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An Examination of User Experience & AI Writing Aids

You're doing homework in 1972. There's a word you don't know how to spell. You call to your mother, "How do you spell –" She cuts you off: "Look it up in the dictionary!" Grumbling, you do. Turns out there isn't an *a* in "definitely."

Fast forward 50 years. You're writing an email in 2022. Now you know how to spell "definitely" – looking it up all those times made a difference – but there are a few other words you're not so sure of. "We can definitely – " But how do you spell the next word? You type out "a-c-o-m-m-o-d-a-t-e," thinking that might be it. But the red squiggly line tells you it's not. A click of the mouse shows you suggested corrections and you adjust your spelling. "We can definitely accommodate your request." Done – now send that email! But will you remember how to spell "accommodate" next time?

This paper will examine the development, effectiveness, and user experience of spellcheck, grammar check, and other computer-based writing aids, which we will collectively call "AI writing aids." Though these tools have vastly improved our access to spelling and simple grammar correction, they are far from perfect. While they make corrections in the moment, they may not help writers improve over the long term. And as the research documented here will show, AI tools require human oversight when measuring complex aspects of writing such as humor, tone, or genre.

The Invention of Spellcheck

The measure of a technology's impact may be the number of people who claim credit for its invention – after all, as the saying goes, success has many fathers. By this metric, and by many others, spellcheck has had a massive impact on the way we write. In an interview with Dag Spicer of the Computer History Museum, computer scientist Les Earnest mused, "There's been a bunch of histories written about spelling checkers. Nearest I can tell, all of them are wrong. Many people claim to have invented it. That's what happens." (page 13)

Houghton Mifflin's Howard Webber is more forgiving, pointing out that a technology with many iterations can have many contributors: "Once you begin processing text, computer-based spell checking is the kind of application that is so irresistible that there are likely to have been many 'first' implementations and many 'first' implementers." (page 2)

Computer scientists and linguists who played an integral role in the development of spellcheck include:

- **Earnest,** who in the early 1960s, during his time at MITRE Corporation and Stanford University, developed an early spellchecker that would compare text to a master list of approved words and flag words that were not on the list. (Spicer 12)
- **Ralph Gorin,** a Stanford graduate student under Earnest who created an interactive spellchecker that would suggest alternate spellings when a word was flagged. Gorin's spellchecker was released on ARPANET in 1971 and, as Earnest says, "people gobbled it up from all over the world and started using it." (Spicer 12)
- **Henry Kucera,** a linguist at Brown University who was a pioneer in the field of computational linguistics. In the early 1980s he developed the corpus (master word list) for the American Heritage Dictionary, which comprised words that were in use at the time versus words that had fallen out of use. Webber writes that "the Kucera work enabled Houghton to determine which of the large universe of available words should be included in a print dictionary, and, moreover, provided the technology by which the lexicon could be constantly renewed as the language changes." (page 3)

The work of these men and their teams gave us three skills – the ability to compare text to a master list of words, to suggest alternate spellings, and to update the list to match contemporary usage – that laid the foundation for what we know as spellcheckers.

At the time Gorin's spellchecker was released, computers were still massive machines that lived on college campuses or in laboratories. Though his spellchecker was popular with those who had access to it, it was not until the 1980s and the rise of personal computers that the average person could use spellcheck.

At first, spellcheck was available as a standalone program, and users could choose from several options, not all of them distributed by technology companies. In a 1982 ad in *PC Magazine*, Random House argued that its spellchecker, based on the print dictionary, was superior because "some popular spelling checkers don't even use real dictionaries. They use formulas called 'hash tables.' Which make a hash out of your spelling some of the time" ("The Spelling Bee is Over"). By the early 1990s, as software became more user-friendly and operating systems more visual, spellcheck was typically built into either a word processor or the operating system itself.

Spellcheck wasn't foolproof by a long shot: Both false positives and false negatives were possible. "Columbia" and "Colombia" might both pass muster as accepted words, but in a text about the South American country or the capital city of South Carolina, only one would be correct. Conversely, a skimpy or poorly prepared list of accepted words might mean that words were flagged as incorrect when they were in fact correct, especially when writing about technical issues or people or places from non-English-speaking countries. The hasty or insecure writer could take the spellcheck's flag as a correction instead of a suggestion, therefore inserting an error.

Despite these shortcomings, writers came to depend on spellcheck as a tool, sometimes to their detriment. A 2003 study at the University of Pittsburgh asked undergraduates to proofread a

business letter; half were given the letter with no spellcheck results, and the other half could refer to spelling and grammar suggestions made by Microsoft Word. In the first group, students with high verbal SAT scores (considered to have stronger language skills) made fewer errors than those with lower scores, as expected. But in the group that had access to Word's suggestions, the advantage of stronger language skills disappeared: Students made similar numbers of errors, regardless of their SAT scores. Moreover, the group with access to Word's suggestions made *more* errors overall. "The experts performed just like the novices," study lead Dennis F. Galletta told Charles Sheehan of the Associated Press.

