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ARTIFICIAL INTELLIGENCE IN THESIS WRITING: EXPLORING THE ROLE OF ADVANCED GRAMMAR CHECKERS (GRAMMARLY)

*Inteligencia Artificial en la Redacción de Tesis:
Explorando el Papel de los Correctores Gramaticales
Avanzados (Grammarly)*

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Artificial Intelligence in Thesis Writing: Exploring the Role of Advanced Grammar Checkers (Grammarly)

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ABSTRACT

This study aims to investigate the impact of advanced grammar checkers, specifically Grammarly, on thesis writing in academic settings. Employing a qualitative methodology, the research involved semi-structured interviews with three experienced thesis supervisors from two academic institutions. The findings highlight that while Grammarly enhances writing quality through immediate, personalized feedback, it raises concerns about potential over-reliance, which may hinder the development of students' writing skills and academic independence. The research underscores the need for a balanced integration of AI tools in academic writing, advocating for their use as supplementary aids rather than primary solutions. It also calls for comprehensive training and clear policies to maximize the benefits of these tools while maintaining academic integrity and fostering critical thinking skills among students.

Keywords: *Artificial Intelligence (AI), advanced grammar checkers, thesis writing, academic integrity, critical thinking*

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Inteligencia Artificial en la Redacción de Tesis: Explorando el Papel de los Correctores Gramaticales Avanzados (Grammarly)

RESUMEN

Este estudio tiene como objetivo investigar el impacto de los correctores gramaticales avanzados, específicamente Grammarly, en la redacción de tesis en entornos académicos. Empleando una metodología cualitativa, la investigación involucró entrevistas semiestructuradas con tres supervisores de tesis experimentados de dos instituciones académicas. Los hallazgos destacan que, si bien Grammarly mejora la calidad de la redacción mediante retroalimentación inmediata y personalizada, también plantea preocupaciones sobre la posible dependencia excesiva, que podría obstaculizar el desarrollo de las habilidades de redacción y la independencia académica de los estudiantes. La investigación subraya la necesidad de una integración equilibrada de las herramientas de IA en la redacción académica, abogando por su uso como ayudas complementarias en lugar de soluciones primarias. También se hace un llamado a una capacitación integral y a políticas claras para maximizar los beneficios de estas herramientas, manteniendo al mismo tiempo la integridad académica y fomentando las habilidades de pensamiento crítico entre los estudiantes.

Palabras clave: *Inteligencia Artificial (IA), correctores gramaticales avanzados, redacción de tesis, integridad académica, pensamiento crítico*

INTRODUCTION

Artificial Intelligence (AI) has become deeply ingrained in various facets of modern life, transforming processes and bolstering efficiency across diverse domains. Its influence pervades academia, prompting discussions on its implications for intellectual development and academic integrity (Jones, 2019; Smith et al., 2021). Within this context, the integration of AI technologies, including advanced grammar checkers such as Grammarly, has become increasingly prevalent in educational institutions, offering both opportunities and challenges (Aldosari, 2020).

While the adoption of AI-powered tools for academic writing has streamlined processes and improved quality, it has also raised questions regarding the integrity of academic work and the preservation of human effort in scholarly endeavors. Despite the potential benefits, concerns linger regarding the overreliance on AI-driven assistance and its impact on the authenticity and originality of student theses (Lee, 2018).

Therefore, this study aims to address the gap in the literature by investigating the perceptions of thesis supervisors regarding the role of advanced grammar checkers, particularly Grammarly, in student thesis writing. By exploring supervisors' perspectives on the integration of AI technologies as substitutes for human writers, this research seeks to shed light on the implications for academic integrity and intellectual autonomy.

While acknowledging the benefits of AI-driven assistance, this study also anticipates potential critiques and examines the nuanced complexities surrounding the use of advanced grammar checkers in thesis writing. Through a comprehensive analysis of supervisors' viewpoints, this research endeavors to contribute to a deeper understanding of the evolving landscape of academic writing in the era of Artificial Intelligence.

In this introduction, we provide an overview of the pervasive influence of AI in academia and outline the specific focus of our study: examining the perceptions of thesis supervisors regarding the integration of advanced grammar checkers, with a focus on Grammarly, in thesis writing.

Subsequent sections will delve into the methodology, findings, and implications of this investigation, offering valuable insights into the intersection of AI and academic writing.

Justification

The integration of Artificial Intelligence (AI) technologies into academic practices has spurred significant inquiry across various domains. Central to this discussion is the pivotal question: How will AI advance to potentially replace human writers in the creation of research works, particularly in the context of students' final theses? Grammar and paraphrasing checkers, exemplified by tools like Grammarly and Quillbot, serve as indispensable aids in editorial processes, offering functionalities that extend beyond basic spell-checking. Similarly, automatic translators represent transformative tools poised to reshape educational practices. However, the integration of advanced grammar checkers into academic writing raises ethical considerations that necessitate thorough deliberation, particularly within the realm of thesis composition.

Thesis supervision stands as a cornerstone of academic mentorship, where seasoned researchers play a critical role in nurturing the next generation of scholars within their respective fields. Many established researchers form research teams to foster scientific inquiry and innovation (Alvarez-Gayou, 2018).

