E., & Aguirre Paden, M. O. (2025). Planning and proposing evaluations to support project success. *BMC Proceedings*, *18*(Suppl 1), Artículo 31. https://doi.org/10.1186/s12919-025-00344-2

Lourenço, J. M., Romaro, G. da C., & Coelho, S. de C. F. (2026). Manual para gestão de eventos acadêmicos, científicos e culturais. *Revista Saberes Universitários*, *4*(00), e025204. https://doi.org/10.20396/saberes.v4i00.20435

Luna, L. B. (2025). Evaluation Methodology for Graduate Follow-Up and The Development of Complex Competencies in Higher Education. *Journal of Cultural Analysis and Social Change*, *10*(4), 398–407. https://doi.org/10.64753/jcasc.v10i4.2843

Martirena Hernández, J. F. (2025). Impact of using calcined clays in concrete. *Journal of Cement and Its Applications*, *2025*(6), 1-10. https://en.jcement.ru/magazine/644/76990/

Ministerio de Educación Superior. (2018). *Plan de estudio E de la carrera Ingeniería Civil*. http://www.mes.gob.cu/

Organización de las Naciones Unidas. (2015). *Transformar nuestro mundo: la Agenda 2030 para el Desarrollo Sostenible*. https://sdgs.un.org/2030agenda

Organización de las Naciones Unidas para la Educación, la Ciencia y la Cultura. (2022). *Reimaginar juntos nuestros futuros: Un nuevo contrato social para la educación*. https://es.fundacion-sm.org/wp-content/uploads/sites/12/2023/08/Reimaginar-juntos-nuestros-futuros-%E2%80%93-UNESCO.pdf

Pasi, B. N., & Dhamak, P. (2026). Transforming higher education for the fourth industrial revolution: A strategic review of digital integration and

institutional readiness. *Journal of Science and Technology Policy Management*. 1-29. https://doi.org/10.1108/JSTPM-03-2025-0101

Pérez Rodríguez, E. O., & Colas Chavez, M. (2022). Guías metodológicas para la evaluación de la protección ambiental, la sostenibilidad y el bienestar animal en sistemas de producción avícola intensivos. *Biotecnología Aplicada*, *39*(1), 3101-3108. https://www.medigraphic.com/pdfs/biotecapl/ba-2022/ba221b.pdf

Phogat, P., Rab, S., & Wan, M. (2025). Science communication in the digital age: Trends, gaps, and interdisciplinary opportunities. *Information Services and Use*, *45*(1-2), 148-163. https://doi.org/10.1177/18758789251342896

Quintero-Dávila, I. (2026). Prioridades epistémicas en la formación investigativa del Ingeniero Latinoamericano: su contribución al Desarrollo Humano. *Revista Iberoamericana de Investigación en Educación,* (10), 1-12. https://www.riied.org/index.php/v1/article/view/282

Rodrigues da Silva, F. E., da Silva, J. S., de Sousa, E. F., & de Alencar Costa, A. R. M. (2021). Gestão de eventos: um estudo bibliométrico e sociométrico da produção científica internacional. *Revista De Gestão E Secretariado*, *12*(2), 122–146. https://doi.org/10.7769/gesec.v12i2.1177

Rodríguez Hernández, R., & Alberteris Rodríguez, A. (2026). Satisfacción y usabilidad de Moodle en un evento científico virtual de Bioquímica. *Revista Pulso Científico, 4*(2), 66–75. https://doi.org/10.70577/rps.v4i2.203

Suárez Fernández, D., Bauta Leyva, L., & Aldana Aldana, Y. (2024). La actividad científica estudiantil de la Universidad de Moa, Cuba: Análisis bibliométrico en la revista Ciencia & Futuro (2016-2021). *E-Ciencias de la Información*, *14*(1), 65-88. https://doi.org/10.15517/eci.v14i1.55964

Universidad Central "Marta Abreu" de Las Villas. (2022). *Política Integrada de Ciencia, Tecnología, Innovación y Postgrado 2022-2026*. https://www.uclv.edu.cu/ciencia-e-innovacion/

Universidad Central "Marta Abreu" de Las Villas. (2023). *Resolución Rectoral 427/2023*.

Valdes, Y., & Capote, R. (2023). Sistemas Integrados de Gestión en empresas asociadas a la construcción de viales en Villa Clara. *Revista Ciencia y Construcción, 4*(4), 67-77. https://share.google/S1MhVfx7tuyavzsmM

Valdes, Y., García, T., & González, E. (2022). Material de estudio sobre calidad en la construcción para la carrera Ingeniería Civil. *EduSol, 22*(78), 191-205. https://edusol.cug.co.cu/index.php/EduSol/article/view/96/438

Vélez Bravo, P. E., & Santana Sardi, G. A. (2023). Guía metodológica para mejorar el uso de las TIC del docente en el proceso de enseñanza-aprendizaje de la Unidad Educativa “Rosa Herlinda Zambrano Ganchozo”. *Tesla Revista Científica, 3*(2), e211. https://tesla.puertomaderoeditorial.com.ar/index.php/tesla/en/article/view/211

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Declaration of author responsibility

Yasel Valdes Alonso 1: Conceptualization, Data curation, Formal analysis, Investigation, Methodology, Resources, Software, Supervision, Validation/Verification, Visualization, Writing – original draft, and Writing.
Halyl Josué Iznaga Ortega 2: Data curation, Visualization, Writing – original draft, and Writing.
Pedro Samuel Hernández Jiménez 3: Methodology, Resources, Software, Supervision, Validation/Verification, Visualization, Writing – original.
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