Phoenix College: Grammarly Efficacy Study

(Fall 2023 and Fall 2024)

Conducted by Rachel Schechter, PhD; Paul A. Chase, PhD; Colin Ackerman, PhD; and Kenny Lam
LXD Research at Charles River Media

Abstract

Many students enter community college with writing challenges that impede academic success, particularly English learners (students whose primary language is not English) and students from underrepresented backgrounds. Writing support technologies offer scalable solutions to address these barriers. This mixed-methods study examined the impact of Grammarly's AI-powered writing coach among 3,638 students at Phoenix College during Fall 2023 and Fall 2024, comparing outcomes of 569 Grammarly users with 3,069 nonusers in writing-intensive courses. Grammarly users demonstrated significant improvements across key metrics: Course completion rates were higher among users (87% vs. 81%, $p < .001$), with significant effects for Hispanic students (85% vs. 81%, $p = .026$) and particularly strong effects for online learners (83% vs. 77%, $p = .014$). Year-on-year retention rates showed substantial differences, with Grammarly users persisting at 87% into the next academic year, compared to 74% for nonusers ($p < .001$). Academic performance revealed a clear dosage effect on grades, with high-frequency users (5+ days/week) averaging 3.49 GPA compared to 3.23 GPA for nonusers ($p < .05$). Benefits extended across diverse academic programs, including business and professional studies, STEM (science, technology, engineering, and mathematics) fields, and social sciences. Semi-structured interviews with instructors highlighted differentiated support for multilingual learners, reduced burden for fixing mechanical errors, and opportunities for teaching ethical AI use. These findings indicate that Grammarly, as an AI-powered writing coach, provides meaningful academic benefits in community college contexts, particularly for populations facing the greatest barriers to educational success.

Keywords: Writing support technology, automated feedback, academic performance, student retention, course completion, educational technology, higher education, AI, community college, English learners

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Table of Contents

Introduction **1**
- Writing Support and the Use of Technology 2
- Supporting Multilingual and Diverse Learners 2
- Pedagogical Integration and Instructor Perspectives 3
- Research Questions 4

Method **4**
- Research Design 4
- Participants and Setting 5
- Data Sources and Collection 6
- Measures 7
- Analysis Plan 7

Quantitative Findings: Student Outcomes **8**
- Course Completion 8
- Year-on-Year Retention 10
- Grade Point Average (GPA) 12

Qualitative Findings: Instructor Perspectives **13**
- Differentiated Support for Diverse Learners 13
- Enabling Ethical AI Use 14
- Instructor Efficiency and Pedagogical Impact 15

Discussion **15**
- Study Limitations 16
- Suggestions for Future Research 17

Conclusion **18**

Acknowledgments **18**

References **19**

Appendix **21**

Introduction

Writing proficiency among students in the United States remains alarmingly low despite its importance across all areas of learning. According to the most recent National Assessment of Educational Progress (NAEP), approximately 75% of 8th- and 12th-grade students still perform below the proficient level in writing (National Center for Education Statistics, 2024). Similarly, research indicates that about half of US high school graduates are not adequately prepared for the demands of college-level writing (Hart Research Associates, 2011). More recently, i-Ready Assessment data indicate that approximately 54% of 8th-grade students are not meeting writing proficiency benchmarks that predict college-level writing success, with significant gaps in analytical and argumentative writing skills essential for higher education (Curriculum Associates, 2023). Despite ongoing reform efforts, the issue persists in postsecondary education. Approximately 41% of first-time community college students are still placed into developmental English or writing courses nationwide, with rates varying significantly by state, from 29% to 68% across different state systems. These remediation rates are particularly high among first-generation college students and students from historically underrepresented backgrounds (Overbay & Thurley, 2024). These statistics highlight systemic challenges in teaching and supporting writing at the K–12 level, which ultimately shape students' readiness for higher education.

The impact of weak writing skills extends beyond developmental English classrooms. Because writing is central to demonstrating understanding and critical thinking, difficulties with writing affect student performance across disciplines. These challenges also fall disproportionately on historically marginalized groups, including Black and Hispanic students and those living in poverty, further widening educational inequities (Fleming, 2002). At the same time, expressive and participatory writing interventions empower adolescents to process emotions, cultivate self-awareness, and strengthen their sense of agency (Farella et al., 2025). In community and cultural contexts, writing allows youth to preserve heritage, amplify collective voices, and challenge inequities through storytelling and advocacy (Al-Shami, 2024; Cervantes-Soon et al., 2023). Collectively, these studies affirm that writing functions as a practice that bridges personal growth, cultural identity, and social justice engagement.

These problems continue into higher education. College instructors often describe student writing as underdeveloped, and students themselves frequently experience writing as demanding and stressful. This is especially true for those from English-as-a-second-language (ESL) or English-as-a-foreign-language (EFL) backgrounds, who may face additional linguistic barriers (Zailaini et al., 2015). Writing-related anxiety can discourage students from fully engaging in writing-intensive courses, leaving both students and instructors uncertain about how best to support growth in this critical area.