How did the students with strong language skills make so many errors? In the conclusion of the official study paper, Galletta and his team posit that students trusted the computer ("the Advisor") too much: "Our speculation is that experts tend to be less careful when the Advisor is on, and assume that their text has been checked carefully for them. Users of the Advisor seem to attribute greater power than it really has; they are lulled into a false sense of security."

Writing in *Communications of the ACM* several years later, Galletta et al. note that the results of the study surprised them. "We originally conducted this study to warn those of lower verbal ability that spelling- and grammar-checking software might require additional verbal expertise. What we found surprising—perhaps more interesting, and more pragmatic—was that all users need such a label. Users with high verbal ability can actually lose their advantage and perform just like those with lower verbal ability." (page 86)

Moreover, even when spellcheck correctly flags an error, the writer will likely make the same mistake again next time. Hazelynn Rimbar writes that "learners become over-reliant on the spelling-check function to correct their spelling and the spell-checker does not help 'repair' students' errors internally" (page 3).

Consider this study: Researchers dictated a passage to a group of Form 1 students (roughly equivalent to 7th grade in the U.S.) and asked the students to handwrite the text. The exercise was repeated using a word processor with spellcheck abilities, then repeated again by hand (Rimbar pages 4-5). Ideally, students would have noticed misspellings when reviewing their typed work and been able to spell the words correctly when taking dictation by hand. Instead, the group's average accuracy score rose when using spellcheck (as expected) but fell again when writing by hand (Rimbar page 7). Though there was some improvement, it was not enough to suggest that students had learned from spellcheck's corrections.

It is worth noting that participants in Rimbar's study were students at a school in Malaysia, where English is not an official language. The study paper does not make clear whether participants had spoken English from birth or learned it in school; however, students were selected from a school that teaches English and requires a minimum score on an entrance exam. Rimbar writes: "It is expected that the learners already have a high level of language proficiency and are least likely to make errors. These learners were also selected with the assumption that they have high level of English Language proficiency to eliminate any possible

lexical or grammatical errors because this study aims to examine only spelling errors. However, analysis of the data collected suggested otherwise." (page 5)

Evolution to Artificial Intelligence

As computer processing speed got faster and machines were able to do more tasks at a time, spellcheck evolved to include checks for grammar, punctuation, word choice, and more, thanks to the power of artificial intelligence (AI). AI can do far more than writing tasks, of course, but we will focus our attention on that arena.

A full explanation of AI and its applications on language is beyond the scope of this paper. But at a very basic level, AI writing aids do the same thing as early spellcheckers, but they can run hundreds (perhaps thousands) of checks simultaneously. The concept that enables AI to run these checks is natural language processing (NLP), a combination of linguistics and computer science that teaches computers how to speak English and refines their abilities over time. Cloud computing, in which software draws on the power of multiple data centers at a time, gives AI more processing power so it can analyze large passages rapidly.

Examples of AI Corrections

Grammar rules are the core of AI checks. Take the classic typing-class sentence:

> The quick brown fox jumps over the lazy dog.

AI can parse the sentence, classifying each word as a part of speech:

> The quick brown fox = noun phrase→→→→The = article modifying *fox*
> Quick = adjective modifying *fox*
> Brown = adjective modifying *fox*
> Fox = noun
> Jumps = verb, present tense
> Over = preposition
> The lazy dog = noun phrase→→→→→→→The = article modifying *dog*
> Lazy = adjective modifying *dog*
> Dog = noun

Further, a well-built AI knows that:

- Sentences must begin with a capital letter and end with punctuation: *The* and *dog.* Check.
- A complete sentence requires a noun and a verb, at minimum: *fox / jumps*. Check.
- A preposition requires an object: *over / the lazy do*g. Check.
- A subject and verb must agree in number: *fox / jumps*. Check.

- Adjectives almost always come before the nouns they modify: *The quick brown / fox* and *the lazy / dog*. Check and check.
- Most nouns require articles: *The / fox* and *the / dog*. Check and check.

Breaking these or any of a hundred other grammar rules should cause the AI to flag an error and, if it is programmed to, suggest a correction. But when reviewing several versions of the "quick brown fox" sentence with errors inserted, AI caught some of the errors but not all.

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Here, the AI noticed that the noun phrase "quick brown fox" needs an article before it:

Screenshot from Grammarly on Chrome

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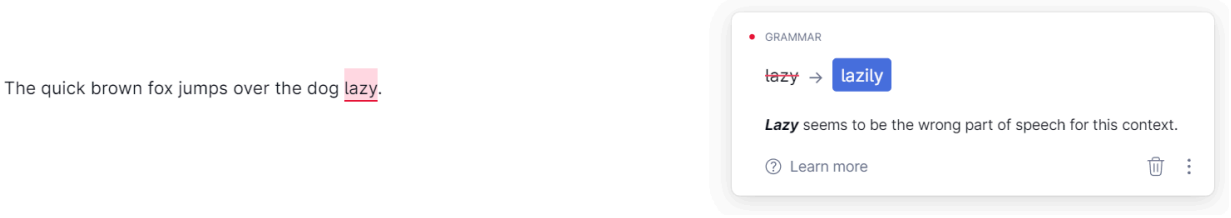
Writers need to proceed carefully when considering an AI's suggestions, as some "corrections" can change the meaning of a sentence. Here, the AI suggested changing the adjective "lazy" to the adverb "lazily," on the assumption that "lazy" was meant to modify the verb "jumps." This would make the sentence grammatically correct, but it would also change the meaning. Instead of a lazy dog, we now have a fox jumping lazily. This is both physically unlikely and a different meaning altogether:



Screenshot from Grammarly on Chrome

—

In this sentence, a plural noun ("foxes") is paired with a singular verb ("jumps"), which is flagged. The suggested correction assumes that the plural noun is correct and the error was with the singular verb. An AI can not know a writer's intent, so depending on the goal of the text, this could be a welcome correction or an introduced error:

Screenshot from Grammarly on Chrome

—

This sentence is missing a verb entirely but was not flagged:

Screenshot from Grammarly on Chrome

—

Here, the sentence has a similar issue with subject-verb agreement, and a singular noun (“fox”) is paired with a plural verb (“jump”). But AI assumes that the problem is with verb tense and suggests “jumped,” a past-tense verb that can be used with both singular and plural subjects. As above, AI does not know the writer’s intent, so this suggestion could either correct an error or introduce one:

Screenshot from Grammarly on Chrome

—

These examples are not intended to be an indictment of AI or an argument that AI is never a helpful tool. Rather, they are intended to illustrate how critical it is that writers carefully evaluate AI suggestions and consider each suggested correction before accepting it.

Grammarly Changes the Landscape

The web-based service Grammarly represents the vanguard of English-language AI writing tools – and ironically, its developers didn’t grow up speaking English. Founders Max Lytvyn and

Alex Shevchenko, who grew up in Ukraine and still run the company from there, consider their second-language status an asset. “When you communicate in your native language and your native culture, it is easy to assume that everybody around you understands you perfectly,” Lytvyn told Harry McCracken of *Fast Company*. “But when you have to do it with a culture and language that aren’t your own, you pay more attention to the challenge.”

That understanding of the nuances of language perhaps influenced Grammarly’s growth beyond simple spellchecking. Today, the software runs checks for punctuation, grammar, capitalization, word choice, wordiness, sensitivity (a reference to “workman” might return a gender-neutral suggestion of “worker”), and the most delicate of all, tone. (“How Does Grammarly Work?”) The industry is noticing: Microsoft has strengthened its built-in spellcheck function to include Grammarly-like features, and Google has added features to its Google Docs platform.

Grammarly’s tone checker, still in beta mode, draws on word choice, phrasing, punctuation, and capitalization to predict the reaction a reader might have to text. (“Meet Grammarly’s Tone Detector, the Ultimate Tone Analyzer.”) The genesis of the tone checker is another testament to Lytvyn and Schevchenko’s understanding of the nuance of language:

> The new feature, Lytvyn says, was inspired by the fact that “emotion and tone are essential parts of communication,” but tougher to master in written form than with spoken words. “At one point, Alex, my cofounder, and I were working on a presentation about our vision for our team,” he recalls. “And to make it more energetic and motivating, we just overloaded it with expletives and high-energy words. But what ended up happening was we just scared the team. Because everybody perceived it as ‘the sky is falling,’ and it was totally not our intention.” (McCracken)

McCracken, a Grammarly user, says the platform’s feedback is often but not always helpful: “About 40% of its suggestions, I consider but ultimately reject. Another 40% pinpoint weaknesses I already know my writing has, but have failed to eliminate from a first draft. And 20% identify issues I might never have noticed without Grammarly’s assistance.” And yet, despite its flaws, he still uses the service: “But it’s not that it’s transformed my prose. I just find it helpful as a sort of linguistic Jiminy Cricket that watches me at work, steers me in the right direction, and points out when I slip up.”

That assessment is echoed by other writers and by those who teach writing. Dorothy Mayne of the University of Wisconsin’s Writing Center terms Grammarly “useful but imperfect.” And J.M. Dembsey, in a close analysis of the literature on Grammarly, says that though the platform has positives like simple design, quick turnaround, and categorization of errors, it has plenty of negatives, such as false positives, false negatives, and unclear or overly technical explanations. Most troublingly, she points out that users must have a good grasp on grammar rules and be confident in their abilities in order to evaluate Grammarly’s feedback. (page 67)

As writing center employees, both Dembsey and Mayne encounter students who struggle with grammar and lack confidence in their abilities; these students need more support than an online tool can give. Dempsey concludes: “Even though technology can be more available, humans provide a wider range of support and can alter ineffective approaches through training and self-improvement. Thus, ‘reaching’ students (regardless of the reasons or their writing concerns) is still a human activity.” (page 89)

A Note About “Good Writing”

AI writing aids are helpful only if a writer’s goal is to meet the standard for which the AI has been programmed. We have discussed above that AI can not guess a writer’s intent; neither can AI know the intended tone or purpose of a text. If a writer and an AI tool have different notions of what constitutes “good writing,” especially for a specific use or audience, the writer will be frustrated by the AI feedback – or worse, compelled to change it in a way that does not improve it. This frustration is not new. In discussing writing as a technology, Walter Ong cites Plato’s ancient texts: “A written text is basically unresponsive. If you ask a person to explain his or her statement, you can at least get an attempt at explanation; if you ask a text, you get nothing except the same, often stupid words which called for your question in the first place” (page 27). Just as Plato considered a written text unresponsive, a modern-day writer might consider an AI writing aid unresponsive and unhelpful if it is a poor match for the text.

