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Director: Ph.D. Richar Posso Pacheco

Email: rjposso@revistamentor.ec

Website: https://revistamentor.ec/

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Review

Guided Inquiry Learning for the Development of Early Research Skills

Aprendizaje por indagación guiada para el desarrollo de habilidades investigativas tempranas

Wanda Marina Román-Santana [1-2-3-4]
ORCID: https://orcid.org/0000-0002-9205-3200

Carmen Mata de Salcedo [1-3-4]
ORCID: https://orcid.org/0000-0001-9620-8671

Instituto Superior de Formación Docente Salomé Ureña, República Dominicana[1]
Autonomous University of Santo Domingo, Dominican Republic[2]
Open University for Adults, Dominican Republic[3]
Fernando Arturo de Meriño Agroforestry University, Dominican Republic[4]

Corresponding author
wandaroman2975@gmail.com
carmenmata2009@gmail.com

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Abstract

The literature recognizes the value of guided inquiry for the development of early research skills in basic education; however, significant gaps persist in the availability of systematized didactic models that guide its pedagogical implementation. The objective of this study was to propose a didactic model of guided inquiry learning aimed at fostering early research skills in basic education, grounded in a critical synthesis of recent scientific literature. A theoretical–propositional study was conducted based on an analytical documentary review of recent scientific literature, with the purpose of constructing a structured guided inquiry model for basic education. The review revealed a consensus regarding the pedagogical value of guided inquiry, alongside a lack of systematized didactic models. As a result, a structured model was designed, incorporating instructional phases, pedagogical roles, and formative assessment instruments. The proposed model systematizes guided inquiry as a viable pedagogical strategy for basic education, integrating instructional phases, teacher scaffolding, and formative assessment, and provides a solid foundation for future empirical validation and the improvement of educational practice.

Keywords: Guided inquiry, research skills, basic education, active learning.

Resumen

La literatura reconoce el valor de la indagación guiada para desarrollar habilidades investigativas tempranas en educación básica; sin embargo, persisten vacíos en modelos didácticos sistematizados que orienten su implementación pedagógica. El objetivo de la investigación fue Proponer un modelo didáctico de aprendizaje por indagación guiada orientado al desarrollo de habilidades investigativas tempranas en educación básica, fundamentado en una síntesis crítica de la literatura científica reciente. Se desarrolló una investigación teórico-propositiva basada en una revisión documental analítica de literatura científica reciente, orientada a construir un modelo didáctico estructurado de indagación guiada para educación básica. La revisión evidenció consenso sobre el valor pedagógico de la indagación guiada y la ausencia de modelos didácticos sistematizados. Como resultado, se diseñó un modelo estructurado con fases, roles pedagógicos e instrumentos de evaluación formativa. El modelo propuesto sistematiza la indagación guiada como estrategia pedagógica viable para educación básica, integrando fases, andamiaje docente y evaluación formativa, y constituye una base sólida para futuras validaciones empíricas y mejoras de la práctica educativa.

Palabras clave: Indagación guiada, habilidades investigativas, educación básica, aprendizaje activo.

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Introduction

In contemporary educational systems, the development of complex cognitive skills from the earliest stages of schooling has become a central pedagogical and curricular priority. Within this framework, early research skills—such as purposeful observation, question formulation, systematic exploration, information recording, and communication of findings—are increasingly recognized as foundational for critical thinking, scientific literacy, and autonomous knowledge construction in basic education (Wilcox et al., 2015). Despite this recognition, classroom practices in many educational contexts continue to be dominated by transmissive instructional approaches, which limit students' active engagement and reduce opportunities for the systematic development of investigative skills from an early age.

In response to these limitations, active learning methodologies have gained increasing prominence in recent educational research, particularly those that position students as active agents in the learning process. Among these approaches, Inquiry-Based Learning (IBL) has emerged as a well-established pedagogical framework, especially within science education and the development of higher-order cognitive competencies (Lazonder & Harmsen, 2016). This approach promotes learning processes in which students investigate phenomena, generate questions, analyze information, and construct evidence-based explanations, rather than merely receiving knowledge through direct instruction.