Writing Support and the Use of Technology

Writing proficiency has long been linked to academic persistence and overall student success. Students with strong writing skills predict higher GPAs and retention and greater critical thinking (Sullivan & Tinberg, 2006). To address widespread gaps in writing ability, institutions have, in recent decades, implemented various support structures such as writing centers, peer tutoring, and skill-development workshops. These programs are empirically associated with improved academic outcomes: Graham and Perin (2007) found that structured interventions can increase course completion rates by up to 40%. Writing centers, even in the age of online learning, foster metacognitive skills by encouraging students to reflect on their writing process and engage in productive dialogue about revision (Lundin et al., 2023).

However, even effective support programs face barriers to scalability and equity. Writing centers are often limited by staffing constraints, scheduling challenges, and student awareness or stigma surrounding help-seeking behaviors (Reglin, 2017). As a result, many students receive limited feedback on their writing. These limitations have fueled interest in digital and AI-supported writing tools that offer continuous, accessible feedback aligned with instructional goals. Automated writing evaluation (AWE) systems, such as Grammarly, provide real-time feedback on grammar, mechanics, clarity, and style. Unlike traditional spell-checkers, these systems are built on adaptive algorithms that model best practices in written communication and scaffold student learning over time (Ranalli et al., 2017). Studies show that the immediacy of feedback provided by AWE tools aligns with immediate feedback theory, which holds that timely correction promotes stronger retention and conceptual understanding (Opitz et al., 2011).

Moreover, the nature of student interaction with automated feedback appears to determine its educational value. Yang et al. (2025) found that students who actively engaged with and modified AI-generated suggestions, rather than accepting them passively, produced essays with greater lexical sophistication and syntactic complexity. Dhillon et al. (2024) similarly observed that paragraph-level feedback, which offers higher scaffolding, improved writing quality and productivity more effectively than sentence-level corrections. These findings suggest that AWE tools are most beneficial when they encourage critical engagement and revision rather than passive acceptance.

Supporting Multilingual and Diverse Learners

The diversity of today's student population calls for writing supports that are inclusive, adaptable, and responsive to varied linguistic backgrounds. ESL and EFL students often face unique challenges in academic writing, including mastering grammatical conventions and adopting discipline-specific styles of reasoning and citation (Braine, 1996). AWE systems have shown particular promise in supporting these learners by providing individualized, language-sensitive

feedback that helps students identify and correct recurring errors independently (Ranalli et al., 2017; Wu, 2022).

For multilingual learners, such tools can reduce dependence on instructor feedback, encourage greater writing autonomy, and improve confidence (Zinkevich & Ledeneva, 2021). Importantly, these tools can detect and accommodate specialized vocabulary, enabling students in scientific or professional disciplines to focus on communicating complex ideas rather than surface-level mechanics. Integrating AWE systems into courses comprising English learners and other students has been found to complement human instruction, offering formative feedback that teachers can then extend into discussions about style, audience, and argumentation (Yang et al., 2025).

These supports are especially critical for community colleges, which often enroll large numbers of English learners and first-generation students. By providing consistent, individualized feedback, technology-enhanced writing tools can help level the playing field for students who might otherwise lack access to sustained writing support, thereby advancing institutional goals related to improving access for all students to succeed.

Pedagogical Integration and Instructor Perspectives

The impact of writing technology in higher education ultimately depends on how instructors integrate it into their teaching. Instructor perspectives on automated tools vary: Some view them as invaluable supplements that enhance feedback efficiency and student engagement, while others express concern about overreliance or potential misuse (Yeo, 2023). Studies indicate that when they are thoughtfully implemented, these systems can reduce instructors' grading burden, freeing time to focus on higher-order aspects of student writing such as argumentation, structure, and critical analysis (Cui, 2025; Harris, 2024).

Moreover, writing technologies not only assist students but also support instructors in their own communication. Automated tools can help streamline administrative and instructional writing tasks, improving the clarity and professionalism of feedback and correspondence to students (Harris, 2024). As AI becomes increasingly prevalent in the workplace, higher education institutions recognize the importance of teaching ethical technology use. Surveys show that more than 75% of instructors believe AI literacy is essential for students' future careers (Harris, 2024; Parveen & Alkudsi, 2024). Instructors, therefore, play a crucial role in framing tools like Grammarly not as shortcuts but as opportunities to develop critical thinking and editorial judgment.

Research Questions

Given the documented challenges in writing proficiency and the limitations of traditional support models, questions remain about whether automated writing feedback tools can provide the

scalable, equitable support that community college students need. While research demonstrates the theoretical promise of these technologies, their real-world implementation and impact in diverse educational settings require empirical investigation. This mixed-methods study examined Grammarly's implementation at Phoenix College, a community college serving a predominantly Hispanic student population with significant numbers of English learners and first-generation college students.

The investigation pursued four interrelated lines of inquiry. The first question examined whether automated writing assistance influences key academic outcomes, specifically course completion rates, year-over-year retention, and overall academic performance. The second question investigated whether the intensity of Grammarly engagement matters, exploring the relationship between usage frequency and student outcomes. The third question examined whether Grammarly's impact varied across different student populations and learning contexts, with particular attention to Hispanic students, English learners, and students in online versus face-to-face courses. Through instructor interviews, the final question explored how writing support technology functions within actual teaching practice and how instructors perceive its influence on both student writing development and their own pedagogical approaches. By combining quantitative analysis of student outcomes with qualitative examination of instructor perspectives, this study sought to understand not only whether automated writing support influences student success, but how it operates within the complex realities of community college education.

