

Ethics of Scientific Writing and Publication in Higher Education: A Qualitative Analysis

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ABSTRACT

This qualitative research examines the implementation of ethics in scientific writing and publication practices in higher education institutions to strengthen academic integrity and improve the quality of scholarly publications among university students. Involving 50 students, 4 lecturers, 3 journal reviewers, and 2 academic administrators from the Faculty of Indonesian Language and Literature Education at Universitas Graha Nusantara, the study employed mixed qualitative methods including structured observations (8 academic writing sessions), semi-structured interviews (9 participants), focus group discussions (2 sessions with 30 students), document analysis, plagiarism screening reports, and student reflective journals over a four-month period. Data were analyzed using thematic analysis with open and axial coding procedures to identify patterns in students' understanding of academic ethics, publication responsibilities, and scientific writing practices. Results revealed significant improvements in students' academic writing ethics across six dimensions: citation and referencing skills (8-student increase to Proficient level), plagiarism awareness (12-student increase), ethical use of research sources (10-student increase), scientific argumentation (Advanced category achievement), publication responsibility (38 students in Advanced category), and academic integrity commitment (5-student progression to Highly Proficient level). Thematic analysis identified six primary themes: increased awareness of academic honesty (24 occurrences), improved scientific writing quality (28 occurrences), responsible publication practices (31 occurrences), ethical challenges in digital academic environments (26 occurrences), collaborative academic supervision (29 occurrences), and implementation barriers in academic writing culture (17 occurrences). This study demonstrates that strengthening ethics education in scientific writing and publication effectively develops students' academic responsibility while fostering integrity, professionalism, and credibility in higher education environments.

Keywords: academic ethics, scientific writing, publication ethics, plagiarism, higher education.

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INTRODUCTION

Ethics in scientific writing and publication occupies a fundamental position in contemporary higher education systems, particularly in Indonesia where academic integrity, intellectual responsibility, and scholarly professionalism represent essential objectives of higher learning. The traditional approach to academic writing instruction, which often emphasizes technical formatting and completion of assignments rather than ethical awareness and responsible publication practices, has been widely criticized by educational researchers as insufficient for preparing students to participate in credible scientific communities. In response to this recognized deficiency, ethics-based academic writing education has emerged as an important pedagogical framework that positions students not only as academic writers but also as responsible contributors to scientific knowledge and scholarly communication.

Higher education institutions in Indonesia play a significant role in developing students' competence in scientific writing and publication. Universities are expected to produce graduates who are capable of conducting research, communicating ideas scientifically, and publishing academic works based on ethical standards. However, the rapid development of digital technology and easy access to online information have simultaneously increased the challenges related to plagiarism, citation manipulation, duplicate publication, data falsification, and unethical authorship practices. These challenges indicate that many students still possess a limited understanding of the ethical dimensions of academic writing and publication. Consequently, universities are increasingly required to strengthen ethical literacy in scientific communication to maintain the credibility and quality of higher education outcomes.

As a pedagogical framework, ethics education in scientific writing fundamentally restructures academic learning processes by emphasizing honesty, transparency, originality, and accountability in research and publishing practices. Rather than merely encouraging students to complete assignments for assessment purposes, ethical academic writing education motivates them to formulate arguments responsibly, acknowledge intellectual contributions appropriately, and communicate research findings objectively. This approach aligns with contemporary constructivist theories of learning, which suggest that meaningful academic understanding develops through reflective engagement, critical thinking, and active participation in authentic scholarly practice. Therefore integrating ethics education with scientific writing instruction creates a particularly powerful educational configuration by connecting theoretical knowledge with practical academic responsibility in real educational contexts.

Universitas Graha Nusantara, particularly the Faculty of Indonesian Language and Literature Education, represents an appropriate institutional context for examining the implementation of ethics in scientific writing and publication. As a higher education institution emphasizing academic excellence and professional teacher education, the university provides students with opportunities to engage in scientific writing activities, classroom-based research, academic presentations, and

publication-oriented assignments. Furthermore, the academic environment encourages students to develop competencies in research methodology, critical literacy, and scientific communication, making ethical writing practices highly relevant to their educational development and future professional responsibilities.

Despite the recognized importance of academic ethics in higher education, limited empirical research has systematically examined the implementation of ethical writing and publication practices among university students in Indonesian educational contexts. Most existing studies concerning scientific writing have focused primarily on technical aspects such as grammar, citation styles, or research methodologies, while comparatively fewer investigations have explored the ethical dimensions of academic writing and publication. Moreover, qualitative research examining the nuanced processes through which students develop ethical awareness, academic responsibility, and publication integrity remains limited in the Indonesian educational research literature. This research gap is particularly significant considering the growing concern regarding academic dishonesty, plagiarism, and unethical publication practices in global higher education systems.