For example, an organization may follow specific style guidelines that dictate punctuation, spelling, or usage. A publication that follows the *Associated Press Stylebook* would say “Sam bought butter, milk and eggs at the grocery store on 82nd Street,” but a publication that follows *The Chicago Manual of Style* would use the serial comma (page 371) and spell out the numbers in certain street names (page 562): “Sam bought butter, milk, and eggs at the grocery store on Eighty-Second Street.” An AI that had been programmed to use the serial comma would flag the first example as incorrect; it’s up to the human user to determine if that standard is appropriate for the text. Issues like these can not be considered in a vacuum.

Moreover, AI writing aids may not take into account regional terms, colloquialisms, or dialects. Take, for example, the regional phrase “needs washed,” which standard English would recast as “needs to be washed” or “needs washing.” The Yale Grammatical Diversity Project, which collects data on nonstandard usage among North American English speakers, shows that this construction and similar ones (“wants fed,” “likes petted”) are most common in northern Appalachia and echoes the Scots English that the region’s first European inhabitants may have spoken. Though this construction is used across the U.S. to varying degrees, it still falls outside the bounds of standard English. Careful readers can divine the meaning of this phrase even if they are unfamiliar with it, but an AI writing aid will not.

Dialects such as African American Vernacular English (AAVE) pose a particularly sticky problem because judgment of language fluency is inextricably linked to racism and classism. In an excerpt from his book *Don’t Believe a Word: The Surprising Truth about Language* published as

a blog post in *The Paris Review*, David Shariatmadari says that the stigma against AAVE is an extension of the stigma against Black Americans. “Few large groups of English speakers have borne as great a burden of stigma as black people. … It’s not surprising, then, that the dialect many black people speak is stigmatized, too.”

Linguist Geoffrey K. Pullum argues that because AAVE is so similar to standard English, it is often considered “bad English” when it is actually a dialect of its own. “AAVE as a dialect of English still deserves respect and acceptance. It has a degree of regularity and stability attributable to a set of rules of grammar and pronunciation, as with any language. It differs strikingly from Standard English, but there is no more reason for calling it bad Standard English than there is for dismissing Minnesota English as bad Virginia speech, or the reverse.” (page 45)

But when studied closely, AAVE has strict internal grammatical structures that actually echo elements found in the grammar of other languages. Shariatmadari cites the double negative, which is also used in Italian, or the missing copula (“to be”), often used in Arabic.

For these and other reasons, poorly applied standards of “correct” English can be considered racist or classist. Skilled editors know how to balance notions of correctness with respect for dialects and colloquial terms, but an AI editor does not.

Survey of Users

To better understand the feedback that users get from AI writing tools, a survey was distributed to ask about the frequency, context, and quality of their experience.

Survey Distribution

A link to the survey was posted to a general audience on Facebook, LinkedIn, and Nextdoor. Text accompanying these posts specifically requested participation from those who did not typically use AI writing aids or were not native English speakers, in hopes of balancing the sample, but otherwise the survey did not target any particular demographic. The survey was open for 14 days.

Survey Contents

An initial question asked respondents if they had used an AI writing aid in the past year. Those who said they had not were asked why they did not use AI writing aids. Those who said they had used an AI writing aid were asked the following:

- What is the primary reason you use AI writing aids?
- Do you use AI writing aids for everything you write/edit?
- In which context(s) do you use AI writing aids?
- What is the primary AI writing aid you use?

- What led you to choose your primary AI writing aid?
- When AI corrects your writing, how often do you understand why it is making a certain suggestion?

Finally, all respondents were asked for demographic information: age, level of education, and age at which they learned English.

Full data on survey responses is available in the appendix to this paper.

Survey Highlights

Far more respondents said they use AI writing aids (92.1%) than those who said they do not (7.9%). However, those who do use AI writing aids varied in how consistently they use the tools; they were split roughly evenly among using the tools with everything they write, using them on more important texts, and using them only if convenient. Two respondents were able to answer follow-up questions; selections from their answers are listed below.

> I leave them on all the time, although I don't always pay attention to them. I only run a grammar check once I'm done with my own editing skills (I'm an English teacher).
>
> – S.B. Fradkin

The survey asked respondents to identify their primary AI writing aid. As expected, the vast majority of respondents said they use Grammarly or their computer's built-in spellchecker. Two other AI writing aids were listed as possible responses, with a space to add tools not listed. Only one respondent named another tool. This is not for lack of other options; searches for "online proofreading," "online spellcheck," "grammar tool," and the like turn up millions of results. The likely conclusion seems to be that ease of access and/or ease of use prompt users to choose Grammarly and built-in spellcheck, but further research is needed to confirm this. It would be interesting to see if other AI tools are programmed to suit specialized texts or genres.