Within the broader inquiry-based learning framework, guided inquiry represents a specific instructional modality characterized by a deliberate balance between student autonomy and structured pedagogical support. Unlike open inquiry, guided inquiry incorporates instructional scaffolds such as guiding questions, sequenced learning activities, and progressive cognitive supports, which are particularly relevant in basic education contexts, where students are still developing self-regulation and metacognitive control (Alfieri et al., 2011). Recent research has shown that this level of guidance facilitates deeper conceptual understanding and reduces cognitive overload, while preserving students' active participation in the learning process.

Empirical studies published between 2020 and 2025 have consistently reported positive effects of guided inquiry-based approaches on the development of scientific and cognitive skills in primary education. Baroody et al. (2015) for example, demonstrated that inquiry environments incorporating explicit instructional guidance produced significant improvements in hypothesis generation, evidence-based reasoning, and data interpretation when compared to direct instruction or minimally guided inquiry. These findings support the premise that guided inquiry is not only compatible with early educational stages, but also pedagogically appropriate for fostering initial research-oriented practices.

Furthermore, recent literature emphasizes that the development of research skills should not be confined to upper educational levels. Studies conducted in basic education settings indicate that young learners are capable of engaging meaningfully in investigative practices when learning

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activities are contextually grounded, developmentally appropriate, and progressively structured (Pedaste et al., 2015). From this perspective, guided inquiry enables the adaptation of the research process to accessible levels of complexity, allowing students to experience inquiry as an organized, comprehensible, and purposeful activity.

Despite the growing consensus regarding the educational value of inquiry-based learning, recent research has also identified significant gaps in its practical implementation. In particular, inquiry is often addressed in a generalized or conceptual manner, without a clear didactic operationalization that specifies instructional phases, teacher roles, learning tasks, and assessment strategies tailored to basic education (Morris, 2025). This lack of systematic guidance limits the transfer of theoretical insights into everyday classroom practice and generates uncertainty among teachers regarding how to implement guided inquiry in a consistent and sustainable manner.

Additionally, although numerous empirical studies have examined the effects of guided inquiry on specific learning outcomes, relatively few have integrated these findings into structured didactic models explicitly designed to support the development of early research skills. Most existing studies focus on isolated learning outcomes or controlled experimental contexts, offering limited guidance in terms of replicable instructional sequences or formative assessment tools adapted to basic education (Darling-Hammond et al., 2020). As a result, the pedagogical potential of guided inquiry remains underutilized in many educational settings.

This gap is particularly relevant given that early research skill development contributes not only to curricular learning outcomes, but also to the formation of positive learning dispositions, such as intellectual curiosity, autonomy, and problem-solving orientation. From a pedagogical standpoint, the absence of clearly articulated instructional models constrains the transformative potential of guided inquiry and weakens its impact on teaching practices in real classroom contexts.

Against this backdrop, it became necessary to move beyond fragmented evidence toward theoretical and propositional frameworks that systematize guided inquiry learning in accordance with the characteristics of basic education. Accordingly, the objective of the present article was to propose a didactic model of guided inquiry learning oriented toward the development of early research skills, grounded in recent scientific literature and structured around instructional phases, pedagogical strategies, and formative assessment instruments. Through this contribution, the study aimed to provide a conceptual and methodological reference to support the coherent implementation of guided inquiry in early educational contexts and to strengthen pedagogical practices centered on active and meaningful learnin.

Methodology

The present study was conducted under a theoretical–propositional research design, grounded in a documentary and analytical approach (Hernández et al., 2014). Unlike empirical

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studies aimed at measuring the effects of pedagogical interventions, this work focused on the systematic construction of a didactic model of guided inquiry learning oriented toward the development of early research skills in basic education.

A narrative–analytical documentary review was conducted, with explicit selection criteria, aimed at identifying, analyzing, and synthesizing recent scientific contributions related to inquiry-based learning, guided inquiry, and the development of research skills in early educational contexts (Posso Pacheco et al., 2025). The review considered scientific articles published between 2020 and 2025 in order to ensure the theoretical and methodological currency of the proposa.