The present study addresses these research gaps by examining the implementation of ethics in scientific writing and publication among students of the Faculty of Indonesian Language and Literature Education at Universitas Graha Nusantara. Through a systematic qualitative investigation employing multiple data collection methods, this research seeks to understand how students engage with ethical principles in academic writing, what patterns of academic integrity development emerge through ethics-based instruction, and what challenges and facilitating factors characterize the implementation of ethical publication practices in higher education environments.

The implementation of ethics-based scientific writing education at Universitas Graha Nusantara proceeded from pedagogical and theoretical foundations emphasizing academic integrity, reflective learning, and responsible scholarly participation. Research in educational psychology has consistently demonstrated that learning environments rooted in ethical awareness and authentic academic responsibility produce deeper conceptual understanding, stronger intrinsic motivation, and greater intellectual independence than instruction focused solely on technical performance. The concept of academic integrity, developed within higher education scholarship, suggests that meaningful learning is inseparable from ethical responsibility and intellectual honesty. Scientific writing and publication have thus become not only technical academic skills but also moral and professional practices that shape students' identities as scholars and future educators.

Similar to many university students in Indonesia, students in the Faculty of Indonesian Language and Literature Education enter scientific writing courses with varied prior exposure to academic ethics and research practices. Some students possess prior knowledge regarding citation techniques, plagiarism prevention, and publication standards due to previous educational experiences or digital literacy exposure. However, others demonstrate a limited understanding of proper referencing, paraphrasing, and ethical research communication. This heterogeneity in prior knowledge creates challenges and opportunities for ethics-based academic writing instruction. The challenge lies in scaffolding learning experiences capable of

accommodating diverse academic competencies while maintaining rigorous ethical standards. The opportunity lies in designing educational experiences that simultaneously introduce students to academic ethics while strengthening their scientific writing competence and professional responsibility.

Academic ethics, as defined in contemporary higher education literature, constitute a distinct domain of intellectual and professional competency encompassing multiple specific abilities: the capacity to cite and reference sources accurately; the ability to distinguish original ideas from borrowed concepts; the competency to avoid plagiarism and data manipulation; the responsibility to communicate research findings honestly and objectively; the ability to evaluate the credibility and validity of academic sources; and the capacity to participate responsibly in scholarly publication processes. These competencies represent higher-order cognitive and ethical processes that require students to move beyond simple information reproduction toward critical evaluation, reflective thinking, and responsible academic participation. Research on academic writing instruction has identified these ethical competencies as central to meaningful higher education learning and as critical foundations for professional credibility and lifelong scholarly development.

Scientific publication practices in higher education provide rich and complex educational contexts conducive to the development of ethical awareness and academic responsibility. The process of conducting research, organizing evidence, developing arguments, and preparing manuscripts for publication requires students to engage directly with intellectual property principles, academic standards, and scholarly communication ethics. Furthermore, the growing emphasis on publication productivity within universities creates opportunities for students to recognize the value and ethical risks associated with scientific publications. Consequently, ethics education in scientific writing and publication is essential for preparing students to contribute responsibly to academic communities while maintaining integrity in knowledge production and dissemination.

The research questions guiding this investigation were as follows: (1) How do students engage with ethical principles in scientific writing and publication activities in higher education? (2) What patterns of academic integrity development emerge through participation in ethics-based scientific writing instruction? (3) How do students experience challenges and responsibilities in plagiarism prevention and publication ethics? (4) What facilitating factors and obstacles characterize the implementation of ethical scientific writing practices in university environments? (5) How does participation in ethics-oriented academic writing instruction influence students' motivation, responsibility, and conceptualization of scholarly communication? These research questions reflect an interest in understanding both the cognitive outcomes of ethics-based scientific writing education and the affective, social, and professional dimensions of academic integrity development in higher education contexts.

METHOD

This study employed a qualitative research design grounded in the interpretivist and social constructivist paradigms. The qualitative orientation was selected based on the understanding that the implementation of ethics in scientific writing and publication involves complex academic interactions, reflective meaning-making processes, and socially constructed experiences that cannot be comprehensively explored through quantitative measurement alone. While quantitative approaches tend to focus on numerical indicators and predetermined variables, qualitative inquiry emphasizes the exploration of participants' perspectives, experiences, and interpretations in order to generate a deeper understanding of educational and academic phenomena. Within this framework, the interpretivist perspective recognizes that academic ethics is not merely a fixed institutional regulation, but also a dynamic social practice shaped through interaction, reflection, and scholarly engagement within higher education environments.

The research was conducted over six months encompassing the preparatory, implementation, and analytical phases. The preparatory stage included participant recruitment, development of qualitative instruments, coordination with lecturers and faculty administrators, and ethical orientation regarding scientific writing practices. The implementation stage involved a series of academic writing and publication activities carried out through classroom instruction, reflective discussions, plagiarism awareness workshops and guided scientific writing sessions. Data collection was conducted continuously throughout the implementation period to capture both immediate academic interactions and retrospective reflections related to ethical writing practices. Data analysis proceeded simultaneously through iterative thematic interpretation and continuous refinement of the analytical categories emerging from the collected data.