> Grammarly is great at what spell check is not – catching misused homophones. … [But] Grammarly has made some utterly ridiculous suggestions before that completely alters the meaning of the message. If I don't understand it, I will look it up in the APA and MLA first.
>
> – L. Cole

Interestingly, the only respondent who said they had chosen a writing aid solely because of reviews was also the only one who said they used PerfectIt, which is a specialized platform that describes itself as "the leading software among professional proofreaders and editors." It is possible that once respondents truly delve into reviews, they are more likely to choose other platforms than Grammarly or built-in aids. The other respondent who mentioned reviews used Grammarly, but also said "it's the only AI writing aid I know of" and "it was free," so reviews were not the sole reason.

> I would love some kind of "No, that's not wrong. You're just dumb" feature. Not every "error" that it finds is actually an error. It's better than nothing, but it would be great to improve its abilities based on your writing style.
>
> – S.B. Fradkin

Most respondents (86.1%) said they always or almost always understood the reasons when AI suggested a correction. Of these 30 respondents, 18 used built-in spellcheck, 11 used Grammarly, and one used built-in spellcheck and Grammarly equally. Of the four (11.1%) who said they only sometimes understood the reason, three used built-in spellcheck and one used Grammarly. Proportionally, this seems to indicate that respondents who use Grammarly are more likely to understand AI's corrections than those who use spellcheck – or perhaps that those with greater English proficiency are more likely to choose Grammarly over spellcheck. With a small sample size, it would be imprudent to draw conclusions, but it would be interesting to see if this relationship is echoed in a larger sample.

Survey Conclusion

Though this survey did not provide clear insights about users' experience with AI writing aids, it did show that these tools have become an accepted part of the writing process. Many users indicated they used the tool that was available most easily to them, so it is critical for institutions to vet these tools before providing them to users. It is heartening to see that so many users understand AI's suggestions.

> These aids are helpful but not 100% reliable. They can polish a good writer – but they will not make a bad writer good. They're sort of like the text-to-image AI machines that give humans seven fingers or butchers a nose. At first glance you'll feel it's ok – but if you [look] close enough, you'll find the flaws.
>
> – L. Cole

To gather more specific insights about user behavior or experience, this subject needs more research. Ideally, any future study would comprise a larger sample with greater diversity of age, education, and English familiarity (see Appendix for specific areas in which this sample lacked variety). Personal interviews could provide better understanding of subjects' experience with AI than the multiple-choice format that was used in this survey.

Conclusion

Academic research, personal research, and a survey of users all point to a similar conclusion: AI writing aids are helpful tools, but they do not replace a careful human editor. As AI evolves and writing aids become more able to manage the nuances of the English language, these tools may move closer to human abilities, but they are not there yet. In the meantime, AI writing aids can play a similar role to calculators: They can take over rote tasks, but they can not offer the higher-level thinking necessary to make major decisions.

Dennis F. Galletta et al. put it well when describing their 2003 study of spellcheck users: “Users should no longer abdicate their responsibilities to software that lacks the ability to analyze completely the meaning of their written words for them. It will remain a task more appropriately assigned to the human side of the equation for many years to come.” (“Does Spell-Checking Software Need a Warning Label?” page 86)

Appendix: Full Survey Text, Results, and Demographic Data

(Raw data available as Google Sheet online.)

Survey Questions & Results

Have you used an AI writing aid in the past year?

The survey (still available online, though no longer taking responses) received a total of 38 responses. Three respondents (7.9%) said they had not used an AI writing aid in the past year. (However, as noted below, one also answered questions designated for those who had used an AI writing aid, so it is unclear how accurate this answer is.) Thirty-five respondents (92.1%) said they had used an AI writing aid in the past year.

Questions for those who do not use AI writing aids:

If you don't use AI writing aids, why not? (check all that apply)

- **I'm confident in my writing ability:** 0 responses
- **The things I write don't seem formal/important enough to need an AI review:** 0 responses
- **I prefer human editors to AI:** 1 response
- **I don't have access to an AI writing aid:** 1 response
- **AI writing aids are too confusing/make too many mistakes:** 1 response
- **I don't write very much, so I haven't looked into AI writing aids:** 2 responses

Of the three respondents who answered this question:

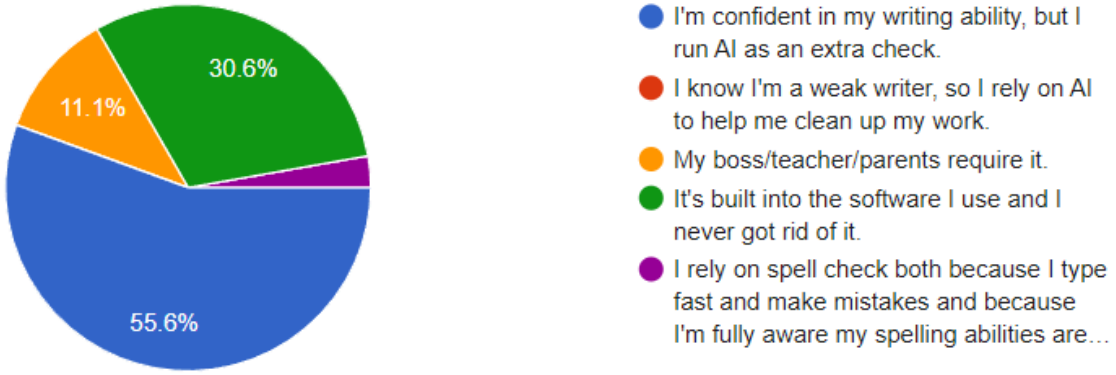
- One said "I prefer human editors to AI, "AI writing aids are too confusing/make too many mistakes," and "I don't write very much, so I haven't looked into AI writing aids."