Recognition of the significance of technological applications in streamlining reviewing and grading processes is increasingly evident among research experts (Dougiamas, 2024). Virtual writing assistants, as highlighted in the 2022 EDUCAUSE Horizon Report, offer students real-time feedback aligned with instructors' criteria and course objectives.

Chiu's (2022) study underscores the efficacy of grammar-checking tools such as Grammarly, Ginger, and Quillbot in providing real-time feedback to students, thereby complementing traditional teacher correction comments.

It's evident that the integration of AI-driven technologies, including autochecking exams and advanced grammar checkers, presents an opportunity to alleviate teachers' grading burden, enabling greater investment of time in scholarly pursuits and professional development.

Empirical findings suggest that the adoption of software like Grammarly and Quillbot reduces the time spent on grammar proofreading, thereby allowing educators to focus on substantive aspects of writing, such as content and organization (Chiu, 2022).

Effectiveness of Grammarly in Thesis Writing

Grammarly proves valuable in thesis writing by serving as a versatile writing aide, offering thorough feedback and recommendations to students striving to enhance their academic work.

As an advanced grammar checker, Grammarly surpasses mere spell-checking functions and attends to various writing components, encompassing spelling, grammar, punctuation, clarity, and writing style. Here's an in-depth examination of how Grammarly assists students in elevating the quality of their theses (Karyuatry, Laksnorina & Rizqon, Muhammad Dhika Arif, 2018):

- **Correction of Spelling and Grammar:** Grammarly's primary role involves detecting and rectifying spelling and grammatical errors in written text. Leveraging an extensive repository of language rules and patterns; also, identifies and fixes common spelling errors, typos, and grammatical mistakes to ensure adherence to standard linguistic conventions.
- **Improvement in Punctuation Usage:** Beyond spell and grammar checks, this tool aids students in refining the accuracy and appropriateness of punctuation usage in their theses. It identifies misplacements or omissions of punctuation marks, offers suggestions for suitable punctuation adjustments, and ensures uniformity in punctuation usage throughout the document.
- **Enhancement of Clarity:** Clear communication is paramount in academic writing, particularly in thesis composition where intricate concepts demand clear and effective expression. Grammarly provides suggestions to enhance sentence

structure, eliminate ambiguity, and improve readability, thereby augmenting the clarity of the thesis content.

- **Refinement of Writing Style:** Grammarly scrutinizes the writing style of the text and furnishes feedback on factors such as sentence diversity, tone, and coherence. It offers recommendations to refine the writing style, ensuring that the thesis maintains a consistent and professional tone while effectively conveying the intended message to the readers.
- **Enrichment of Vocabulary:** To elevate the overall quality of the thesis, Grammarly proposes alternative word choices and synonyms to enrich the diversity and richness of the vocabulary employed in the text. This aids students in avoiding repetitive language usage and articulating their ideas more eloquently.
- **Consistency Verification:** Grammarly conducts checks for consistency in spelling, grammar, punctuation, and writing style throughout the thesis. It identifies any discrepancies and provides suggestions to uphold uniformity and coherence across the document, thereby contributing to the production of a polished and professional final product.

However, despite its numerous benefits, Grammarly does have limitations. It may not always accurately interpret the context of the text, leading to incorrect suggestions. Additionally, the free version of Grammarly offers limited features compared to the premium version, which may deter some students from fully utilizing its capabilities. Overall, while Grammarly aids in enhancing the quality of theses, students should remain mindful of its limitations and exercise critical judgment in implementing its suggestions.

Integration of AI in Academic Writing

The incorporation of artificial intelligence (AI) into academic writing represents a notable advancement in how students engage with the writing process. Leading the charge in this evolution is Grammarly, an AI-driven tool that offers sophisticated features to aid writers. Here's

an in-depth examination of how AI impacts academic writing, particularly focusing on Grammarly's utilization of AI algorithms.

Advantages of AI in Academic Writing

The use of artificial intelligence (AI) in academic writing offers several significant advantages (Textero AI, 2024)

- **Analysis of Writing Patterns:** Grammarly harnesses advanced AI algorithms to scrutinize vast collections of writing samples, enabling it to glean insights from diverse writing styles and effective communication patterns. This wealth of data informs Grammarly's suggestions, assisting students in adhering to universally recognized writing norms across academic disciplines.
- **Tailored Feedback:** AI technology within Grammarly delivers feedback personalized to each user. By assimilating knowledge from individual writing habits and preferences, it offers tailored suggestions that evolve with user interaction. This personalized guidance is pivotal in fostering students' development of their distinctive writing styles while upholding academic standards.
- **Real-Time Support:** Grammarly provides instantaneous corrections and recommendations as students write, significantly streamlining the revision process. This immediacy not only preserves the writing flow but also facilitates immediate learning from mistakes, a crucial aspect of effective writing enhancement.
- **Accessibility:** AI tools like Grammarly are accessible across various platforms, seamlessly integrating into writing environments through plugins and applications. This accessibility ensures that students can refine their writing skills wherever they are, be it drafting a thesis, composing an email, or participating in online discussions.