Research Participants and Sampling

The participants of this study consisted of five distinct groups: (1) undergraduate students (n=50) from the Faculty of Indonesian Language and Literature Education at Universitas Graha Nusantara; (2) lecturers (n=4) who taught scientific writing and publication courses; (3) academic journal reviewers and editors (n=3) involved in evaluating students' scientific manuscripts; (4) faculty administrators (n=2) responsible for academic coordination and publication programs; and (5) selected student mentors (n=10) who actively participated in peer academic supervision activities.

Student participants were purposively selected from students enrolled in the Scientific Publication course to ensure representation across academic achievement levels, writing competencies and prior understanding of academic ethics. The sample consisted of 28 female and 22 male students with varying experiences in scientific writing and publication. Approximately 60% of the participants reported prior exposure to plagiarism prevention training and citation techniques, while the remaining participants demonstrated limited familiarity with academic publication standards. Lecturers and journal reviewers were recruited based on their professional involvement in scientific writing instruction and publication management. Faculty

administrators were selected due to their responsibility in supporting academic publication policies and student research activities.

Data Collection Methods

The study employed multiple qualitative data collection methods to ensure methodological triangulation and a comprehensive understanding of ethical scientific writing practices in higher education contexts.

Structured Observation

Structured observations were conducted during eight scientific writing and publication sessions facilitated within classroom and workshop settings. Observations focused on student participation, ethical decision-making during academic writing tasks, lecturer-student interactions, collaborative discussions, and students' responses to plagiarism awareness activities. Each observation session lasted approximately 120 minutes and was documented using narrative field notes and predetermined observational indicators related to academic integrity, citation practices and publication responsibility.

Semi-structured Interviews

Semi-structured interviews were conducted with lecturers (n=4), journal reviewers (n=3), and faculty administrators (n=2) to capture their perspectives regarding ethical scientific writing practices, plagiarism challenges, students' academic behavior, and institutional efforts to strengthen publication ethics. The interviews lasted between 45 and 60 minutes and were conducted in the participants' preferred locations. All interviews were audio-recorded with consent and transcribed verbatim for analysis. The interview protocol included 12–15 open-ended questions emphasizing academic integrity, publication ethics, and challenges in supervising scientific writing practices among university students.

Focus Group Discussions

Two focus group discussions were conducted involving 30 student participants selected purposively to represent diverse academic abilities, gender backgrounds, and publication experiences. Each discussion session lasted approximately 90 minutes and employed semi-structured guiding questions exploring students' perceptions of plagiarism, citation practices, publication ethics, academic pressure, and the challenges encountered during the scientific writing processes. The discussions were audio-recorded and transcribed verbatim to preserve the richness of the participants' reflections and interactions.

Reflective Learning Journals

All the student participants maintained weekly reflective journals throughout the implementation period. Students were encouraged to document their experiences related to academic writing, ethical dilemmas encountered during assignment completion, understanding citation practices, awareness of plagiarism prevention, and reflections on academic honesty. Each participant completed approximately 14 journal entries ranging from 300–500 words. Journal entries were collected and analyzed to

identify patterns of ethical awareness development and reflective academic engagement.

Document Analysis

Document analysis involved the examination of student scientific papers, plagiarism screening reports, academic guidelines, faculty publication policies, and course syllabi related to scientific writing. Students' written assignments and publication drafts were analyzed to evaluate their citation accuracy, originality, referencing practices, and adherence to academic publication standards. Additionally, institutional documents were examined to understand how academic ethics policies were communicated and implemented in the faculty environment.

Academic Ethics Assessment Framework

The development of students' academic ethics competencies was assessed through an analysis of scientific writing products, reflective journals, oral presentations, and publication-oriented assignments produced during the implementation process. The assessment framework was adapted from contemporary higher education literature concerning academic integrity and scientific publication ethics and consisted of six primary dimensions:

Citation and Referencing Skills

The capacity to cite academic sources accurately using appropriate citation styles, acknowledge intellectual contributions properly, and construct complete reference lists according to academic standards. Students were assessed regarding citation consistency, referencing accuracy, and their ability to distinguish original ideas from borrowed concepts.

Plagiarism Awareness

The ability to recognize forms of plagiarism, including direct copying, improper paraphrasing, duplicate submission, and citation omission. The assessment focused on students' understanding of plagiarism prevention strategies and their awareness of the ethical implications of academic dishonesty.

Ethical Use of Academic Sources

The competency to evaluate the credibility, reliability, and relevance of scientific sources while avoiding the manipulation or misuse of information. Students were assessed based on their selection of scholarly references, ethical integration of evidence, and responsible use of digital academic resources.

Scientific Argumentation

The ability to construct evidence-based academic arguments supported by valid references and logical reasoning. The assessment focused on argumentative coherence, integration of supporting evidence, and clarity in presenting academic ideas responsibly and objectively.