- One said “I don't write very much, so I haven't looked into AI writing aids,” but also answered the questions designated for those who do use AI writing aids. In information for those questions, this user’s answer is indicated, for context.
- One said only “I don’t have access to an AI writing aid.”

Questions for those who do use AI writing aids:

What is the primary reason you use AI writing aids?

(respondents could add their own answer)



- **I'm confident in my writing ability, but I run AI as an extra check:** 20 responses, 55.6%
- **I know I'm a weak writer, so I rely on AI to help me clean up my work:** 0 responses (but see custom response below, which is quite similar)
- **My boss/teacher/parents require it:** 4 responses, 11.1%
- **It's built into the software I use and I never got rid of it:** 11 responses, 30.6% (one of these responses was from a user who indicated they do not use writing aids)
- **Provided answer: “I rely on spell check both because I type fast and make mistakes and because I'm fully aware my spelling abilities are near non-existent**”: 1 response, 2.8%

Do you use AI writing aids for everything you write/edit?

(respondents could add their own answer)

- **Yes, every single time:** 11 responses, 30.6%
- **Some things, if it's easy to do the check:** 11 responses, 30.6%
- **Only the really important things**: 9 responses, 25% (one of these responses was from a user who indicated they do not use writing aids)
- **I only use it when someone else makes me:** 1 response, 2.8%
- **Provided answer: "I have been composing a website project in Figma for one client and this software does not have an ai":** 1 response, 2.8%
- **Provided answer: "Only if I'm using word or google docs":** 1 response, 2.8%
- **Provided answer: "Only if it's turned on already":** 1 response, 2.8%
- **Provided answer: "Only to correct its mistakes":** 1 response, 2.8%

In which context(s) do you use AI writing aids? (check all that apply)

(respondents could add their own answer)

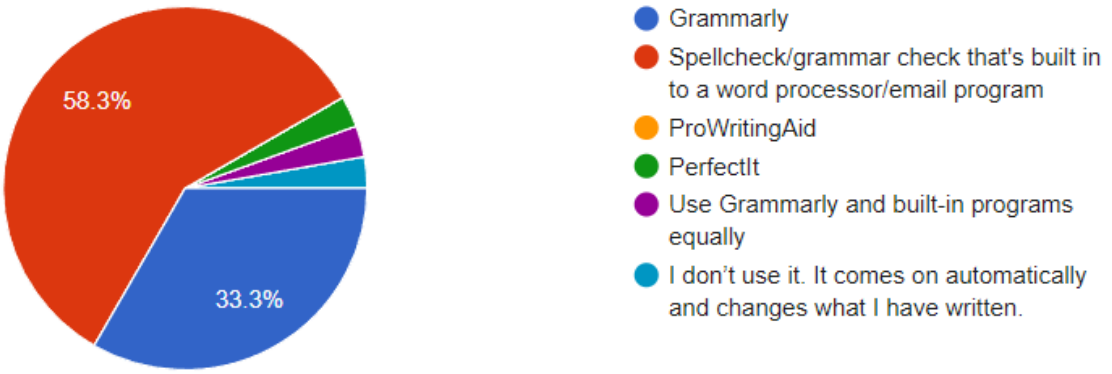
- **Work:** 33 responses, 94.3%
- **School:** 9 responses, 25.7%
- **Personal correspondence:** 18 responses, 51.4%
- **Hobbies/side projects/creative pursuits:** 9 responses, 25.7%
- **Provided answer: "volunteering roles":** 1 response, 2.9%

Combinations of answers:

- **Respondents who said "work" only:** 10, 28.6% (one of these responses was from a user who indicated they do not use writing aids)
- **Respondents who said "personal correspondence" only:** 2, 5.7%
- **Respondents who said both "work" and "school":** 3, 8.6%
- **Respondents who said both "work" and "personal correspondence":** 7, 20%
- **Respondents who said both "work" and "hobbies/side projects":** 4, 11.4%
- **Respondents who said "work," "personal correspondence," and "hobbies/side projects":** 2, 5.7%
- **Respondents who said "work," "school," and "personal correspondence":** 3, 8.6%
- **Respondents who said "work," "school," "personal correspondence," and "hobbies/side projects":** 3, 8.6%
- **Respondents who said "work" and provided an additional answer of "volunteering roles":** 1, 2.9%

What is the primary AI writing aid you use?