Challenges and Constraints of AI in Academic Writing

While the benefits are evident, the integration of AI in academic writing presents several challenges and limitations (Thanya, R.; Marudhavel, Nisha & Chandramohan, Suganthan, 2023):

- **Dependency on Technology:** There is a risk that students may overly rely on AI tools like Grammarly for corrective interventions, potentially impeding their capacity to independently grasp and apply grammar and style rules. This overreliance could hinder the development of critical writing skills.
- **Contextual Limitations:** Despite AI algorithms' robustness, they may occasionally falter in fully grasping context or recognizing nuanced academic arguments. This can result in erroneous suggestions or oversight of context-specific stylistic nuances.
- **Potential for Standardization:** The widespread adoption of a single AI writing tool, such as Grammarly, may foster a trend towards uniform writing styles. This uniformity could dilute individuality and stifle creative expression in writing.
- **Privacy Implications:** The use of AI-powered tools entails processing substantial volumes of personal data to tailor suggestions. This raises privacy concerns, particularly when sensitive or proprietary academic work is processed through commercial software platforms.
- **Economic Barriers:** Access to the full suite of features in AI tools like Grammarly often necessitates a subscription, posing a potential economic barrier for some students. This barrier may limit equal access to the benefits of AI in academic writing.

In summary, although AI tools such as Grammarly bring substantial advantages through their provision of thorough, instantaneous, and tailored feedback, it is essential for both students and educational institutions to recognize the accompanying limitations and possible disadvantages. Achieving a harmonious blend of AI-supported writing and traditional learning approaches, alongside promoting a discerning approach to AI recommendations, is essential to harnessing the advantages of technology while safeguarding educational achievements.

Ethical Considerations

In the context of employing advanced grammar checkers in thesis composition, it's crucial to tackle pertinent ethical aspects. Among these is the prospect of excessively depending on assistance provided by artificial intelligence (AI), potentially hindering the cultivation of students' critical writing abilities. Furthermore, acknowledging the necessity of upholding academic integrity and preventing plagiarism is essential, even as AI tools are employed to refine text quality (Muztafa, 2024).

Constraints

In this section, we explore the constraints facing AI in academic writing (Muztafa, 2024):

Decline in Critical Thinking Skills

Excessive dependence on AI for creating content and constructing arguments might result in a deterioration of critical thinking abilities. The skills of analyzing information, crafting coherent arguments, and articulating independent ideas are vital in academic settings.

Human-like Writing by AI?

The capacity for critical thought and the generation of original ideas are key attributes of effective academic writing. Although AI serves as a useful resource, it does not yet possess the human ability for true creativity and deep analytical insight.

Preventing Accidental Plagiarism

AI writing tools may inadvertently lead to plagiarism by rephrasing sources too closely without appropriate citations. Although these tools do not directly copy text, their paraphrased outputs can closely mimic the original sources. Heavy reliance on AI for paraphrasing needs vigilant review and correct attribution to avoid unintended plagiarism.

Achieving a Healthy Equilibrium

AI writing assistants are transforming academic writing, offering tools that boost both efficiency and quality. Nonetheless, it is important to find a healthy balance between leveraging these technologies and preserving academic principles.

Educators should guide students towards the selective use of AI tools such as Grammarly to enhance their writing skills. It is crucial to emphasize that these tools should be used as aids, not substitutes, in the academic writing process. Students should be instructed on the importance of using Grammarly and similar tools to improve the quality of their texts while maintaining primary responsibility for content creation. Additionally, emphasis should be placed on the need to report the use of AI to promote academic honesty. This could be achieved through the implementation of forms provided by educators, which students are required to fill out to document their use of the application. This approach aims to foster transparency and student integrity in the writing process.

By encouraging transparent and ethical use, the educational community can utilize AI to enhance academic writing while protecting the foundational values of research and education.

Impact on Thesis Supervision

Examining how thesis supervisors view the utilization of advanced grammar checkers like Grammarly in student thesis composition is essential for grasping their significance in academic oversight and guidance. This study seeks to explore the viewpoints of thesis supervisors concerning the benefits, obstacles, and wider ramifications linked to the incorporation of advanced grammar checkers into the thesis writing procedure.

Comparison with Other Tools

When comparing Grammarly to other advanced grammar checkers and writing assistance tools available on the market, several key aspects come into focus: the features offered, the effectiveness of these features, and their suitability for thesis writing purposes. Let's examine Grammarly in relation to two other prominent tools: ProWritingAid and Hemingway Editor.

Grammarly

Features: Grammarly offers comprehensive writing assistance, covering grammar and spelling checks, punctuation, style, and tone adjustments. Its features also include plagiarism detection, which is particularly useful for thesis writing (Grammarly, s.f.).

Effectiveness: Known for its accuracy in grammar correction and style suggestions, Grammarly provides detailed explanations for its edits, which can be educational for users wanting to improve their writing skills. The tool integrates smoothly with various platforms, including word processors and web browsers, enhancing its usability (Perdana, I.; Manullang, S. & Masri, F., 2021)

Suitability for Thesis Writing: Grammarly's detailed feedback and plagiarism checker make it highly suitable for thesis writing, ensuring academic integrity and a polished, professional writing style. Meanwhile, Grammarly's limitations include its inability to identify the tenses students use throughout their documents, the absence of an option to download feedback as a file, and the requirement for students to purchase a subscription to unlock all premium features of Grammarly. (Fitria, R.; Sabarun, S. & Miftah, M. Z, 2022).