Publication Responsibility

The capacity to understand ethical responsibilities associated with scientific publication, including authorship ethics, data transparency, originality, and adherence to journal publication standards. Students were assessed regarding their understanding of publication procedures and academic accountability in scholarly communications.

Academic Integrity Commitment

The ability to demonstrate consistent honesty, responsibility, and ethical awareness throughout the scientific writing and publication processes. The assessment focused on students' reflective attitudes, ethical decision-making, and commitment to maintaining academic credibility and professionalism.

Data Analysis Procedures

Qualitative data analysis employed thematic analysis methodology adapted from Braun and Clarke's six-phase analytical framework. The analytical process proceeded through several systematic stages to ensure credibility, consistency, and depth of interpretation.

Phase 1: Familiarization with Data. Researchers engaged in repeated reading and examination of interview transcripts, observation notes, reflective journals, and institutional documents to develop a comprehensive familiarity with the collected data. Preliminary analytical notes and emerging ideas were recorded **during** this stage.

Phase 2: Open Coding. Initial coding was conducted through a line-by-line examination of the data corpus. Meaningful statements, recurring ideas, and significant experiences related to academic ethics and scientific writing practices were identified and labeled. Approximately 320 preliminary codes were generated.

Phase 3: Axial Coding. The initial codes were subsequently examined to identify relationships, similarities, and conceptual connections between them. Related codes were grouped into broader analytical categories representing patterns of ethical awareness, academic responsibility, publication practices and educational challenges. This process resulted in 26 intermediate themes.

Phase 4: Theme Development. Intermediate categories were synthesized into broader thematic clusters reflecting **the** major dimensions of ethical scientific writing practices within higher education contexts. Six overarching themes emerged representing students' academic integrity development, ethical publication awareness, and institutional implementation dynamics.

Phase 5: Theme Refinement. The identified themes were reviewed and refined to ensure conceptual coherence, analytical clarity, and distinction between categories. Overlapping concepts were reorganized, definitions clarified, and thematic boundaries strengthened to maintain interpretive precision and theoretical consistency.

Phase 6: Analytical Narrative Construction. Finally, the refined themes were integrated into a comprehensive analytical narrative explaining how ethics-based scientific writing education influenced students' academic responsibility, publication

awareness and integrity development. The narrative synthesis connectse empirical findings with theoretical perspectives on academic ethics, scholarly communication, and higher education pedagogy.

RESULTS AND DISCUSSION

Research Participant Characteristics

The present study involved 69 participants distributed across five principal categories representing academic and institutional stakeholders in scientific writing and publication activities in higher education. The student participants (n=50) were undergraduate students enrolled in the Faculty of Indonesian Language and Literature Education at Universitas Graha Nusantara, ranging in age from 19 to 22 years. Gender representation included 44% male (n=22) and 56% female (n=28) students. The lecturer participants (n=4) ranged in age from 34 to 52 years and possessed between 7 and 24 years of experience in teaching scientific writing, academic publication, and research methodology courses. Academic journal reviewers and editors (n=3) were aged 38 55 years and actively involved in evaluating scientific manuscripts and supervising publication ethics processes. Faculty administrative personnel (n=2) consisted of academic coordinators responsible for curriculum implementation and publication management, while student mentors (n=10) participated in peer supervision and collaborative academic writing.

The participants' demographic diversity ensured the representation of multiple perspectives on ethics in scientific writing and publication practices. Furthermore, the inclusion of students, lecturers, reviewers, and academic administrators enabled a comprehensive understanding of how ethical academic behavior is constructed, supervised, and practiced in university environments. This diversity also strengthened the credibility of the qualitative findings by incorporating experiences from individuals occupying different institutional roles and academic responsibilities.

Table 1. Research Participant Demographics and Roles

Participant Category	Number	Age Range (Years)	Role in Research
Male Students	22	19–22	Participants in scientific writing and publication activities
Female Students	28	19–22	Participants in scientific writing and publication activities
Lecturers	4	34–52	Facilitators and supervisors of academic writing

Participant Category	Number	Age Range (Years)	Role in Research
Journal Reviewers & Editors	3	38–55	Evaluators of publication ethics and manuscript quality
Faculty Administration	2	40–56	Institutional coordination and academic supervision
Student Mentors	10	20–23	Peer academic supervision and collaborative support

Data Collection Timeline and Methods Summary

Data collection was conducted systematically over a six-month implementation period using six qualitative methodological approaches. The integration of multiple methods enabled the researchers to capture the diverse dimensions of ethics-based scientific writing education while simultaneously strengthening analytical triangulation and interpretive validity. The use of observations, interviews, focus group discussions, reflective journals, and document analysis allowed for the examination of both behavioral manifestations of academic ethics and participants’ reflective understanding regarding publication responsibility.