(respondents could add their own answer)



- **Grammarly:** 12 responses, 33.3%
- **Spellcheck/grammar check that's built in to a word processor/email program:** 21 responses, 58.3% (one of these responses was from a user who indicated they do not use writing aids)
- **ProWritingAid:** 0 responses
- **PerfectIt:** 1 response, 2.8%
- **Provided answer:** "Use Grammarly and built-in programs equally": 1 response, 2.8%
- **Provided answer:** "I don't use it. It comes on automatically and changes what I have written": 1 response, 2.8%

What led you to choose your primary AI writing aid? (check all that apply)

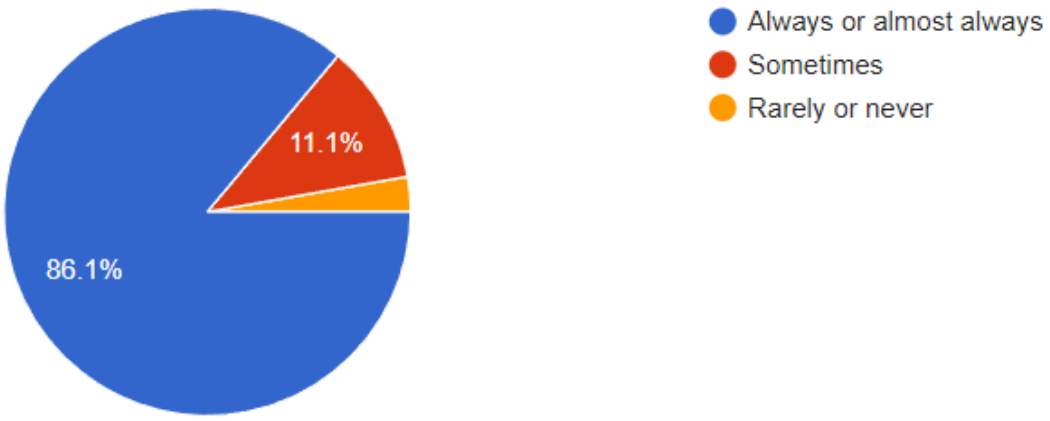
(respondents could add their own answer)

- **My workplace/school/parents chose it for me:** 11 responses, 30.6%
- **It was already installed on my computer/built into the software I use:** 25 responses, 69.4%
- **It was free:** 11 responses, 30.6%
- **It got good reviews:** 2 responses, 5.6%
- **It's the only AI writing aid I know of:** 3 responses, 8.3%
- **Provided answer: "I'm conscientious about always improving my writing":** 1 response, 2.8%

Combinations of answers:

- **Respondents who said "workplace/school/parents" only:** 5, 13.9%
- **Respondents who said "already installed" only**: 14, 38.9%
- **Respondents who said "it was free" only:** 1, 2.8%
- **Respondents who said "it got good reviews" only:** 1, 2.8%
- **Respondents who said "workplace/school/parents" and "already installed":** 3, 8.3% (one of these responses was from a user who indicated they do not use writing aids)
- **Respondents who said "workplace/school/parents" and "it was free":** 1, 2.8%
- **Respondents who said "workplace/school/parents" and "already installed" and "it was free":** 1, 2.8%
- **Respondents who said "workplace/school/parents" and "already installed" and "only AI aid I know of":** 1, 2.8%
- **Respondents who said "already installed" and "it was free":** 6, 16.7%
- **Respondents who said "it was free" and "only AI aid I know of":** 1, 2.8%
- **Respondents who said "it was free" and "it got good reviews" and "only AI aid I know of":** 1, 2.8%
- **Respondents who provided an answer of "I'm conscientious about always improving my writing":** 1, 2.8%

When AI corrects your writing, how often do you understand why it is making a certain suggestion?

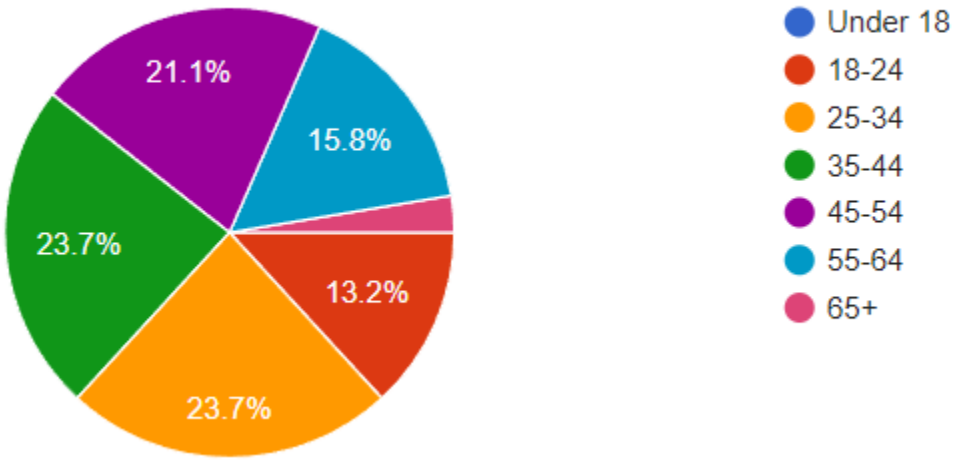


- **Always or almost always:** 31 responses, 86.1% (one of these responses was from a user who indicated they do not use writing aids)
- **Sometimes:** 4 responses, 11.1%
- **Rarely or never:** 1 response, 2.8%

Survey Demographics

For transparency's sake, it should be noted that respondents to this survey had, on average, achieved a much higher level of education than the general U.S. population. The sample also included proportionally more people who spoke only English, but fewer of the very young or very old.