ProWritingAid

Features: Like Grammarly, ProWritingAid offers extensive feedback on writing, but with a stronger emphasis on style and readability. It includes reports on sentence length and variation, passive voice, adverbs, and cliches, among others (ProWritingAid, s.f.).

Effectiveness: ProWritingAid is particularly effective for writers looking to improve their style and readability. Its comprehensive reports help users understand the deeper aspects of their writing style, though it may not be as intuitive as Grammarly for quick grammar checks (Fitria, T.N., 2023).

Suitability for Thesis Writing: This tool is useful for thesis writers aiming to refine their academic style and ensure clarity and flow in their writing, though its grammar checking is less comprehensive than Grammarly's (Fitria, T.N., 2023).

Hemingway Editor

Features: Hemingway focuses on readability and sentence structure, highlighting complex sentences, use of passive voice, adverbs, and hard-to-read sentences. It is less focused on grammar and more on making writing bold and clear (Hemingway Editor, s.f.).

Effectiveness: Hemingway is effective for making writing concise and easy to read. It is particularly good at encouraging more assertive and direct writing, though it lacks the depth in grammar and style suggestions compared to Grammarly and ProWritingAid. The free version of this tool offers a trial period and includes features such as word, character, sentence, paragraph, and letter count. It's particularly useful for short writing pieces like blog posts, articles, and short stories. Additionally, it tracks reading time and provides a readability scale using a grade-level system. The app sets limits on adverb usage based on the length of your writing and highlights passive voice. It also evaluates sentence structure and identifies sentences that are challenging to read, encouraging clear and concise writing. You can easily transfer your text into the app and switch between your manuscript as needed. If you find it beneficial and choose to purchase it, the cost is \$19.99 for either Windows or Mac. On the other hand, the application lacks the capability to detect spelling or punctuation mistakes and does not integrate seamlessly with Microsoft Word or Outlook as Grammarly does. It is less suitable for longer writing projects such as novels or novellas. Additionally, it does not provide formatting or organizational suggestions, which are features found in other applications (Ward, 2023).

Suitability for Thesis Writing: While helpful for refining sentence structure and improving readability (Ward, 2023), Hemingway's lack of advanced grammatical feedback makes it less suitable as a standalone tool for thesis writing. It is best used in conjunction with a more comprehensive tool like Grammarly.

In conclusion, while all three tools offer valuable features for improving writing, Grammarly stands out in terms of comprehensive grammatical feedback and suitability for academic environments, particularly for thesis writing. ProWritingAid and Hemingway provide excellent complementary benefits that can enhance clarity and style but may require pairing with a more robust grammar checker for best results in thesis writing contexts.

Future Trends and Directions

The landscape of AI-driven tools in academic writing is rapidly evolving, with significant advancements anticipated soon. As these technologies become more sophisticated, they are expected to further transform how students and academics engage with writing tasks (Mohamed & Albadawy, 2024).

Enhanced Natural Language Processing (NLP): Future developments in Grammarly and similar platforms are likely to leverage more advanced NLP capabilities. These improvements could enable these tools to understand context better, make more accurate suggestions, and even adapt to different academic disciplines' specific writing styles and terminologies.

Integration with Educational Platforms: AI-driven writing tools may become more deeply integrated into educational systems and platforms. For example, direct integration into Learning Management Systems (LMS) could allow real-time feedback during the writing process, making these tools more accessible and contextually relevant to students' assignments.

Predictive Analytics: Future iterations may include predictive analytics to offer preemptive suggestions about writing issues before they occur, based on the analysis of a user's past writing patterns. This could help in enhancing the learning curve and significantly improving writing quality over time.

Expansion of Multilingual Support: As global education markets grow, AI tools like Grammarly are expected to expand their multilingual capabilities, thereby supporting a broader range of languages, and helping non-native English speakers improve their academic writing in their second languages.

Ethical AI Use: There will likely be a greater focus on the ethical implications of using AI in academic writing. This includes concerns about authorship, plagiarism, and the extent to which AI should intervene in the creative and intellectual process.

Empirical Studies and Case Examples

Empirical evidence supports the efficacy of Grammarly and other advanced grammar checkers in enhancing academic writing outcomes. Several studies and case examples highlight these benefits (Sieras, 2024):

Emerging AI technologies have significantly impacted various aspects of human activities, including language education. This research explores the views of higher education students on utilizing ChatGPT and Grammarly for thesis writing. Adopting a phenomenological method, the study aimed to capture the experiences of ten English Language Studies majors engaged in thesis writing, using interviews and focus group discussions for data collection. Analysis of the data through thematic analysis uncovered several key themes: the applications of AI tools in thesis writing, the advantages these tools provide, and the challenges associated with their use.

The findings indicate that students value AI tools like ChatGPT for overcoming writer's block and generating new research ideas by providing immediate access to information. Grammarly was noted for its utility in correcting grammar and mechanics, such as punctuation errors, subject-verb disagreements, incorrect verb tenses, unclear pronoun references, and issues with conciseness. However, the study also highlighted a significant concern: an overdependence on AI tools might hinder critical thinking, potentially degrading the quality of students' writing.

The conclusion drawn from the study emphasizes the importance of educating students on effectively leveraging AI tools to enhance their writing while maintaining high ethical standards and fostering the development of critical thinking skills.