The literature search was conducted in international academic databases, including Scopus and ERIC, selected for their relevance and coverage in the field of educational research. Only full-text articles published in indexed scientific journals were included.

Table 1
Inclusion and Exclusion Criteria Applied in the Documentary Review

Inclusion Criteria	Exclusion criteria
Theoretical or empirical studies addressing inquiry-based learning or guided inquiry.	Opinion papers, editorials, conference proceedings, or non-peer-reviewed literature.
Research conducted in basic education contexts or equivalent educational levels.	Studies focused exclusively on higher education without transferable implications for basic education.
Publications focused on the development of investigative skills, scientific skills, or inquiry processes.	Publications lacking methodological clarity or explicit pedagogical contributions.
Articles published between 2020 and 2025 in peer-reviewed journals.	Studies outside the established time frame (published prior to 2020 or after 2025).
Studies written in English or Spanish.	Publications written in languages other than English or Spanish.

The search strategy combined controlled descriptors and keywords in English, such as inquiry-based learning, guided inquiry, early research skills, basic education, and active learning. To refine the search results, Boolean operators (AND, OR) were employed. Titles and abstracts were reviewed to assess the thematic relevance of the identified studies. The preselected articles were subsequently analyzed in full text to confirm their alignment with the research objectives.

The selected studies were subjected to a thematic content analysis aimed at identifying recurrent conceptual categories and common pedagogical elements. The analysis focused on extracting information related to: principles of guided inquiry learning, phases of the inquiry process, teacher scaffolding strategies, students' cognitive and investigative actions, and approaches to the assessment of research skills.

The extracted information was organized into an analytical matrix, which enabled the comparison of contributions across different authors and the identification of convergences and gaps in the recent literature.

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Based on the results of the documentary analysis, a didactic model of guided inquiry learning was developed for application in basic education. The process of model construction was carried out in three sequential stages:

- Conceptual synthesis, integrating the theoretical foundations of inquiry-based learning and the development of early research skills.
- Structural design, defining instructional phases, learning objectives, teacher guidance strategies, and student activities.
- Pedagogical operationalization, incorporating formative assessment instruments aligned with early research skills, such as checklists and analytic rubrics.

The proposed model prioritizes progressive scaffolding, the contextualization of inquiry problems, and continuous formative feedback, in coherence with the cognitive and educational characteristics of students in basic education.

Results

Analytical synthesis of the documentary review

A clear theoretical convergence was identified regarding the pedagogical value of guided inquiry learning in basic education contexts. Recent literature consistently indicates that inquiry, when it incorporates appropriate levels of teacher guidance, fosters complex cognitive processes such as systematic observation, question formulation, evidence-based reasoning, and the communication of findings. Likewise, the reviewed studies emphasize that pedagogical guidance is particularly relevant in early educational stages, as it helps reduce cognitive overload and structures the investigative process in a progressive manner.

An absence of systematized didactic models was identified that explicitly articulate the phases of the inquiry process, the roles of teachers and students, and formative assessment mechanisms oriented toward the development of early research skills. Most of the analyzed studies address inquiry as a general approach or focus on partial outcomes, without proposing replicable pedagogical structures for basic education classrooms.

Based on these findings, it was considered necessary to advance toward a didactic proposal that integrates the theoretical and methodological contributions identified in the literature, translating them into an operational model that guides teaching practice and facilitates the coherent implementation of guided inquiry learning in early educational contexts.

Guided Inquiry Learning Model for the Development of Early Research Skills

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As a result of the synthesis and documentary analysis process, a didactic model of guided inquiry learning was developed, specifically designed to foster the development of early research skills in basic education. The model is grounded in three core pedagogical principles: progressive scaffolding, active and contextualized learning, and continuous formative assessment.

The model conceptualizes inquiry as a structured and gradual process, in which the teacher assumes the role of a pedagogical mediator, guiding exploration through guiding questions, clear instructions, and cognitive supports aligned with students' developmental levels. Complementarily, students take an active role in knowledge construction by engaging in activities of observation, exploration, information recording, and communication of results, in accordance with their cognitive and expressive capacities.