Method

The following sections describe the methodological approach used to investigate Grammarly's implementation and impact at Phoenix College, including the research design, participant sample, data sources, measures, and analytical procedures.

Research Design

This mixed-methods efficacy study examined the relationship between Grammarly use and student academic outcomes at Phoenix College during Fall 2023 and Fall 2024. The investigation used a quasi-experimental retrospective design comparing academic performance of students with access to Grammarly with the performance of those without access across writing-intensive courses.

The mixed-methods approach combined quantitative analysis of institutional student performance data with qualitative examination of instructor perspectives through semi-structured interviews. This design enabled triangulation of findings while providing both measurable outcomes and contextual understanding of implementation dynamics.

Participants and Setting

Institutional Context

Phoenix College, part of the Maricopa County Community College District, served as the research site, providing a community college context with students who were Hispanic, English learners, or from underrepresented backgrounds. The sample reflected Phoenix College's diversity, with high representation of Pell-eligible and Hispanic students, and comparable academic preparation across groups (see Table 1).

Student Participants

The quantitative analysis included 569 students who used Grammarly while attending courses (405 in Fall 2023; 164 in Fall 2024) compared with 3,069 nonuser students enrolled in similar courses during the same periods (1,302 in Fall 2023; 1,767 in Fall 2024). The sample demographics reflected the diversity of Phoenix College, with 50% Pell Grant–eligible students, 23% transfer students, 63% Hispanic, 8% Black, and 18% White. Students demonstrated similar academic preparation, with Grammarly users averaging a 3.06 high school GPA and nonusers averaging a 3.00 high school GPA. For full details, see Table 1 below.

Table 1. Student Participant Demographics

Characteristic	Grammarly Users (n=569)	Nonusers (n=3,069)	Total Sample (N=3,638)
Enrollment Status			
Fall 2023	405 (71%)	1,302 (42%)	1,707 (47%)
Fall 2024	164 (29%)	1,767 (58%)	1,931 (53%)
Demographics			
Pell Grant eligible	285 (50%)	1,534 (50%)	1,819 (50%)
Transfer students	131 (23%)	705 (23%)	836 (23%)
Hispanic	358 (63%)	1,932 (63%)	2,290 (63%)
Black	46 (8%)	245 (8%)	291 (8%)
White	102 (18%)	552 (18%)	654 (18%)
Academic Preparation			
Mean high school GPA	3.06 (SD = 0.56)	3.00 (SD = 0.56)	3.01 (SD = 0.56)

Instructor Participants

Six instructors teaching courses across multiple disciplines participated in semi-structured interviews conducted during Summer 2024. This sample provided perspectives from varied instructional contexts, including instructors who teach courses in the biological sciences, pre-med sciences, computer science, humanities, and business. Interviews occurred after the study period and provided insight into implementation experiences and observed student impacts.

Data Sources and Collection

Academic Performance Metrics

Student academic data included course completion rates, year-over-year retention, and cumulative GPA. Data were collected from institutional records across Fall 2023 and Fall 2024, with retention measured through enrollment status in the following academic year.

Grammarly Usage Analytics

Platform engagement data captured frequency patterns and feature usage. The key metric used in this study was the average days per week used. Usage frequency was categorized as: low usage (< 3 days per week), moderate usage (3 to < 5 days per week), and high usage (5+ days per week), on average.

Student Background Variables

Demographic and academic preparation data included high school GPA, race/ethnicity, Pell Grant eligibility, international student status, and course enrollment patterns. These variables enabled comparison of baseline characteristics between treatment and comparison groups.

Measures

Academic Outcome Variables

Course completion was defined as earning grades of C or higher, with grades of D, F, or Withdrawal classified as non-completion. Retention analysis examined continued enrollment in courses the following year. GPA calculations utilized institutional records on a 4.0 scale.

Qualitative Data Collection

Semi-structured interviews with instructors explored implementation experiences, perceived student benefits, integration challenges, and attitudes toward automated writing support tools. Interview protocols addressed pedagogical approaches, observed changes in student writing quality, and perspectives on technology's role in writing instruction.

Analysis Plan

Quantitative Analyses

Statistical analyses employed chi-square tests of independence to assess categorical outcomes, including course completion and retention status. Linear multiple regression models examined GPA differences while controlling for baseline characteristics, including high school GPA and demographic variables.

Several of these analyses were stratified by course-level factors such as relevant major and course modality (e.g., in-person, hybrid, or online). Usage intensity analyses employed ANCOVA (analysis of covariance) testing to examine the relationship between engagement frequency and GPA. Multiple regression models incorporated controls for student characteristics to isolate effects attributable to platform use.

Qualitative Analyses

Interview transcripts underwent thematic analysis following established qualitative research protocols. Initial coding identified recurring concepts and experiences, with codes refined through iterative review processes. Similar codes were grouped into broader themes, with research team review ensuring accurate representation of instructor perspectives. Particular attention was directed toward implementation dynamics, observed student benefits, and integration challenges that inform scalability considerations.

Mixed-Methods Integration

Triangulation of quantitative outcomes with qualitative insights provided an opportunity to explore both measurable impacts and underlying mechanisms. Statistical findings informed interview interpretation, while instructor perspectives contextualized quantitative outcomes.