Research questions

Upon scrutinizing the pervasive integration of AI into various facets of contemporary existence, particularly its impact on the creation of academic content such as theses, the following research inquiries are delineated:

Main question

How do the advancements in artificial intelligence (AI), particularly through tools like Grammarly and Quillbot, impact the process of academic writing and thesis composition?

Secondary questions

How has the integration of AI, as exemplified by tools like Grammarly, transformed the landscape of academic writing and research?

How can Advanced Grammar Checkers improve thesis writing for university students?

What strengths and weaknesses do Advanced Grammar Checkers have in serving as an extension to helping university students improve writing a thesis?

How do thesis supervisors perceive the use of AI-powered grammar checkers and paraphrasing tools in student thesis writing, and what are their implications for academic integrity?

Purpose of the Study

The objective of this research is to examine the effects of sophisticated grammar checkers, notably Grammarly, on academic writing practices, especially in the context of thesis development. This study seeks to assess how the incorporation of artificial intelligence (AI) technologies within these tools affects dimensions such as efficiency, effectiveness, and academic integrity in academic writing. By conducting this analysis, the research intends to shed light on AI's contribution to academic writing and its implications for pedagogy, learning, and scholarly discourse.

METHOD

The study adopts a qualitative methodology, engaging semi-structured interviews to probe the insights and experiences of three seasoned researchers from two distinct academic institutions who oversee thesis projects. Purposive sampling was employed to ensure a varied participant demographic. A customized interview guide aligned with the study's aims and central themes facilitated the gathering of data. These interviews were recorded, transcribed verbatim, and scrutinized to distill researchers' perspectives on advanced grammar-checking tools such as

Grammarly and other pertinent elements of thesis supervision. Through inductive qualitative analysis, emergent themes and patterns were identified, categorized, and cross-compared among participants. Ethical considerations were rigorously maintained, with procedures such as obtaining informed consent, ensuring confidentiality, and adhering to ethical standards being paramount. Notable limitations of this study include the constrained sample size and the potential biases linked to subjective interpretations.

Data Collection Procedures

This investigation adopted a qualitative research design, leveraging semi-structured interviews to explore the insights and experiences of thesis supervisors from various academic fields at three separate institutions. To ensure a comprehensive array of viewpoints, purposive sampling was utilized to select three seasoned researchers. The interviews were structured around a guide crafted according to the study's goals and pertinent concepts, featuring open-ended questions designed to garner in-depth perspectives on the use of advanced grammar-checking tools like Grammarly in thesis writing. These interviews were conducted on an individual basis, with each session being recorded and transcribed for detailed analysis. The analytical process employed an inductive approach to qualitative data, aiming to unearth and categorize emergent themes and patterns. Stringent ethical measures were upheld, including obtaining informed consent, maintaining participant confidentiality, and adhering to established ethical standards. The research acknowledged potential limitations such as the limited sample size and the inherent subjectivity of the participants' viewpoints.

Findings

In the following sections, the results of the study are detailed and examined. These results illuminate the views, experiences, and attitudes of thesis advisors regarding the utilization of advanced grammar checkers in thesis composition. The analysis explores the principal themes and patterns that emerged from the interviews, offering significant insights into the consequences of incorporating AI-driven tools into the academic writing process.

Experience and Role of Thesis Supervisor

Contextualization

This article explores the changing terrain of thesis composition, especially the adoption of sophisticated grammar checkers such as Grammarly. Yet, a pivotal element underpinning thesis supervision is the experience and role of the thesis advisor. Within this framework, it is essential to examine how differences in the experience levels of thesis supervisors may influence their research methodologies and the incorporation of technological tools in the evaluation process.

Experience and Role of Thesis Supervisor

The interviewees have varied levels of experience in thesis supervision, with one having 10 years and the others 20 years of experience. This variation in experience might influence their research approaches and the adoption of technological tools in grading, although it is not certain that more years in the field always translate to better expertise. Experience in research can be pivotal, as noted by some scholars like Dougiamas (2024), who highlight the importance of technological tools in streamlining the review and grading processes. However, experience does not derive solely from years spent in the field but also from the volume of theses supervised. The interviewed thesis advisors reported supervising 4, 20, and 42 theses respectively, indicating different levels of direct engagement with thesis projects since they began their roles. An advisor who has supervised only four theses might be considered less experienced in thesis direction, while one who has supervised 42 theses would be seen as highly experienced, having directed more than 20 theses. An advisor with 20 supervisions represents a moderate experience level. These variances highlight the diverse experience levels among thesis advisors, which could significantly shape their perceptions and methods of guiding students in thesis writing. Thesis supervision is crucial for the development of researchers, and as Alvarez-Gayou (2018) points out, seasoned researchers often emphasize mentoring and leading young researchers within their disciplines, sometimes taking on pivotal roles in research teams to foster scientific advancement in their fields.

Thesis review process

The article examines the adoption of advanced technologies, specifically sophisticated grammar checkers such as Grammarly, within the thesis writing process. Prior to delving into the utility of these tools, it is essential to comprehend the dynamics and challenges that accompany the review and evaluation of theses. This initial discussion explores the various methodologies and realities encountered by thesis supervisors during the review of student theses, highlighting the time devoted to revisions and the application of evaluative tools like rubrics.

