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Auto-Correction Usage and Its Effects on Second Year Based English Students' Writing Skills in Davao Del Norte State College

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Abstract

One feature associated with AI is auto-correction. Auto-correction has become commonplace in students' lives. Although it promises convenience and the ability to increase writing accuracy, there is considerable debate over how much it affects students' ability to write. As such, this study examined the potential correlation between the usage of auto-correction tools and students' writing skills through quantitative research and used cluster sampling to get the respondents' sample size. Over 128 Second Year BSED English students participated in the study. Two questionnaires were used: a 5-point Likert Scale and a test questionnaire. The 5-point Likert Scale was for determining the level of students' auto-correction usage (Perceived Ease of Use and Perceived Usefulness), wherein both indicators gained "Often" as the descriptive rating across all domains. Perceived Ease of Use had a higher mean score of 4.132, while Perceived Usefulness obtained 4.081. The test questionnaire was for measuring students' writing skills, with average scores in grammar (14.523), punctuation (15.422), and spelling (17.328). Based on the results, students excel in spelling proficiency, have average competence in grammar, and have a fair level of competence in punctuation. The Pearson correlation test was for determining the correlation between variables. Findings showed no significant relationship between the use of auto-correction tools and students' writing skills, with a result of -0.112 at the 0.05 level of significance. The findings imply that the use of autocorrection tools may not have a significant impact on improving students' writing skills, as indicated by its weak negative correlation.

Keywords—Artificial intelligence; auto-correction tools; auto-correction usage; technology; writing skills.

The Problem and its Setting

Background of the Study

Nowadays, the world is technology-driven, and it has substantially influenced almost every aspect of human existence, particularly in students' lives. Govro (2023) defines Artificial Intelligence (AI) as a technology that empowers machines to gather knowledge and insights from data, enabling these technologies to analyze, interpret, and make informed decisions.

A feature that is associated with AI is auto-correction. Websites with auto-correction tools are one type of technological support students use when writing. It involves providing recommendations and replacing incorrect spelling with appropriate counterparts (Toleu et al., 2022). It not only rectifies words that are incorrectly spelled, but it also rectifies grammar and punctuation mistakes and even offers recommendations to improve writing. Common examples are Grammarly, Quillbot, ProWritingAid, and more. The use of auto-correction has become commonplace in the lives of students. While these tools provide convenience, there is still considerable debate over how auto-correction affects students' writing ability.

Purcell et al. (2013) conducted an Advancement Placement (AP) and National Writing Project (NWP) survey in Washington, D.C., which revealed that 68% of teachers raised concerns about decreased effort in writing due to technologies. 46% expressed worries about hasty and careless writing, while 40% noted poor spelling and grammar usage. Interestingly, 38% believe these tools decrease errors, reflecting the complex interplay between benefits and drawbacks.

Consequently, Kapur (2019) stated that developing basic literacy skills, including reading, writing, and arithmetic, is fundamental for students' academic and professional success. Writing involves various elements such as grammatical correctness, proper punctuation, and organization of thoughts (Ortega, 2013, as cited in Rauf & Saeed, 2021). It underscores that writing is multifaceted. Attention to detail is necessary as writing encompasses not only content generation but also the mechanics of language.

It was asserted by Saglamel et al. (2015) that writing skills are important for English majors since they are more inclined to produce written works like academic essays that follow established academic conventions. Paudel (2020) also noted that writing in English in higher education is regarded as a crucial skill by students as it is a basis that tests their academic achievement. Similarly, 99% of chief academic officers from higher education institutions in America regarded writing as a highly important intellectual skill (AAC&U, 2011, as cited in Sparks et al., 2014). Poor writing skills may lead college graduates to struggle to compete for jobs in today's global market (Alhusban, 2016).

Since writing is essential across academic and professional settings, students must write expertly without relying excessively on technical support. Findings from Adrar University in Southern Algeria revealed that students have quit trying to improve their spelling and grammar because all that required them was to offer a suggestion. The computer would do the rest of the process automatically (Boukhechba & Bouhania, 2020).