Quantitative Findings: Student Outcomes

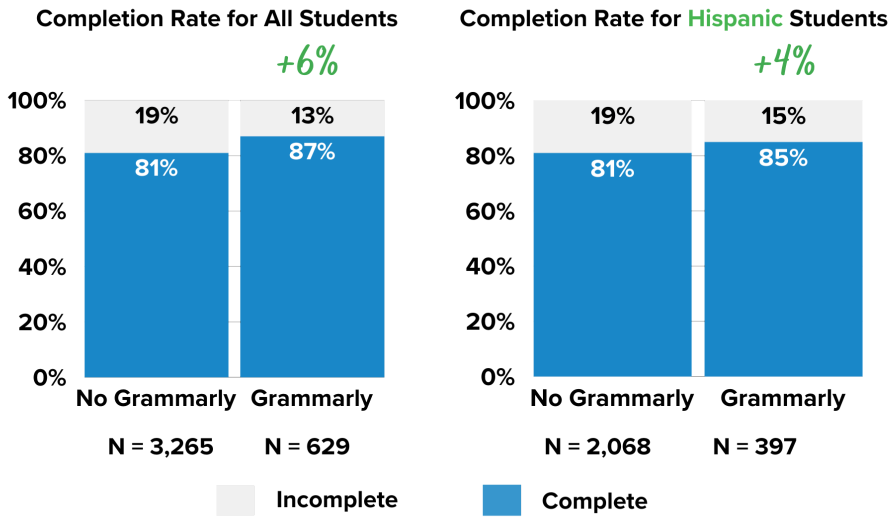
The quantitative portion of this mixed-method study examined course completion rates, year-over-year retention rates, and GPAs. Several findings were also analyzed by relevant subgroups or by Grammarly usage level.

Course Completion

Course completion rates serve as an early indicator of student success, particularly in writing-intensive courses where students often struggle with the dual demands of content mastery and academic writing skills. Grammarly users demonstrated significantly higher course completion rates than nonusers across both academic years examined (see Figure 1). Students with access to the Grammarly writing assistant completed their writing-intensive courses at a rate of 87%, compared to 81% for their peers without Grammarly access—representing a 6-percentage-point improvement ($\chi^2(1, N = 3{,}894) = 11.90$, $p < .001$, $\varphi = 0.055$, Cohen's $d = .11$). This improvement was consistent across both Fall 2023 and Fall 2024, suggesting that Grammarly's impact represents a sustained benefit.

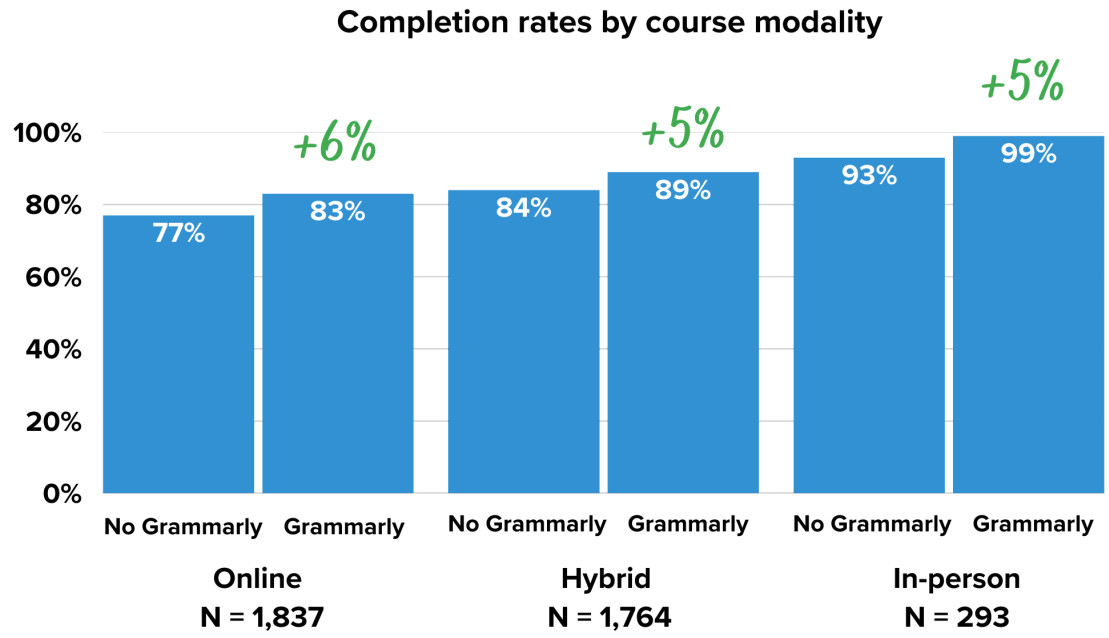
The completion advantage extended across demographic subgroups (see Figure 2). For example, Hispanic students using Grammarly demonstrated significantly higher completion rates (85%) compared to Hispanic nonusers (81%), a 4-percentage-point difference ($\chi^2(1, 2{,}465) = 4.93$, $p = .026$). This finding is particularly noteworthy given Phoenix College's substantial Hispanic student population (63% of the sample), many of whom were also English learners.