The responses from thesis supervisors regarding the time allocated to revising student theses vary significantly:

- **Up to Four Hours:** This response suggests a preference for setting definitive time limits for thesis revisions, indicating a highly efficient organizational system that facilitates effective time management.
- **Contingent on Workload and Availability:** This approach indicates that the time dedicated to thesis revisions may fluctuate based on the supervisor's other commitments and responsibilities, necessitating flexible scheduling.
- **Dependent on Thesis Quality and Student Effort:** This perspective considers the quality of the thesis and the effort put forth by the student as major determinants of the required revision time. Theses that are well-prepared and adhere to guidelines are typically quicker to review than those lacking in quality.

Interviewee 3 notes that reviewing theses is particularly time-consuming when students have not fully understood or conscientiously engaged with their work, with the revision time being more dependent on the student's input than on the supervisor's capacity (personal communication, April 1, 2024).

These insights reveal that the time spent on thesis revisions can vary based on factors like organizational skills, time availability, the quality of student submissions, and the supervisor's efficiency in managing time. Experienced thesis supervisors often develop strategies for

managing their review time effectively and guiding students towards producing high-quality work efficiently.

The integration of AI technologies and automated grading systems is increasingly recognized as beneficial for optimizing grading and review processes in academic contexts. Such technologies can reduce the burden of manual grading, freeing up educators to focus more on research and professional development (Chui, 2022).

Regarding the use of evaluative tools, responses illustrate different approaches taken by thesis supervisors:

- **Using a Rubric:** According to one response, some supervisors use faculty-provided rubrics that outline specific criteria for each thesis chapter, ensuring students meet their objectives (Interviewee 1, personal communication, March 9, 2024).
- **No Specific Rubric:** Another response indicates that some supervisors do not employ a predefined rubric, possibly relying more on subjective judgment or an alternative evaluative approach.
- **Using a Checklist:** Differing from rubrics, another supervisor opts for a checklist to assess various thesis components, offering a potentially more comprehensive and flexible evaluation framework.

The application of rubrics or checklists ensures a consistent and thorough evaluation of theses, critical for providing equitable grades and detailed feedback to students (Ferrer, 2023).

In sum, whether through rubrics, checklists, or other methods, the aim is to conduct meticulous evaluations and provide clear, constructive feedback to students, supporting them in achieving their academic goals. Grading qualitative academic work such as essays or theses presents distinct challenges, and clarity in evaluation criteria is imperative to ensure fair grading and comprehensive feedback (Ferrer, 2023).

Knowledge and experience with advanced grammar checkers

Prior to exploring the role of such tools, it is crucial to comprehend the experiences and practices of thesis supervisors with respect to thesis review and evaluation. This preliminary section offers an exhaustive overview of the varied approaches and perceptions among thesis supervisors, laying the groundwork for the discussion on the integration of advanced grammar checkers in thesis supervision.

Use of Grammarly in Thesis Supervision

Insights from three distinct respondents provide valuable perspectives on the adoption of advanced grammar checkers, particularly Grammarly, in thesis supervision. While one respondent recognizes the effectiveness of Grammarly, another notes a lack of familiarity with such tools, indicating potential gaps in their expertise. Conversely, an experienced respondent acknowledges the utility of Grammarly but voices concerns regarding its possible effects on the development of students' writing skills. These views highlight the complex attitudes towards the use of advanced grammar checkers in thesis supervision and emphasize the need to balance their benefits with the autonomous development of students' writing abilities.

Moreover, it is essential to consider educators' views on the use of advanced grammar checkers. Some support their integration to streamline grading processes and improve writing quality (Lipalam et al., 2023), while others caution against excessive reliance on these tools, advocating for traditional methods and direct feedback to foster long-term skills development. This dichotomy highlights the importance for educators to critically assess the impact of advanced grammar checkers in educational practices and find a middle ground between utilizing technology and nurturing students' writing capabilities.

Perspectives on Advanced Grammar Checkers

The experiences shared by two respondents illustrate diverse opinions on the utility and limitations of advanced grammar checkers. One respondent praises the tools for their error detection capabilities and their role in enhancing writing quality, but also warns of potential

pitfalls, such as context-insensitive corrections altering the intended meaning of texts. On the other hand, another respondent appreciates the convenience and immediate assistance provided by these tools but stresses the importance of critically evaluating their suggestions. These varied perspectives underscore the complexities of integrating advanced grammar checkers into the writing process and the necessity for educators to judiciously manage their use (Jelita et al., 2023).

Interviewees note that grammar checkers offer detailed feedback, helping students identify and correct their own mistakes, thereby boosting their confidence in writing. However, the automatic correction of grammar and coherence errors by these tools also raises ethical considerations (Chui, 2022).

Grammar checkers significantly enhance thesis clarity by correcting linguistic errors, improving readability, ensuring language consistency, and enhancing text organization. They contribute to clarifying students' thesis presentations by addressing various linguistic and stylistic issues that could affect comprehension (Interviewee 3, personal communication, April 1, 2024).