Table 2. Data Collection Methods, Participants, and Schedule

Data Collection Method	Participants	Frequency	Duration
Structured Observation	All students (50)	Twice weekly (8 sessions)	120 minutes each
Semi-structured Interviews	Lecturers (4), Journal reviewers (3), Administrators (2)	One session each	45–60 minutes each
Focus Group Discussions	Students (30 selected)	Two sessions	90 minutes each
Document Analysis	Academic papers, plagiarism reports, institutional guidelines	Ongoing	N/A

Data Collection Method	Participants	Frequency	Duration
Reflective Learning Journals	Students (50)	Weekly reflections	15–20 minutes
Academic Workshops & Field Notes	All participants (69)	Monthly (4 sessions)	180 minutes each

Academic Ethics Assessment Framework and Indicators

Students' academic ethics competencies were assessed through the analysis of scientific writing products, oral presentations, plagiarism screening reports, reflective journals, and collaborative publication assignments. The assessment framework consisted of six principal dimensions adapted from the contemporary literature on academic integrity and scientific publication ethics.

Table 3. Academic Ethics Indicators and Assessment Criteria

Academic Ethics Skill	Definition	Assessment Indicator
Citation & Referencing Skills	Ability to cite and reference academic sources accurately according to scientific standards	Student accurately applies citation styles and constructs complete reference lists
Plagiarism Awareness	Understanding forms of plagiarism and strategies for prevention	Student identifies plagiarism forms and demonstrates paraphrasing competence
Ethical Use of Academic Sources	Ability to evaluate and utilize scholarly references responsibly	Student integrates credible and relevant scientific sources appropriately
Scientific Argumentation	Constructing evidence-based academic arguments supported by scholarly references	Student develops coherent scientific arguments supported by 4+ references
Publication Responsibility	Understanding ethical obligations related to scientific publication processes	Student demonstrates awareness regarding originality, authorship, and publication standards

Academic Ethics Skill	Definition	Assessment Indicator
Academic Integrity Commitment	Demonstrating honesty, responsibility, and ethical consistency in academic work	Student reflects ethical responsibility throughout scientific writing activities

The first major theme emerging from the qualitative analysis concerned the substantial enhancement of students' awareness of academic honesty and ethical scientific writing practices following the implementation of ethics-based instruction. This theme encompassed patterns of reflective thinking, ethical decision-making, and responsible academic behavior documented across observations, interviews, focus group discussions, and reflective journals. The analysis identified 24 distinct instances in which students explicitly demonstrated increased sensitivity toward plagiarism, citation responsibility, and intellectual honesty.

During the initial stages of implementation, many students viewed citation practices as technical academic requirements rather than ethical responsibilities. Students frequently demonstrate uncertainty regarding paraphrasing techniques, source acknowledgment, and the distinction between inspiration and plagiarism. However, as the implementation progressed, students began to demonstrate a more sophisticated understanding of the ethical implications of scientific writing. One student reflected during a focus group discussion: *"Previously, I thought plagiarism only meant copying entire paragraphs. After learning about academic ethics, I realized that even small ideas from others must be acknowledged properly."* This statement reflects a conceptual transformation from procedural understanding to ethical awareness.

Observational data further indicated significant improvements in students' engagement with source evaluation and responsible academic communication. Students increasingly questioned the credibility of references, discussed the importance of using peer-reviewed journals, and critically evaluated information obtained from online platforms. A field observation documented one student group spending approximately 20 minutes debating whether a website article could be considered academically reliable for inclusion in a scientific paper. These interactions suggest the emergence of critical academic literacy alongside ethical awareness.

The second principal theme concerned improving scientific writing quality and publication responsibility among students. Across 28 instances in the qualitative data, students demonstrated more structured academic arguments, clearer citation integration, and greater confidence in presenting scholarly ideas. Initially, many scientific papers produced by students lacked coherent argumentative structures and relied heavily on non-academic Internet sources. Following ethics-oriented instruction, however, students began to integrate scholarly references more effectively while demonstrating improved evidence-based reasoning.

Students also developed a deeper understanding of publication ethics particularly regarding originality and authorship responsibility. Early discussions frequently revealed the assumption that publication success depended primarily on technical formatting and language accuracy. Over time, students recognized that

publication quality is inseparable from ethical responsibility and intellectual honesty. One participant stated in a reflective journal entry: *"Scientific publication is not only about writing correctly but also about respecting the ideas and research of others."* This reflective understanding demonstrates the integration of ethical consciousness into students' academic identity.

Another significant finding concerned students' emotional and professional engagement with academic integrity AI. Several participants expressed feelings of pride and confidence when successfully completing scientific assignments independently without engaging in plagiarism or unethical academic shortcuts. Students reported that understanding publication ethics increased their sense of responsibility and professionalism as future educators and as scholars. A lecturer participant similarly observed: *"Students became more careful and reflective in writing. They no longer focused only on completing assignments quickly, but also on ensuring the originality and credibility of their work."*

Student Learning Outcomes: Academic Ethics Development

Student learning outcomes concerning academic ethics development were assessed by comparing pre and post-implementation performance across the six identified dimensions. The analysis demonstrated substantial progression in students' ethical awareness, citation competence and academic responsibility throughout the implementation period.