Figures 1 and 2: Course Completion by User Status (Overall and Hispanic Students)



Course completion patterns also varied by instructional modality. Online courses demonstrated a significant association between Grammarly use and completion rates, ($\chi^2(1, N = 1{,}837) = 6.05$, $p = .014$, $\varphi = .057$). Grammarly users in online courses achieved an 83% completion rate compared to 77% for nonusers, representing a 6-percentage-point advantage. Hybrid courses showed a 5-percentage-point difference (Grammarly users: 89%; nonusers: 84%), and in-person courses showed a 5.2% difference (Grammarly users: 99%; nonusers: 93%). Although in-person courses had the highest overall completion rates, the effect of Grammarly appeared to be strongest for online courses—the modality where students face the greatest completion challenges. For full details, see Figure 3.

Figure 3: Completion Rates by Course Modality



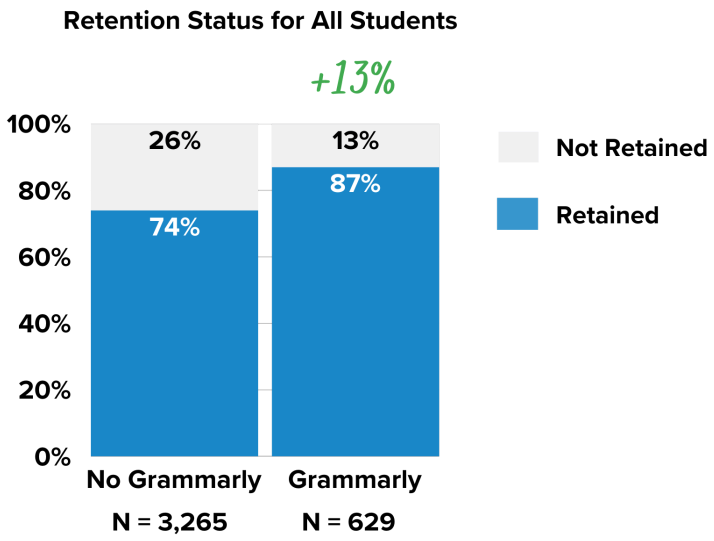
Note: percentages may not align due to rounding.

Year-on-Year Retention

Student retention for the following academic year represents a critical predictor of degree completion, particularly for community college students who may be navigating complex educational and life demands. Because many community college attendees are part-time students, balance employment and caregiving responsibilities, or enter with varied academic preparation, persistence from one year to the next is especially vulnerable to disruption. As a result, year-over-year retention serves as a key indicator of whether institutional supports are effectively enabling students to remain enrolled and progress toward their educational goals.

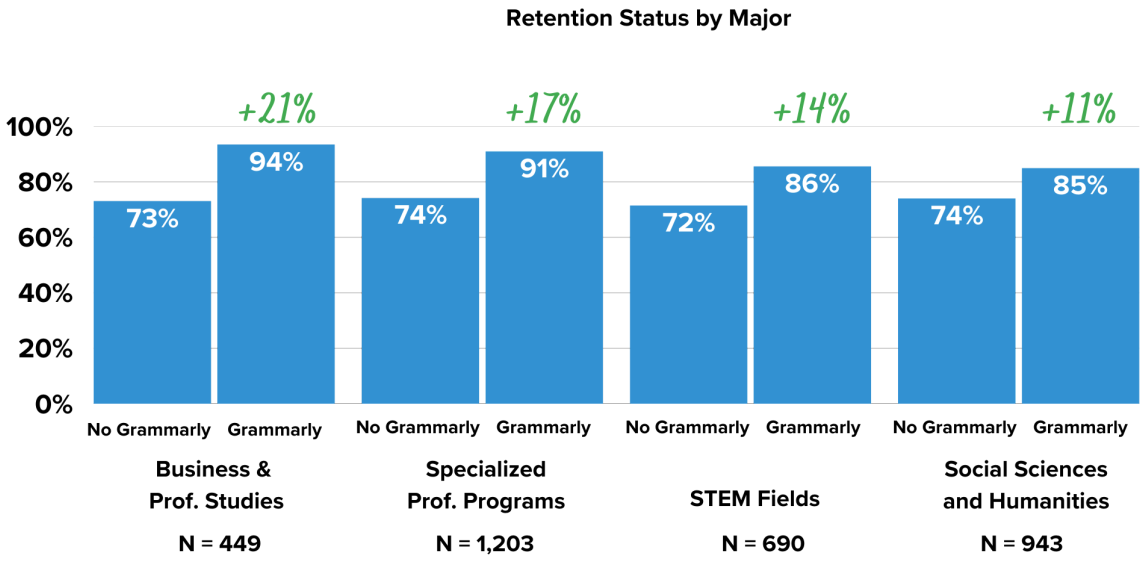
Grammarly users demonstrated significantly higher year-over-year retention rates (87%) compared to nonusers (74%), a 13-percentage-point difference ($\chi^2(1, N = 3{,}894) = 51.16$, $p < .001$, $\varphi = 0.115$, Cohen's $d = .23$). This substantial retention rate advantage suggests that consistent writing support contributed to students' ability to persist in their educational goals.