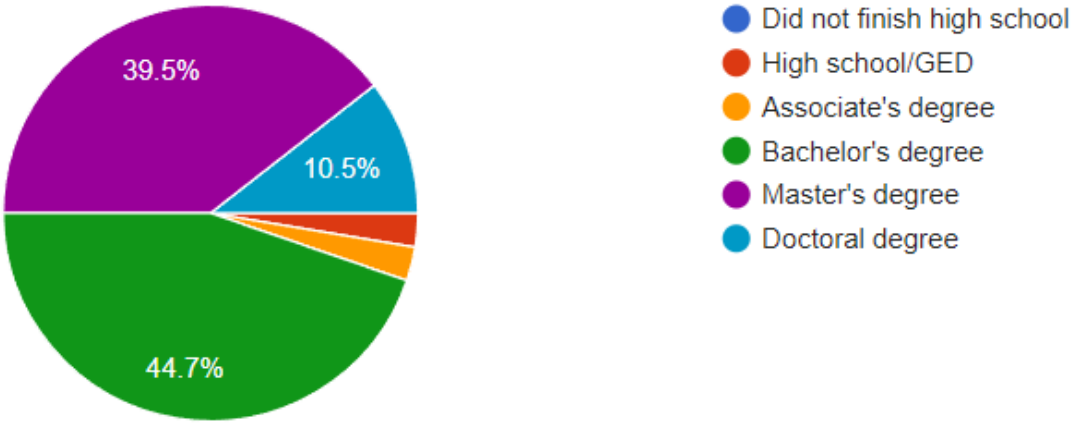
How old are you?



- **Under 18:** 0 responses
- **18-24:** 5 responses, 13.2%
- **25-34:** 9 responses, 23.7%
- **35-44:** 9 responses, 23.7%
- **45-54:** 8 responses, 21.1%
- **55-64:** 6 responses, 15.8%
- **65+:** 1 response, 2.1%

Compared to the general population of the U.S., this sample underrepresents those under 18 and over 65. According to U.S. Census data, those 18 and under comprise about 22.1% of the population, while those over 65 make up 16.8% ("United States"). This survey got no responses from those under 18 and only one (2.1%) from someone over 65.

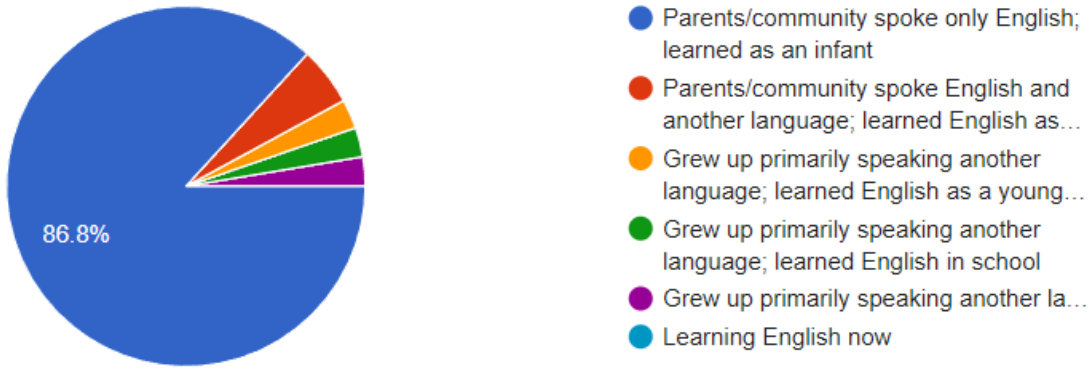
What is the highest level of education you have completed?



- **Did not finish high school:** 0 responses
- **High school/GED:** 1 response, 2.6%
- **Associate's degree:** 1 response, 2.6%
- **Bachelor's degree:** 17 responses, 44.7%
- **Master's degree:** 15 responses, 39.5%
- **Doctoral degree:** 4 responses, 10.5%

Compared to the general population of the U.S., this sample has far more respondents with a post-high school education. According to U.S. Census data, about 42.3% of the population has an associate's degree or higher (Ryan and Bauman), compared to 97.4% in this survey.

When were you first introduced to English?



- **Parents/community spoke only English; learned as an infant:** 33 responses, 86.8%
- **Parents/community spoke English and another language; learned English as an infant:** 2 responses, 5.3%
- **Grew up primarily speaking another language; learned English as a young child:** 1 response, 2.6%
- **Grew up primarily speaking another language; learned English in school:** 1 response, 2.6%
- **Grew up primarily speaking another language; learned English as an adult:** 1 response, 2.6%
- **Learning English now:** 0 responses

Compared to the general population of the U.S., this sample had a slightly higher proportion of participants who spoke only English. According to U.S. Census data, about 78% of people nationally speak only English (Dietrich and Hernandez).

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