Likewise, the usage of AI-driven tools introduces new challenges to writing education. It was reported that a history professor at the University of the Philippines recently uploaded a student's AI-generated essay to Facebook. This is alarming since using AI in any school related paper works is a new form of academic dishonesty (Estanislao. 2023).

Also, Vacalares et al. (2023) investigated the factors affecting first-year BSED students' writing skills in a selected Local College in Misamis Oriental. Results show that grammar checker usage enhances their confidence in writing, particularly in sentence structure, spelling, and technical correctness. Digital technologies have transformed how students learn, including writing, leading to a greater dependence on these for enhancing written output (Blattner & Fiori, 2017, as cited in Vacalares et al., 2023).

Thus, this quantitative research aimed to determine the level at which 128 students in Second Year BSED English at Davao del Norte State College employ auto-correction while writing and assess the potential correlation between this usage and their foundational writing skills. It is important to consider that this study exclusively focused on the intentional use of auto-correction websites, wherein students consciously opt to employ such tools in writing. The selection of Second-Year BSED English students as respondents for this study was deemed essential because they were more inclined to have writing tasks and were expected to meet the college's standards of competence in writing.

Statement of the Problem

Specifically, this study aimed to answer the following questions:

1. What is the level of auto-correction usage among auto-correction users in Second-Year BSED English students of Davao del Norte State College in terms of:

    1.1 perceived ease of use; and
    1.2 perceived usefulness?

2. What is the level of writing skills based on the average scores among auto-correction users in Second-Year BSED English students of Davao del Norte State College in terms of:
    2.1 grammar;
    2.2 punctuation; and
    2.3 spelling?

3. Is there a significant relationship between the use of auto-correction and the writing skills of auto-correction users in Second-Year BSED English students of Davao del Norte State College?

Hypothesis

The null hypothesis was tested at 0.05 level of significance:

H_{01}: There is no significant relationship between Auto-correction Usage and Second-Year BSED English students' writing skills in Davao del Norte State College.

Review of Related Studies

The Impact of Auto-Correction on Students' Grammar in Writing

Li et al. (2013) conducted a study to determine the impact of a web-based application on an English as a second language (ESL) writing class using a mixed-method approach. The qualitative data were gathered through surveys to explore students' opinions, while quantitative data were derived from grammar pre- and post-tests, self-editing exercises, and writing accuracy scores from two assignments. The findings revealed that students reduced the number of errors in their written assignments and demonstrated improved performance in grammar post-tests. Also, the researchers noted an increase in students' self-efficacy in corrective editing after using the web-based application.

In addition, the findings in the study conducted by Lipalam et al. (2023) examined the integration of grammar checkers as tools for error correction and feedback, finding significant improvements in students' writing accuracy and overall proficiency. The study highlighted that student viewed grammar checkers positively, recognizing them as effective tools for enhancing their grammar skills and academic writing capabilities. This positive perception was shown to strongly influence students' intentions to use grammar checkers for their writing tasks, emphasizing the perceived ease of use and usefulness of these tools in academic contexts.

Grammarly, is a well-known auto-correction software which was used in a study conducted by Amelia (2022), which showed significant difference on senior high school students' writing before and after using Grammarly application. The study showed significant improvements in students' writing after using Grammarly, particularly in reducing errors related to vocabulary (diction), grammar, spelling, and punctuation. These findings confirmed the effectiveness of grammar checkers in addressing common writing issues. However, the study also noted that Grammarly was less successful in improving the overall quality and structure of students' EFL writing, suggesting that while it aids in correcting technical errors, it may not fully address more advanced aspects of composition.

Additionally, Faisal and Putri (2023) explored the perspectives of English-Language-Education-Program (ELE) students regarding Grammarly as an automatic grammar checker for academic writing. Their findings revealed that an average of 73.3% of respondents expressed positive perceptions, believing that Grammarly assisted them in identifying and rectifying errors, improving the quality of their academic work, and enhancing their confidence. However, some students voiced negative opinions, citing issues with Grammarly's feedback, such as irrelevance and lack of contextual accuracy. Factors influencing students' perceptions included the perceived

usefulness, practicality, and limitations of Grammarly's feedback, highlighting a mix of positive and critical views among the participants.