Premium vs. Basic Version of Grammarly

The difference between Grammarly's basic and premium versions is a crucial consideration for educators. While the basic version covers fundamental error correction, the premium version offers advanced features like enhanced grammar checks, vocabulary enhancements, and plagiarism detection. Educators must carefully choose the premium version, considering cost and the specific needs of their students, to align technology use with educational goals and resource constraints (Herrera & Mendoza, 2017).

Aspects Evaluated by Grammar Checkers

Responses highlight the wide range of elements assessed by grammar checkers, from grammar and syntax to style, coherence, and vocabulary. These insights reveal the extensive evaluation capabilities of grammar checkers and their role in improving the quality and effectiveness of written content. Nonetheless, it is critical to recognize the limitations inherent in AI-driven

grammar checkers and the need for users to remain vigilant about potential inaccuracies or contextual errors in automatic corrections (Creely, 2023).

Integrating advanced grammar checkers into thesis supervision provides numerous advantages, such as streamlining the grading process, enhancing writing quality, and offering timely feedback. However, educators must carefully navigate the adoption of these tools, considering their impact on students' writing skill development, the differences between basic and premium versions, and the comprehensive evaluation capabilities of grammar checkers. By balancing the use of technology with the independent development of students' writing skills, educators can fully utilize advanced grammar checkers to effectively enhance the thesis writing process.

Impact of Advanced Grammar Checkers on Thesis Writing Quality

Advantages and Challenges of Advanced Grammar Checkers in Thesis Preparation

Advanced grammar checkers are instrumental in providing essential feedback for thesis writing, as noted by a seasoned expert:

These tools offer significant benefits in thesis preparation, including enhanced writing quality, increased efficiency, improved clarity and consistency, and beneficial learning experiences. However, they also pose risks such as dependency, inaccuracies, limited contextual comprehension, scope constraints, and associated costs. Consequently, while these tools are advantageous for thesis writing, it is recommended that students use them with discretion and in combination with traditional editing practices to maintain the highest standard of their work. A primary concern for educators is the potential for these tools to impede the development of students' writing skills and to foster an overreliance on technological assistance (Interviewee 3, personal communication, April 1, 2024).

Expanding on these observations, the analysis explores various viewpoints on the impact of advanced grammar checkers on the quality of university thesis writing. These tools are praised for their ability to enhance writing quality, conserve time, and facilitate educational experiences,

yet they also bring potential drawbacks such as dependence and limited contextual understanding. The benefits and drawbacks of these tools are thoroughly documented in scholarly literature.

Zinkevich, N. & Ledeneva, T. (2021) assert that tools like Grammarly can significantly improve the writing quality of university students by providing instant feedback on grammatical issues and offering suggestions for stylistic and clarity enhancements. However, they also warn of the risk that students may become overly reliant on these tools, which could impede their comprehensive development as writers.

Furthermore, Cavaleri, M., & Dianati, S. (2016) observe that advanced grammar checkers can expedite the writing review process for both students and educators, thereby saving valuable time. Yet, they also highlight the critical need for human oversight to ensure textual coherence and contextual accuracy.

In summary, while advanced grammar checkers present considerable benefits for thesis writing, including improved writing quality and efficiency, it is vital for both students and educators to strategically use these tools in conjunction with conventional editing techniques. This balanced approach safeguards the integrity and clarity of academic writing, allowing students not only to correct mistakes but also to refine their writing abilities (Zinkevich, N. & Ledeneva, T., 2021 and Cavaleri, M., & Dianati, S., 2016).

CONCLUSIONS

In the current academic environment, the incorporation of artificial intelligence through tools like advanced grammar checkers significantly impacts the thesis writing process for university students. These technologies, exemplified by Grammarly, offer substantial benefits by enhancing writing quality, ensuring textual consistency, and saving valuable time that can be redirected towards deeper research and content development. Experts such as Kelley (2023) and Mendoza (2024) argue that these tools are crucial in creating scholarly work that meets high academic standards.

Advanced grammar checkers serve as educational aids that not only reinforce grammar rules and enhance punctuation precision but also elevate the overall quality of written work. These tools allow students to present clearer, more coherent theses capable of withstanding rigorous academic scrutiny. Additionally, they provide immediate feedback, which is invaluable in an academic setting where timely submissions are crucial. This instant feedback enables students to make continuous improvements to their texts, thereby progressively honing their writing skills (AIContentfy team, 2023).

However, the use of these technologies also presents challenges. A significant concern is the potential dependency they could foster among students, potentially leading them to rely too heavily on automated corrections rather than developing their own critical editing skills. This dependency could undermine the educational goal of fostering independent thinkers and skilled writers (Aqua, 2023). Moreover, these tools sometimes generate false positives and may not fully grasp the context or nuance within academic writing, which could lead to misunderstandings and potentially compromise the integrity of a thesis if not properly managed. To counter these risks, it is crucial for educators to advocate for a balanced approach to the use of technology in academic writing. Instruction should include the integration of grammar checkers as part of a comprehensive set of writing strategies that encompass traditional proofreading and peer reviews. This approach encourages students to view these tools as supplementary rather than primary solutions to writing challenges. By developing curricula that incorporate both technological and conventional editing methodologies, educators can prepare students to effectively navigate the complex landscape of academic writing (Aqua, 2023).