Figure 4: Institution Retention



Retention benefits extended across academic programs. Chi-square analyses examined retention rates across popular majors, revealing that Grammarly users consistently demonstrated significantly higher retention rates than nonusers. Business and professional studies showed the largest difference (94% vs. 73%, $\chi^2 = 13.7$, $p < .001$, $\varphi = 0.175$), followed by specialized professional programs (91% vs. 74%, $\chi^2 = 22.8$, $p < .001$, $\varphi = 0.138$), and STEM fields (86% vs. 72%, $\chi^2 = 10.85$, $p < .01$, $\varphi = 0.125$). Social sciences and humanities also showed a significant positive association (85% vs. 74%, $\chi^2 = 7.6$, $p < .01$, $\varphi = 0.090$). The consistency of retention benefits across diverse academic programs suggests that Grammarly's writing support provides value beyond discipline-specific contexts.

Figure 5: Retention by Major



Grade Point Average (GPA)

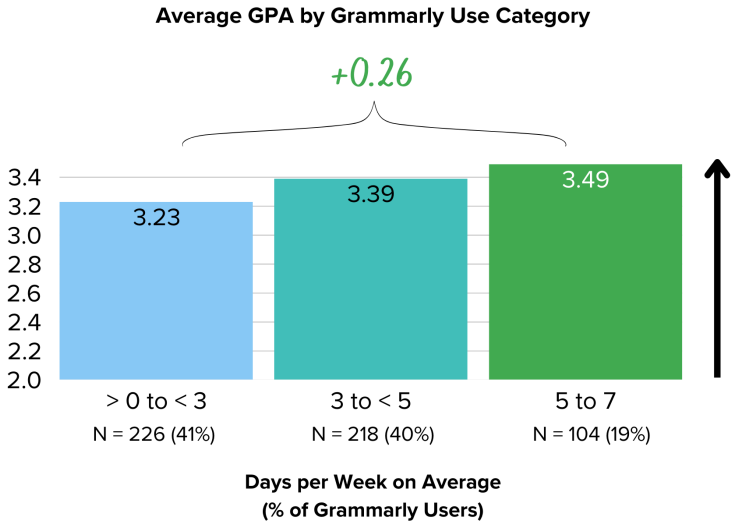
GPA represents a key academic outcome and one of the clearest near-term indicators of postsecondary success. A multiple regression analysis was conducted to predict student GPA, which included predictors of high school GPA, race/ethnicity, Pell Grant status, and international student status. The multiple regression model showed that Grammarly use was a statistically significant predictor of GPA. The effect of Grammarly use remained significant after controlling for high school GPA, race/ethnicity, international status, and Pell Grant eligibility ($\beta = 0.16$, $p < .05$, final model $R^2 = .10$).

In addition to this overall effect of Grammarly use on GPA, a treatment-group-only analysis indicated a positive relationship between Grammarly usage frequency and academic outcomes,

providing insight into optimal implementation patterns for writing support technologies. Students were organized into usage levels based on their average weekly engagement with Grammarly: low usage (> 0 to < 3 days per week), moderate usage (3 to < 5 days per week), and high usage (5+ days per week).

Low-usage students averaged 3.23 GPAs. However, students using Grammarly 3 to < 5 days per week averaged higher GPAs (3.39), and high-usage students (5–7 days per week) averaged GPAs of 3.49. This analysis was significant after controlling for high school GPA, race/ethnicity, Pell Grant eligibility, and international student status ($\beta = 0.09$, $p < .05$). The 0.26 GPA difference between high-usage and low-usage groups suggests that consistent engagement with writing support unlocks substantial academic benefits across achievement levels. For full details, see Figure 6, below.

Figure 6: GPA by Grammarly Usage Level



Post hoc testing results indicated that while full-time students were somewhat more likely to use Grammarly frequently, improvements in GPA associated with increased usage were virtually identical for both part-time and full-time students, supporting the findings above that usage frequency drove the observed academic benefits.

Qualitative Findings: Instructor Perspectives

Analysis of instructor interviews revealed three primary themes characterizing implementation experiences and perceived impacts. These findings provided contextual understanding of the mechanisms underlying the quantitative improvements.

Differentiated Support for Diverse Learners

Instructors observed that Grammarly provided differentiated instruction based on students' needs, with particularly strong benefits for specific populations. Multiple instructors emphasized the value for English learners, who make up a substantial portion of Phoenix College's student population. As one biological sciences instructor noted: "Half of our students are Hispanic, and whatever percentage of them are English-second-language learners … When we get to the end of the class, how much better the class as a whole has done … I'm always telling students that overall their writing has improved."

The differentiated support extended to technical and scientific writing contexts in ways instructors had not anticipated. Biology and STEM instructors emphasized that Grammarly helped students communicate complex scientific concepts more clearly, with particular value in ensuring accurate spelling of technical terminology. A pre-med sciences instructor explained: "A lot of the Latin terms … they've actually gotten much better, because basically, we teach Latin … . With spell check, if you were just to use Word … it doesn't recognize that term. But Grammarly … knows that that's the correct usage."

Beyond specialized support, instructors also observed generalized improvements in undergraduate writing quality. A computer science instructor stated: "Grammarly is great … because I've noticed, and I noticed a massive improvement since I started [encouraging students to use Grammarly] in the class … I can tell who's using it and who's not using it." This observation aligns with the quantitative finding that 82% of all writing sessions improved with Grammarly assistance.

Enabling Ethical AI Use

Instructors reported that Grammarly facilitated conversations about responsible use of generative AI features, with most science instructors viewing AI tools as essential preparation for students' professional futures. A biological sciences instructor articulated this perspective: "How do I teach them how to use it ethically as opposed to … I hope they don't cheat. If you're going to a workplace, you aren't going to get to use five tools, six tools—you're going to use whatever … is given to you."