Further, another study conducted by Dizon and Gayed (2021) investigated the impact of Grammarly on L2 students' writing performance, specifically focusing on grammatical accuracy and lexical richness. The study found that students who used Grammarly wrote with higher grammatical precision and incorporated more diverse vocabulary, as its predictive text feature encouraged the use of less frequently employed words. However, these features had minimal effects on writing fluency, such as the ability to construct longer and more complex sentences. The researchers concluded that Grammarly significantly improved grammatical accuracy and lexical richness compared to a control group without access to writing aids. Nonetheless, its impact on fostering fluency or creating more sophisticated sentence structures remained limited, suggesting that while Grammarly is beneficial at the word and sentence level, its capabilities in enhancing overall writing complexity and productivity are constrained.

The Impact of Auto-Correction on Students' Spelling

Mastering spelling is crucial for proficiency in a language since it facilitates the clear articulation of ideas in written form (Okyere, 1990, as cited in Da Costa & Arias, 2021). Furthermore, spelling significantly influences students' written performance. It is anticipated that students with weaker spelling abilities may experience reduced confidence and clarity in their writing compared to proficient spellers (Warda, 2005, as cited in Da Costa & Arias, 2021). Mastering English spelling poses a significant challenge for many second language learners.

Numerous students and individuals aim to attain fluency in spoken English but encounter difficulties when it comes to writing, often resulting in frequent spelling errors. This struggle can be attributed to the disparity between spelling and pronunciation, as well as the complexity of certain words, which may lead to confusion. Consequently, spelling mistakes emerge as the most prevalent type of error among English learners (Rizwan, 2022).

One study aimed at finding out the impact of auto-correction features on spelling competency of EFL learners. The result showed students who spend a lot of time using applications with auto-spell checkers do not develop spelling proficiency compared to students who rely more on handwriting because it requires more work engaged in handwriting, which strengthens the language learning process. Based on the study, spelling is improved when students use auto-spell checkers extensively, but not as much as when they write by hand. Subsequently, because handwriting exercises and assignments greatly aid in spelling improvement, teachers must incorporate them into their syllabus and assessment tools (Ali et al., 2022).

In terms of spell checkers, Netterström and Persson (2020) examined the impact of spell checkers on the spelling skills of upper secondary students studying English as a second language. Combining a systematic literature review with an online questionnaire, it employs a mixed-methods strategy. The results revealed three key perceptions: the importance of individual responsibility when using spell checkers for learning, the need to improve spell checkers to effectively support spelling acquisition, and a group of students who believe spell checkers should

not be used for learning spelling. The study indicates that spell checkers can aid in learning, but learners must use them actively and responsibly, keeping in mind the software's limitations.

In addition, Rimbar (2017) conducted a study that investigated the impact of spell checkers on students' spelling errors and their capacity to generate corrections. The research revealed that spell-checkers, despite their ability to identify errors and provide alternative options, did not have a substantial effect on students' capacity to rectify spelling mistakes or internalize what was suggested. The study comprised of two distinct groups, namely an experimental group utilizing spell-checkers and a control group employing handwritten dictation. The findings of the study revealed that there were no statistically significant differences observed in the post-test spelling performance between the two groups. Thus, the results suggested that the use of spell-checkers did not have a major impact on enhancing spelling proficiency.

Equally important, Wood (2014) stated in her study about Autocorrect Awareness: Categorizing Autocorrect Changes and Measuring Authorial Perceptions that the manner in which an individual approach and perceive the autocorrect feature can significantly influence the overall judgment of natural spelling skills. As a result, an individual may start to confuse the correct spelling of a word with the version that auto-correct suggests. In other words, individuals might become unsure about their ability to spell words correctly because they have grown dependent on auto-correction to do it for them.