Furthermore, promoting a culture of meticulous self-editing and regular peer feedback sessions can help mitigate the risk of over-reliance on grammar checkers. These practices enhance students' writing proficiency and foster critical thinking skills as they learn to assess and refine both their own work and that of their peers. Such a holistic approach ensures that the use of

grammar checkers bolsters educational outcomes without compromising the development of core academic competencies.

In addition to improving current academic skills, strategic use of advanced grammar checkers prepares students for the professional world, where clear and effective communication is highly valued (Mohamed & Albadawy, 2024). In various professional contexts—from drafting reports to composing business emails—the ability to write clearly and correctly is often seen as indicative of one’s professional competence and attention to detail.

As the education sector continues to embrace digitalization, integrating a range of tools that enhance educational accessibility and efficiency, it is evident that technology will play an increasingly central role. The judicious integration of tools like grammar checkers into educational practices is not only beneficial but necessary (Aqua, 2023).

Implications of Integrating Advanced Grammar Checkers

The use of advanced grammar checkers like Grammarly in higher education thesis and research writing carries several significant implications (Aqua, 2023):

- **Improved Writing Quality:** Advanced grammar checkers significantly enhance the clarity, coherence, and grammatical precision of academic documents, elements that are indispensable for the rigorous presentation of scholarly research. By refining these aspects, such tools contribute to the production of high-quality academic work that meets professional standards .
- **Increased Writing Efficiency:** These tools streamline the editing process, enabling students to allocate more time and energy towards developing the substantive content of their texts. This shift in focus from the mechanical to the conceptual aspects of writing can lead to richer and more thoughtful academic work.
- **Risk of Overdependence:** There is a concern that students might become excessively dependent on grammar checkers, which could inhibit the growth of their own critical

writing and editing abilities. This dependence risks diminishing their capacity to write and revise independently, which is a critical skill in academic and professional settings.

- **Issues of Academic Integrity:** While grammar checkers are useful for identifying and correcting plagiarism, their use could inadvertently encourage students to rely too heavily on source material, potentially without adequate integration or original analysis. This overreliance can compromise the development of original thought and critical engagement with texts, foundational elements of academic integrity.
- **Educational Equity Concerns:** The premium features of advanced grammar checkers, which often come at a cost, may not be accessible to all students. This economic barrier can create disparities in the quality of academic outputs, as students who cannot afford these features are at a disadvantage compared to those who can, thereby exacerbating educational inequities.

Recommendations for Effective Integration

To maximize the benefits and mitigate the challenges of using Grammarly and similar tools in academic thesis and research writing at the university level, the following strategies are recommended:

- **Balanced Integration in Academic Curricula:** Digital transformation is reshaping education, particularly through the increasing use of artificial intelligence (AI) in curriculum development in higher education as of 2023. AI has the capability to enhance learning by personalizing educational content and enabling data-driven decisions. AI technologies allow for the customization of learning experiences by analyzing extensive data on student performance to address individual needs and preferences. This personalization helps students learn more effectively at their preferred pace and style, enhancing educational outcomes. Additionally, AI supports educators in making informed decisions about curriculum changes by providing insights from student data, including engagement patterns and performance metrics. This ensures that curriculum

adjustments are evidence-based and focused on continual improvement. AI also facilitates the integration of advanced technologies into educational content, offering interactive and experiential learning opportunities through simulations and collaborative platforms (Aqua, 2023).

- **Comprehensive Training Programs:** The integration of artificial intelligence (AI) into higher education mandates that faculty members acquire the necessary expertise and knowledge to effectively deploy and utilize AI technologies. It is imperative to establish structured training programs and professional development opportunities to furnish faculty with these essential skills. Moreover, continual support and the provision of up-to-date resources are crucial to enable faculty members to keep pace with ongoing advancements in AI technology (Aqua, 2023).
- **Developing Critical Writing Skills:** Educators should design assignments that encourage critical thinking and manual editing skills, ensuring that students can write effectively without undue reliance on automated tools (AIContentfy team, 2023).
- **Policy Formulation on Use:** Establish definitive policies delineating the permissible use of grammar checkers to support educational objectives and prevent academic dishonesty. These policies should further ensure equitable access to these technologies, guaranteeing that all students have the necessary resources (Paramount Students, 2024).
- **Ethical Use Education:** Universities should provide explicit instruction to students on the ethical implications of using automated tools in academic writing, emphasizing the correct attribution of sources and the avoidance of plagiarism. As institutions integrate AI technologies, they must place a high priority on ethical considerations to remain at the forefront of this advancing field. This commitment involves promoting transparency, impartiality, and accountability within their operations to ensure the responsible use of AI and to fully realize its benefits (Paramount Students, 2024).

- **Future-proofing Academic Skills:** In an era characterized by swift technological advancements, the adoption of artificial intelligence (AI) in higher education is essential for maintaining a competitive edge. AI not only improves the educational experience but also provides students with the necessary skills to succeed in a digital environment. Incorporating AI into educational programs equips students for a job market that increasingly values expertise in AI and associated technologies. By following these recommendations, universities can ensure that the integration of advanced grammar checkers like Grammarly into thesis and research writing enhances educational outcomes without compromising the development of essential academic skills. This balanced approach will support students in becoming proficient researchers and writers, equipped to navigate both academic and professional challenges effectively (Aqua, 2023).

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