Table 4. Student Learning Outcomes – Academic Ethics Development

Academic Ethics Skill	Pre-Implementat ion Level (Frequency)	Post-Implementat ion Level (Frequency)	Growth Pattern
Citation & Referencing Skills	Basic (34 students)	Proficient (42 students)	Significant improvement (8-student increase to Proficient category)
Plagiarism Awareness	Limited (38 students)	Proficient (50 students)	Strong improvement (12-student increase)
Ethical Use of Academic Sources	Basic (30 students)	Proficient (40 students)	Moderate improvement (10-student increase)
Scientific Argumentation	Limited (41 students)	Advanced (36 students)	Considerable advancement in

Academic Ethics Skill	Pre-Implementat ion Level (Frequency)	Post-Implementat ion Level (Frequency)	Growth Pattern
			evidence-based writing
Publication Responsibility	Limited (35 students)	Advanced (38 students)	Strong awareness of ethical publication standards
Academic Integrity Commitment	Beginning (45 students)	Highly Proficient (50 students)	Consistent ethical development and reflective awareness

The data presented in Table 4 indicate substantial improvements across all assessed dimensions of academic ethics. Students demonstrated the most notable progression in plagiarism awareness, with 12 students advancing from a limited to a proficient understanding. This finding suggests that ethics-oriented instruction effectively strengthened students' awareness regarding academic dishonesty and responsible scholarly behavior. Students became increasingly capable of identifying plagiarism, applying paraphrasing techniques correctly, and recognizing the ethical significance of intellectual property protection.

Citation and referencing skills also demonstrated significant improvement, with eight students advancing to the proficient category. This development reflects students' increasing mastery of citation conventions, reference organization, and source acknowledgment procedures. While initial assignments frequently contained incomplete or inconsistent references, later assignments demonstrated greater technical accuracy and ethical consistency in academic attribution practices.

Scientific argumentation represents another dimension that shows substantial development. Thirty-six students achieved advanced performance in constructing evidence-based arguments supported by credible academic references. Students increasingly demonstrated the ability to synthesize information from multiple scholarly sources while maintaining logical coherence and analytical depth. This improvement suggests that ethics education not only strengthens integrity awareness but also contributes to higher-quality academic communication and critical thinking.

Publication responsibility and academic integrity commitment emerged as the strongest dimensions of development throughout the implementation process. Students demonstrated growing awareness regarding originality, authorship ethics, transparency, and professional accountability in scientific publication activities. Reflective journals consistently indicated that students perceived ethical scientific

writing not merely as an academic obligation but as an essential component of their professional identity and scholarly credibility.

Nevertheless, the findings also revealed ongoing challenges related to the implementation of ethical scientific writing practices in higher education. Several students reported difficulties paraphrasing complex academic texts, managing extensive citation requirements, and distinguishing between common knowledge and citable information. Furthermore, time pressure and academic workload occasionally encouraged tendencies toward superficial referencing. These findings indicate that ethics-based scientific writing instruction requires continuous reinforcement, institutional support, and sustained academic mentoring to ensure the long-term development of responsible scholarly behavior.

Overall, the study demonstrates that ethics-oriented scientific writing education significantly contributes to the development of students' academic integrity, publication responsibility, and scholarly professionalism in higher education contexts. The integration of reflective learning, collaborative discussions, and practical publication activities effectively strengthened students' ethical awareness while simultaneously improving the quality of scientific communication and academic engagement.

DISCUSSION

The findings of this study provide substantial evidence that ethics-based scientific writing education represents an effective pedagogical approach for fostering the development of academic integrity and responsible publication practices among university students. The data demonstrate that when students engage in structured academic writing activities grounded in ethical reflection, collaborative supervision, and authentic publication-oriented experiences, they develop significant competencies across multiple dimensions of academic ethics. These findings align with contemporary higher education literature emphasizing that meaningful scientific writing instruction should extend beyond technical formatting and grammatical accuracy toward the cultivation of intellectual responsibility, scholarly honesty, and ethical awareness. The integration of ethical principles into academic writing instruction appears to strengthen not only students' understanding of publication standards but also their broader academic identity as responsible contributors to scholarly communities.

The development of students' academic ethics competencies progressed through sustained engagement with reflective learning processes and guided scientific writing activities. During the initial stages of implementation, many students demonstrated limited awareness of the ethical implications of plagiarism, improper citation, and irresponsible use of academic sources. Academic writing was frequently perceived as a technical requirement aimed primarily at completing assignments rather than a scholarly practice requiring honesty and intellectual accountability. However, as students became increasingly involved in reflective discussions, plagiarism prevention activities and evidence-based writing exercises, they gradually developed a more sophisticated understanding of academic integrity and publication

responsibility. This developmental progression reflects educational theories emphasizing scaffolded learning, wherein learners gradually assume greater autonomy and ethical awareness through guided participation and reflective engagement.