The Impact of Auto-Correction on Students' Punctuation in Writing

Punctuation is a visual device with various shapes designed to express written texts in a comprehensible and easy-to-read format (Muttalib, 2020). Pais and Tufis (2022) as mentioned in the study of Munfadlila (2022) stated that students' common errors in writing are often committed in proper use of punctuation marks in sentences such as periods, commas, semicolons, colons, hyphens, dashes, question marks, exclamation marks, ellipses, quotation marks, single quotation marks, brackets, square brackets, slashes, abbreviations, and apostrophes. The study also stated the need to put effort into analyzing the use of punctuation marks to improve the quality of writing.

Furthermore, the study of Ismael et al. (2022) entitled the Effects of Auto-Correction on Students' Writing Skill at Three Different Universities in Sulaimaneyah City, examined the effects of auto-correction and technology on students' writing ability. The students involved were from three different institutions in the city of Sulaimaneyah in Iraq. The researchers aimed to find out how auto-correction affects writing ability through a mixed-method study. Their study stressed that punctuation is complex in writing because students often struggle to identify correct positions. Representatives from the three participating universities have all demonstrated significant differences when comparing punctuation errors between handwritten work and the use of auto-correction. Beyond that, the researchers stated that punctuation is a consistent problem in students' writing tasks. The study revealed that in the 2 universities, the students' handwritten texts contain a greater frequency of punctuation mistakes while at the remaining university, the students commit a higher number of punctuation errors when using auto-correction tools. In this case it is evident that students' handwritten works contain more punctuation mistakes than the auto- corrected version because auto-correction revises punctuation errors for the students.

In using auto-correction websites, there were two important beliefs that this study used as indicators of auto-correction usage: Perceived Usefulness, and Perceived Ease of Use.

Perceived Usefulness

Cavalerl and Dianati (2016) conducted a study about utilizing online grammar checkers due to the limited availability of comprehensive grammatical feedback to students. This is in response to the problem faced by school advisers in Australia as they are facing constraints to provide feedback to students because of limited time of a student consultation session. In the study, the perceived usefulness was mentioned, and it was defined as a person's perception about whether using a particular technology will contribute to the attainment of personal goals, such as enhancing performance (Davis et al., 1989, as cited in Cavalerl & Dianati, 2016). As shown in the findings, most of the students perceived the tool as useful, indicating that its suggestions were beneficial in improving their works.10 out of 18 students commented grammar as "helpful" or "useful", and in one remark, a student highlighted that after using Grammarly, there was a significant increase in their academic marks. This implied that students regard grammar checkers as useful since it helped them in checking their grammar errors immediately.

In addition, Nova (2018) stated that Grammarly is one of the auto-correction tools that are part of the Automatic Writing Evaluation program, a program used in checking and enhancing writing by providing comprehensive feedback on spelling, grammar, and punctuation errors. In the same study, results have shown that Grammarly is perceived as a supportive tool used to correct academic writing, making it possible for improvements in various aspects of writing skills. It further suggested that if students find auto-correction websites useful, it will affect their writing skills.

Perceived Ease of Use

Given the emergence of technology, it can never be denied that students will use it to make their writing activities easier and more efficient. Samuel et al. (2018) stated that utilization of mobile technologies made it easier to access educational materials. Aside from that, accomplishing scholarly tasks is easy to finish without much stress. The same study indicated that the use of technology makes schoolwork more motivating to do and less difficult for students. This makes it effortless and time efficient when writing and checking errors. Aside from that, the students highlighted that the reasons behind the increased use of technology is because it is easier for them to enhance their writing skills since it is accessible and user-friendly.

In addition, data shows from the study conducted by Carstens et al. (2021) that participants seem to view technology as a tool to enhance learning and emphasized that technology is perceived as a versatile tool to make all tasks inside the school effortless. It was also indicated that academic works of students were easier to do due to the utilization of technology in many purposes. The positive role of technology in education, especially for students in simplifying tasks, makes it more

effective and time efficient. It underscores the idea that technology simplifies their academic responsibilities, making tasks easier to accomplish.