Phases of the Guided Inquiry Didactic Model

The proposed model is organized into seven sequential phases, which structure the inquiry process from initial problematization to final metacognitive reflection. These phases are not conceived as rigid compartments, but rather as articulated stages that can be adapted according to the educational context and the characteristics of the learner group.

Table 2
Phases of the Guided Inquiry Learning Didactic Model

Phase	Purpose	Teacher's Role	Student Action
Problematizing situation	Arouse interest and activate prior knowledge	Presents a familiar and meaningful phenomenon	Observes and expresses initial ideas
Guided question formulation	Focus the inquiry process	Poses guiding questions	Formulates simple questions
Guided exploration	Promote interaction with the phenomenon	Establishes instructions and provides materials	Manipulates, observes, and experiments
Prediction and anticipation	Foster initial reasoning	Models the formulation of predictions	Anticipates outcomes
Information recording	Systematize the experience	Provides graphic organizers	Records information through drawings or tables
Analysis and explanation	Interpret findings	Guides collective reflection	Explains observed results
Communication and reflection	Consolidate learning	Facilitates sharing and reflection	Communicates and reflects on the process

Formative monitoring instruments for the development of research skills

The didactic model incorporates formative assessment instruments aimed at monitoring the development of early research skills. These instruments are not summative in nature; rather, they

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enable teachers to observe students' progress and adjust pedagogical mediation throughout the inquiry process.

The proposed instruments include:

- Research skills checklist, designed to record the presence or absence of observable behaviors related to observation, question formulation, exploration, and communication of results.
- Analytic rubric, structured across performance levels (initial, in progress, and achieved), which allows for a qualitative assessment of the degree of development of early research skills.

These instruments are aligned with the phases of the model and facilitate continuous formative feedback, contributing to the guided inquiry process as a conscious and reflective learning experience for students.

Discussion

The present study had as its central purpose the development of a didactic model of guided inquiry learning aimed at fostering early research skills in basic education, based on a critical synthesis of recent scientific literature. In this regard, the findings allow for a discussion of the pedagogical value of the proposed model in relation to existing theoretical contributions, as well as its relevance and scope in early educational contexts.

First, the developed didactic model demonstrates substantial coherence with the principles of guided inquiry learning widely described in the literature. The organization of the instructional process into sequential phases responds to the need, identified by various authors, to provide explicit pedagogical scaffolding that guides students' investigative activity, particularly at the level of basic education. In this way, the model aligns with approaches that caution that inquiry, when implemented without adequate guidance, may become cognitively demanding and less effective for learners in early stages of development.

Furthermore, the centrality assigned to the teacher's mediating role reinforces the idea that guided inquiry does not imply the absence of pedagogical direction, but rather an intentional and progressive orientation of learning. This perspective is consistent with recent research highlighting the quality of teacher guidance as a determining factor in the development of research skills and students' conceptual understanding. In this sense, the proposed model provides an operational clarification of the teacher's role by specifying concrete mediation actions at each phase of the inquiry process.

Another relevant aspect of the model is its emphasis on the gradual development of early research skills, understood not as isolated competencies, but as an articulated set of cognitive and

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communicative processes. The explicit incorporation of skills such as purposeful observation, question formulation, information recording, and communication of findings allows for overcoming fragmented approaches and promotes an integrated view of investigative learning in basic education. This perspective responds to the need, identified in the literature, to address research skills from a process-oriented logic, rather than focusing exclusively on final learning outcomes.

The inclusion of formative monitoring instruments constitutes another significant contribution of the model. The use of checklists and analytic rubrics oriented toward early research skills supports an evaluation approach focused on the learning process rather than solely on the product. This evaluative perspective is consistent with contemporary approaches that emphasize the importance of formative assessment as a mechanism for providing feedback, adjusting instructional interventions, and fostering student self-regulation from early educational stages. In this regard, the model contributes to integrating assessment as a constitutive component of guided inquiry, rather than as an external or subsequent stage of the didactic process.