The effectiveness of ethics-oriented scientific writing instruction may be attributed to several complementary pedagogical factors such as First, the use of authentic academic tasks such as preparing scientific articles, analyzing plagiarism reports, and evaluating scholarly references enabled students to engage directly with real-world academic practices rather than abstract theoretical explanations alone. Authentic engagement with publication-oriented assignments appears to strengthen students' awareness regarding the practical consequences of academic dishonesty and the importance of scholarly credibility. Second, collaborative learning interactions involving lecturers, peer mentors, and fellow students create opportunities for discussion, feedback exchange, and ethical reflection, thereby supporting students' understanding of responsible academic communication. Third, the reflective learning components incorporated into journals and focus group discussions encouraged students to examine their own academic behaviors critically, fostering deeper personal commitment toward integrity and professionalism in scientific writing.

Beyond developing technical academic writing competencies, the findings revealed significant emotional and professional dimensions associated with ethics-based instruction. Many students expressed that participation in ethical scientific writing activities strengthened their confidence, self-respect, and sense of responsibility as future scholars and educators. Scientific writing was no longer viewed merely as an academic obligation but increasingly perceived as a professional activity requiring honesty, discipline, and accountability. One student's reflection that *"writing scientifically means being responsible for every idea we present"* illustrates this transformation from procedural understanding toward ethical internalization. These findings support theories of professional identity development suggesting that ethical learning experiences contribute significantly to the formation of responsible academic and professional identities.

The findings also indicate that ethical scientific writing education contributed substantially to students' critical academic literacy. Students demonstrated an increasing ability to evaluate the credibility of academic sources, distinguish scholarly references from unreliable digital information, and recognize the importance of evidence-based argumentation. This development is particularly significant in contemporary digital learning environments where information accessibility often exceeds students' evaluative capacities. The ease of copying online information without critical verification has become a major challenges for higher education institutions globally. Consequently, the strengthening of ethical source evaluation skills observed in this study suggests that ethics-oriented instruction may serve not only as plagiarism prevention but also as an important mechanism for developing responsible digital scholarship and critical literacy competencies.

The collaborative learning dynamics documented throughout the implementation process further reinforce social constructivist perspectives concerning academic learning. Students frequently engaged in peer discussions regarding citation practices, paraphrasing strategies, and publication standards, demonstrating that

ethical understanding was constructed collectively through social interaction rather than in isolation. Peer mentoring activities appeared particularly effective in supporting students who initially lacked confidence in scientific writing. Several participants reported feeling more comfortable discussing difficulties with peers than with lecturers, suggesting that collaborative academic environments may reduce anxiety and encourage more open reflection on ethical challenges. These findings align with Vygotskian perspectives emphasizing the importance of social interaction, dialogue, and collaborative meaning-making in cognitive and professional development.

The study additionally revealed that reflective learning played a crucial role in strengthening students' academic integrity commitment. Reflective journals encouraged students to articulate personal experiences related to academic pressure, time management, and ethical dilemmas encountered during scientific writing activities. Through reflective practice, students became increasingly aware of the motivations underlying unethical behaviors such as plagiarism or superficial citation practices. Rather than perceiving academic dishonesty as mere rule violations, students began to recognize its broader implications for personal credibility, scholarly trust, and institutional reputation. This reflective transformation suggests that ethics education becomes more effective when students are encouraged not only to follow regulations but also to critically examine the moral and professional values underlying those regulations.

Despite the substantial positive outcomes identified, the findings also revealed significant implementation challenges that require careful consideration. One major challenge concerned students' limited prior exposure to formal academic writing conventions and publication ethics. Many participants entered the Scientific Publication course without an adequate understanding of citation systems, paraphrasing techniques, or scholarly source evaluation. This limited foundational knowledge occasionally hindered students' ability to apply ethical principles consistently, even when ethical awareness has already been conceptually developed. The findings suggest that ethics-based instruction should be integrated progressively across multiple levels of higher education curricula rather than being introduced only within advanced scientific writing courses. Early exposure to academic integrity principles may strengthen students' preparedness for complex publication-oriented activities in later semesters.

Another significant challenge is balancing technical writing instruction with ethical education within a limited timeframe. Lecturers have reported difficulties in simultaneously teaching scientific writing structure, research methodology, citation techniques, and publication ethics within a single academic course. Students similarly expressed that ethical academic writing requires substantial time for revision, source verification, and reflective evaluation, while institutional academic schedules often prioritize assignment completion speed over depth of ethical engagement. These findings suggest the need for institutional policies and curricular structures that provide sufficient time and academic support for reflective scientific writing.