Theoretical Framework

This section includes the theory and concepts related to the study. The Technology Acceptance Model by Fred Davis (1989) was utilized in this study to determine the effects of auto-correction usage on students' writing skills.

The Technology Acceptance Model (TAM) is rooted in the Theory of Technology of Reasoned Action (TRA) by Martin Fishbein and Icek Ajzen in 1967. TRA is a widely utilized model in social psychology, asserting that an individual's attitude toward behavior is shaped by their beliefs. Expanding upon TRA, the Technology Acceptance Model (TAM) developed by Davis specifically examines users' inclination to embrace and utilize new technology or media within the realm of information system management. TAM identifies two pivotal beliefs regarding information technology: Perceived Usefulness (PU) and Perceived Ease of Use (PEOU).

In addition, this theory was used in the study of Ndebele and Mbodila (2022), entitled "Examining Technology Acceptance in Learning and Teaching at a Historically Disadvantaged University in South Africa through the Technology Acceptance Model (TAM)". The TAM was emphasized as an information systems theory outlining how individuals use modern technology. Fred Davis stated that perceived ease of use and perceived usefulness are critical aspects of individuals' adoption of technology. Perceived ease of use (PEOU) is well-defined as one's confidence in the ease with which a specific technology may be implemented. In 1989, Davis defined perceived usefulness as an individual's belief that deploying a specific system will enhance job performance, reflecting a desire for useful technology that is simple to use.

In addition, perceived ease of use is defined as the degree to which individuals perceive how easy it is to use the technology, and perceived usefulness refers to the extent to which individuals believe how useful the technology would be (Davis et al., 1989, as cited in Ndebele & Mbodila, 2022). When students perceive ease of use, they discern how easy it is to use technology and are more likely to adopt it. For instance, since QuillBot is one of the most popular free grammar checker tools, it offers a product that uses artificial intelligence (AI) to suggest correct spelling, grammar, and punctuation that users more likely intend to use and rely on (Dale, 2020, as cited in Fitria, 2021). In addition, when the students perceive its usefulness, they believe that auto-correction such as Quillbot is a valuable tool that will help to improve their writing skills.

In relation to the study of Alsadoon (2021), entitled "Saudi EFL Learners' Perceptions of the Frequent Use of Spelling Correction Tools in Social Media," Technology Acceptance Model (TAM) was adopted and posits that perceived usefulness and perceived ease of use lead to perceived potential benefits and challenges. Perceived usefulness refers to the potential benefits of using the target technology, while perceived ease of use refers to the minimal effort required to learn and use the features of the technology, implying the challenges presented by its use.

In another research conducted by Ferdousi (2022), the Technology Acceptance Model was one of the theoretical models utilized to investigate the factors influencing the acceptance of digital

technology among students in computer technology programs for enhancing their technical and academic writing skills. According to this study, people's attitude towards a specific technology directly influences their intention to use and actual use of that technology. In using technology to improve writing, students' attitudes are often more significant than their technical abilities. Even computer technology students, despite their IT proficiency, may harbor negative attitudes towards academic writing. In this case, students' attitudes towards using technology for writing improvement should be a primary predictor of their actions in this area. Furthermore, individuals' attitudes toward technology significantly influence their intention to use it.

Thus, it can be said that the effectiveness of technology in any context, including writing improvement, depends on how individuals accept or perceive it. This was linked to the intentional use of auto-correction software by students, particularly Second-Year BSED English students who are more likely involved in writing tasks in their field. Therefore, how students view and embrace technology influences how they use auto-correction in their writing.

Methodology

This chapter outlines the research methodology employed in the study, including the following aspects: research design, study locale, population and sampling procedures, research instrument, data collection methods, and data analysis techniques.