Several instructors noted that overuse of generative AI was readily apparent in student work. A

computer science instructor explained: “I have to read [essays] as quickly as I can … even then I can tell who’s using [generative AI] and who’s not using it, like when you’re reading 30, 40 essays at a time, it’s pretty clear.” This observational ability gave instructors confidence in their capacity to monitor appropriate AI use even as they encouraged strategic deployment of AI tools.

However, concerns about AI’s impact on critical thinking emerged from the humanities. The single humanities instructor interviewed expressed concern about efficiency potentially replacing learning: “It’s about, for a lot of these young people, like a sense of efficiency… If a computer is going to do the work for you, are you really getting the education?” This perspective echoes patterns observed in the Florida Atlantic University study, where humanities and writing instructors expressed consistent reservations about AI tools.

Instructor Efficiency and Pedagogical Impact

Instructors reported that Grammarly reduced time spent addressing mechanical errors, enabling them to focus feedback on content and critical thinking. A pre-med sciences instructor explained: “Grammarly takes care of commas and capitalizing the ‘I’ … so I can pay attention to if [students are] understanding the content.” This efficiency gain proved particularly valuable given the time constraints instructors face when providing detailed feedback to large classes.

The benefits extended beyond grading to instructors’ own professional communications. A computer science instructor noted: “While I’m constructing messages to the students, believe it or not, Grammarly is sitting there, making suggestions on my messages to the students.” Multiple instructors mentioned using Grammarly for their own writing, demonstrating that the tool provided value across the full spectrum of academic communication.

A biological sciences instructor emphasized the scalability challenge that Grammarly helps address: “Most people don’t have the time that it takes to give adequate feedback on a written assignment like that every week.” By offloading mechanical error correction to automated feedback, instructors could maintain sustainable workloads while still providing meaningful guidance on higher-order writing concerns.

Discussion

The integration of quantitative and qualitative findings reveals a compelling narrative about Grammarly’s automated writing support at Phoenix College. Quantitative findings demonstrated significant improvements in course completion (87% vs. 81%), retention (87% vs. 74%), and GPA outcomes, with notable effects for Hispanic students and online learners. These outcomes align with instructor observations that Grammarly provided critical support for diverse learners, especially English learners. Statistical benefits were most pronounced with consistent use (5+ days per week), echoing Yang et al.’s (2025) findings that active engagement with AI-generated

suggestions produces greater lexical sophistication. This pattern supports immediate feedback theory (Opitz et al., 2011), which holds that timely correction promotes stronger retention and conceptual understanding. The alignment between statistical improvements and instructor observations provides a comprehensive understanding of how writing support technologies function as scaffolding within students' zones of proximal development while still maintaining emphasis on higher-order thinking skills.

Triangulation of quantitative and qualitative data revealed the mechanisms through which automated writing support influences student success. The 4-percentage-point improvement in course completion among Hispanic students was echoed by instructor observations regarding Grammarly's value for English learners. This finding aligns with research by Zinkevich and Ledeneva (2021), who found that automated writing tools can increase confidence among multilingual learners. Similarly, the relationship between usage frequency and GPA gains is illuminated by instructor reports that Grammarly allowed them to focus feedback on content rather than mechanics—aligning with research suggesting automated tools can free faculty time for higher-order concerns (Cui, 2025). The strong effects in online courses (6-percentage-point completion advantage) confirm previous research suggesting that digital writing tools offer particular value where traditional support structures are less accessible (Ranalli et al., 2017). Most notably, the 13-percentage-point retention advantage corresponds with observations about reduced writing anxiety—suggesting that writing support technologies address psychological barriers that Zailaini et al. (2015) identified as impediments to full engagement in writing-intensive courses.

This study's findings hold important implications for educational practice and institutional support. First, the consistent benefits across diverse academic programs demonstrate that writing support technologies have broad applicability beyond traditional writing-intensive disciplines, reflecting writing's fundamental role as a tool for self-expression and advocacy (National Writing Project & Nagin, 2006). Second, the relationship between usage intensity and academic outcomes suggests implementation strategies should focus on encouraging regular engagement rather than merely providing access. The findings illustrate how automated writing support operates at the intersection of multiple educational frameworks—combining elements of scaffolded learning, universal design, and digital literacy development. Third, the strong benefits for online students highlight writing support technologies as a potential solution to the persistent challenges of distance education, where dropout rates have traditionally exceeded those of in-person courses. Finally, the benefits for Hispanic students (63% of Phoenix College's population) indicate that writing support technologies may serve as an opportunity to enhance equitable outcomes, addressing both linguistic and psychological barriers that have traditionally widened educational inequities. These differentiated benefits connect to principles of inclusive pedagogy, particularly for multilingual learners who benefit from individualized, language-sensitive feedback (Ranalli et al., 2017; Wu, 2022).

Study Limitations

Several limitations should be considered when interpreting these findings. The voluntary adoption model introduces potential self-selection bias, as students choosing to use Grammarly may possess different motivation levels or academic orientations than nonusers. While demographic and baseline performance controls (using high school GPA) were used to address this concern, unmeasured characteristics may influence both platform adoption and academic success. The establishment of baseline equivalence between groups strengthens causal plausibility, but the quasi-experimental design limits definitive causal claims.