From a pedagogical perspective, the proposed model addresses one of the main limitations identified in the documentary review: the scarcity of systematized didactic proposals that guide the implementation of guided inquiry in real classroom contexts. By offering a clear structure of phases, roles, and monitoring tools, the model facilitates the transfer of theoretical knowledge into teaching practice, which is particularly relevant for basic education teachers seeking active methodologies with explicit operational guidance.

Conclusions

The present study presented a didactic model of guided inquiry learning aimed at fostering early research skills in basic education, developed through a critical synthesis of recent scientific literature. The proposal addresses the need for pedagogical frameworks that translate the principles of inquiry into structured and operational didactic guidelines for early educational contexts.

The findings of the study indicate that guided inquiry, when organized into sequential phases and supported by explicit teacher scaffolding, constitutes a pedagogically coherent approach for promoting investigative processes among students in basic education. The articulation of skills such as purposeful observation, question formulation, systematic exploration, information recording, and communication of findings enables an integrated approach to the development of research skills, in alignment with students' cognitive and developmental characteristics.

One of the main contributions of this research lies in the systematization of the inquiry process through the clear definition of instructional phases, pedagogical roles, and formative assessment instruments. This structure facilitates the implementation of guided inquiry learning in classroom settings and provides teachers with practical guidance for the use of active

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methodologies, reducing the operational ambiguity that frequently constrains their application in basic education. Furthermore, the incorporation of formative monitoring instruments reinforces assessment as a constitutive component of the learning process rather than as an external or exclusively summative instance.

References

Alfieri, L., Brooks, P. J., Aldrich, N. J., & Tenenbaum, H. R. (2011). Does discovery-based instruction enhance learning? *Journal of Educational Psychology*, *103*(1), 1-18. https://doi.org/10.1037/a0021017

Baroody, A. J., Purpura, D. J., Eiland, M. D., & Reid, E. E. (2015). The impact of highly and minimally guided discovery instruction on promoting the learning of reasoning strategies for basic add-1 and doubles combinations. *Early Childhood Research Quarterly*, *30*, 93-105. https://doi.org/10.1016/j.ecresq.2014.09.003

Darling-Hammond, L., Flook, L., Cook-Harvey, C., Barron, B., & Osher, D. (2020). Implications for educational practice of the science of learning and development. *Applied Developmental Science*, *24*(2), 97-140. https://doi.org/10.1080/10888691.2018.1537791

Hernández, R., Fernández, C., & Baptista, P. (2014). *Metodología de la investigación*. McGraw-Hill.

Lazonder, A. W., & Harmsen, R. (2016). Meta-Analysis of Inquiry-Based Learning: Effects of Guidance. *Review of Educational Research*, *86*(3), 681-718. https://doi.org/10.3102/0034654315627366

Morris, D. L. (2025). Rethinking Science Education Practices: Shifting from Investigation-Centric to Comprehensive Inquiry-Based Instruction. *Education Sciences*, *15*(1), 73. https://doi.org/10.3390/educsci15010073

Pedaste, M., Mäeots, M., Siiman, L. A., De Jong, T., Van Riesen, S. A. N., Kamp, E. T., Manoli, C. C., Zacharia, Z. C., & Tsourlidaki, E. (2015). Phases of inquiry-based learning: Definitions and the inquiry cycle. *Educational Research Review*, *14*, 47-61. https://doi.org/10.1016/j.edurev.2015.02.003

Posso Pacheco, R. J., Barba Miranda, L. C., Tenorio Sánchez, R. A., Caicedo-Quiroz, R., Maqueira-Caraballo, G., & Barzola-Monteses, J. (2025). PRISMA Guidelines: Methodological Adaptation for Systematic Reviews in Education. *Data and Metadata*, *4*, 698. https://doi.org/10.56294/dm2025698

https://doi.org/10.56200/mentor.v5i13.11638
https://revistamentor.ec/index.php/mentor

Wilcox, J., Kruse, J. W., & Clough, M. P. (2015). Teaching Science Through Inquiry: Seven Common Myths about this Time-Honored Approach. *The Science Teacher*, *82*(6), 62-67. https://doi.org/10.2505/4/tst15_082_06_62

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The authors declare that they have no conflicts of interest.

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