The assessment of academic ethics development has also emerged as a complex pedagogical challenge. Unlike purely technical competencies, ethical awareness and academic integrity involve multidimensional cognitive, behavioral, and affective

processes that are difficult to measure using standardized assessment instruments alone. Students may demonstrate technical citation accuracy while still lacking a deeper ethical understanding of intellectual responsibility and scholarly honesty. Consequently, the use of multiple assessment forms—including reflective journals, interviews, classroom observations, and scientific writing analysis—was essential for capturing the complexity of students' ethical development. These findings support broader educational discussions suggesting that authentic assessment approaches are necessary for evaluating higher-order competencies such as academic integrity and professional ethics.

The findings of this study support and extend several theoretical perspectives relevant to higher education pedagogy and academic ethics. The situated learning perspective, which emphasizes that meaningful learning develops through participation in authentic social practices, is strongly supported by the data. Students' engagement with real scientific writing tasks, publication-oriented assignments, and collaborative academic interactions created learning experiences embedded within actual scholarly practices rather than isolated classroom simulations. This situated character of learning appears to strengthen both conceptual understanding and long-term ethical commitment to the field.

These findings also resonate with self-determination theory, particularly concerning the role of autonomy, competence, and relatedness in sustaining intrinsic motivation. Students demonstrated stronger engagement and responsibility when they perceived scientific writing as personally meaningful and professionally relevant rather than merely as an institutional requirement. Opportunities for autonomous reflection, collaborative support, and successful mastery of ethical writing practices appeared to foster intrinsic motivation toward responsible academic behavior. Consequently, ethics-based scientific writing education may contribute not only to improved academic performance but also to the cultivation of long-term scholarly professionalism and a lifelong learning orientation.

Overall, this study demonstrates that ethics-oriented scientific writing education is a powerful pedagogical approach for strengthening academic integrity, publication responsibility, and scholarly professionalism in higher education. The integration of reflective learning, authentic academic tasks, collaborative supervision, and ethical discussions effectively supported students' development as responsible academic writers and future professionals. These findings underscore the importance of positioning academic ethics not as supplementary institutional regulations but as the central foundations of meaningful higher education and credible scientific communication.

CONCLUSION

This qualitative study examined the implementation of ethics-based scientific writing and publication education in higher education and its influence on the development of students' academic integrity, publication responsibility, and scholarly professionalism. Through systematic qualitative investigation utilizing structured observations, semi-structured interviews, focus group discussions, reflective learning

journals, and document analysis, the research identified multiple dimensions of ethical academic development and explored the broader educational implications of integrating publication ethics into scientific writing instruction. The findings provide substantial evidence that ethics-oriented scientific writing education constitutes an effective pedagogical approach for strengthening students' understanding of academic honesty, responsible scholarship, and professional publication practices within university contexts.

The research findings demonstrate significant improvements across several dimensions of academic ethics competency, including citation and referencing skills, plagiarism awareness, ethical source utilization, evidence-based scientific argumentation, publication responsibility, and commitment to academic integrity. Students gradually developed a greater awareness of the importance of acknowledging intellectual contributions, utilizing credible academic references, and constructing scientific arguments supported by responsible scholarly evidence. This development occurred through authentic engagement with scientific writing tasks, reflective learning activities, collaborative academic discussions, and publication-oriented assignments that encouraged students to connect theoretical ethical principles with practical scholarly experiences.

Beyond the development of technical scientific writing competencies, the study also revealed substantial affective and professional dimensions associated with ethics-based learning in the course. Students expressed increased confidence, responsibility, and pride in their ability to produce original academic work while adhering to ethical publication standards. Ethical scientific writing is increasingly perceived not merely as an academic requirement but as an essential professional value shaping students' identities as future educators, researchers, and scholars. These findings suggest that ethics-oriented academic instruction contributes not only to improved writing quality but also to the cultivation of responsible scholarly character and long-term professional integrity of the students.

The study also identified several implementation challenges that require institutional attention and pedagogical support. Among the principal challenges were students' limited prior exposure to formal academic writing conventions, difficulties in paraphrasing and source evaluation, restricted instructional time, and the complexity of assessing ethical development comprehensively. These findings indicate that academic ethics education should not be treated as a single course responsibility but rather integrated systematically throughout higher education curricula. Sustainable implementation requires continuous mentoring, institutional commitment, supportive academic policies, and collaborative learning environments that can reinforce ethical scholarly behavior over extended periods.

Overall, this study concludes that ethics-based scientific writing and publication education plays critical roles in fostering academic integrity, responsible publication practices, and scholarly professionalism in higher education. The integration of reflective learning, authentic academic tasks, collaborative supervision, and ethical discussions creates meaningful educational experiences that support both the cognitive and moral dimensions of student development. Consequently, universities should strengthen their institutional efforts to integrate publication ethics into

academic culture as a foundational component of quality higher education and credible scientific communication.

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