The total sample size of the treatment group was limited between Fall 2023 (n = 405) and Fall 2024 (n = 164, respectively). The limited sample size may limit the opportunity to analyze effects (e.g., those of smaller subgroups) in each term. Future research with larger samples would strengthen conclusions about consistency across time periods.

The instructor interview sample, while providing rich qualitative insights, skewed toward science disciplines due to scheduling constraints during the summer data collection period. This disciplinary distribution complements the FAU study's emphasis on English and writing instructors but meant that humanities perspectives were underrepresented in this study. The single humanities instructor's concerns about AI tools echo patterns from other institutions, and additional humanities instructor perspectives would provide a fuller understanding of disciplinary variation in implementation experiences.

Retention measurement in this study captured year-over-year enrollment without distinguishing between students who dropped out or transferred to other institutions. While the overall retention metric provides meaningful information about persistence, more granular outcome data—differentiating completion, transfer, and departure—would enable more nuanced interpretation of retention effects. This limitation is common in institutional research but should be acknowledged when interpreting retention findings.

Data collection occurred during Fall 2023 and Fall 2024, periods when generative AI tools were publicly available but still relatively new in educational contexts. The rapid evolution of both AI capabilities and institutional policies regarding AI use means that implementation dynamics and student usage patterns may shift substantially in the coming years. Findings reflect a specific moment in the technology adoption curve and should be interpreted with awareness of this temporal context.

Suggestions for Future Research

Future investigations should examine the impacts of current and evolving generative AI features, as automated writing assistance capabilities continue to advance rapidly. The tension some instructors expressed about distinguishing appropriate AI use from overreliance suggests that feature-specific guidance and training warrant systematic study. Research examining how instructor support and pedagogical integration strategies influence both usage patterns and outcomes would inform effective implementation approaches.

Expanding analysis to full academic years rather than isolated semesters would provide insight into long-term outcomes, including further insight into degree completion rates and time to degree. Likewise, multiyear tracking of student outcomes could be used to determine whether early advantages translate into graduation rate improvements and academic success.

Research explicitly examining the mechanisms through which writing support tools influence retention outcomes would strengthen theoretical understanding. While this study demonstrates associations between Grammarly use and persistence, qualitative research exploring student decision-making about continuation, alongside longitudinal tracking of writing skill development, would inform causal pathways linking writing support to long-term success.

The community college context of this study suggests particular value in research examining how writing support tools interact with the complex life circumstances many community college students navigate. Understanding how accessible, always-available writing assistance influences students balancing education with work, family, and other commitments could inform targeted support strategies for populations facing the highest barriers to degree completion.

Conclusion

This mixed-methods study showed that Grammarly implementation at Phoenix College was associated with significant improvements in course completion, retention, and academic performance. The integration of quantitative findings with qualitative insights provided robust evidence that automated writing assistance addresses both linguistic and psychological barriers to writing development, with strong benefits for diverse learners and online students. The substantial retention advantage (13 percentage points) suggests writing support technologies play a critical role in addressing systemic challenges in postsecondary writing education that have traditionally disadvantaged historically marginalized groups (Fleming, 2002).

Phoenix College should continue to focus on implementation strategies that encourage consistent Grammarly engagement across disciplines, with particular attention to online contexts where benefits appear most pronounced. Faculty development should address disciplinary variations in attitudes toward AI writing tools, fostering conversations about ethical technology

use while highlighting benefits for underserved populations. As Graham and Perin (2007) noted, writing strengthens not only individual achievement but also community resilience. By building on this study's findings, Phoenix College can leverage educational technology to advance goals related to student success, equitable outcomes, and access in ways that acknowledge both practical and transformative dimensions of writing proficiency.

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Appendix

Statistical Citations by Key Finding

Key Finding: Course completion rates were 5.8% higher for Grammarly users vs. nonusers

- All students: ($\chi^2(1, N = 3{,}894) = 11.90$, $p < .001$, $\varphi = 0.055$).
- Hispanic students: ($\chi^2(1) = 4.93$, $p = .026$).
- Course modality: Online ($\chi^2(1, N = 1{,}837) = 6.05$, $p = .014$, $\varphi = .06$).
- Course modality: Hybrid (93.8% vs. 77.7%, $\chi^2(1, N = 1{,}764) = 32.56$, $p < .001$, $\varphi = .14$).

Key Finding: Retention rates were significantly higher for Grammarly users (87%) vs. nonusers (74%)

- All students: ($\chi^2(1, N = 3{,}894) = 51.16$, $p < .001$, $\varphi = 0.115$).
- Retention effects by major: Business and professional studies (93.5% vs. 73.1%, $\varphi = 0.175$), specialized professional programs (91.0% vs. 74.2%, $\varphi = 0.138$), and STEM fields (85.6% vs. 71.5%, $\varphi = 0.125$).

Key Finding: GPAs for Grammarly users were significantly higher overall ($\beta = 0.16$). High-usage students averaged significantly higher GPAs (3.5) than low-usage students (3.2).

- Overall effects on GPA: ($\beta = 0.156$, $p < .05$, final model $R^2 = .102$).
- Usage analysis: ANCOVA with post hoc comparisons ($F(12, 307) = 2.51$, $p < .05$, $R^2 = .09$.