Research Design

The researchers used a quantitative method, specifically a descriptive-correlational design, to examine the relationship between auto-correction usage and students' writing skills. Quantitative research involves analyzing phenomena through numerical data and statistical tools (Adedoyin, 2020). Correlational research determines the extent of relationships between variables (Apuke, 2017), and a descriptive-correlational design focuses on a single group to explore these connections (Aithor, 2024).

The goal was to determine the relationship between auto correction usage and proficiency of students' writing skills. Surveys were used to gather standardized data from a large sample, which is effective for understanding group characteristics (McCombes, 2019).

Research Locale

The study took place at Davao del Norte State College (DNSC) in Barangay New Visayas, Panabo City. DNSC is an institution offering programs in education, engineering, arts, sciences, and fisheries. Presented in Figure 2 is the map of the Philippines, where DNSC is located.

Figure 2. Map of Davao del Norte State College

Source. Google Maps

Population and Sample

This study used cluster sampling to determine the sample size of the respondents. Cluster sampling involves dividing the population into preexisting groups, or clusters, and then selecting a random sample of these clusters from the overall population (Deshmukh, 2021). This study targeted the Bachelor of Secondary Education population, particularly those who were English majors. The BSED Major in English program was clustered according to their year level: the first years, second years, third years, and fourth years. From those clusters, the researchers randomly selected the second years as respondents of this study.

The Second-Year BSED English program consisted of three sections: Set A with 45 students, Set B with 39 students, and Set C with 44 students. This study entailed a total of 128 students for the three sets. These students were suitable participants due to their coursework in literature and frequent writing tasks such as book reviews, reflections, and poetry.

Research Instrument

This study used two sets of questionnaires to assess whether the level of respondents' usage of auto-correction websites affected their level of writing skills. In the first set of questionnaires, there are close-ended questions with a 5-point Likert scale. Likert scales allow students to express the strength of their agreement or feelings toward a statement or question (McLeod, 2023).

The first research questionnaire was for auto-correction. It was adapted from EFL Students' Perception of the Use of Grammarly Application in Writing Class by Hakiki (2019), Stop! Grammar Time: University Students' Perceptions of the Automated Feedback Program Grammarly by O'Neill and Russell (2019), EFL Students' Perception on Grammarly Premium's Feedback and Dealing with Inaccuracies by Ummah and Bisriyah (2022), and The Influence of Grammarly on Students' Grammar in Academic Writing: Students' View by Yunita (2020). These inquiries were carefully adapted to target and collect data directly relevant to the study's objectives and hypotheses.

The table below shows the interpretation of a 5-point Likert Scale in the following manner: 1. Never, 2. Rare, 3. Sometimes, 4. Often and 5. Always. This interpretation was adopted from the

study of Pimental (2010). Giving a description, one has to create an interval of means in order to give interpretations for the weighted mean.

Figure 3. 5-Point Likert Scale Interpretation

Likert Scale	Interval	Interpretation	Description
1	1.00-1.50	Never	The statement is never true
2	1.51- 2.50	Rare	The statement is rarely true
3	2.51- 3.50	Sometimes	The statement is sometimes true
4	3.51- 4.50	Often	The statement is often true
5	4.51- 5.00	Always	The statement is always true

The first instrument assessed respondents' use of auto-correction, focusing on two indicators: perceived ease of use and perceived usefulness. Respondents rated their usage using a 5-point Likert scale: (5) always, (4) rarely, (3) sometimes, (2) often, and (1) never.

The second questionnaire, adapted from *Year 9 NAPLAN Style Literacy Tests* (2015), evaluated students' writing skills—specifically grammar, spelling, and punctuation. Although originally designed for primary and secondary students, NAPLAN items were suitable for assessing college students' proficiency in these areas (Beaglehole, 2014).

Apart from this, the grammar and punctuation sections each contained 25 multiple-choice items, a number selected to ensure reliable assessment of student proficiency. According to Marie (2020), 20–25 items are optimal for such tests, effectively measuring expected skills (Jannah et al., 2021). Thus, 25 items were deemed sufficient for evaluating students' grammar and punctuation knowledge.

On the other hand, the spelling test included 10 error correction and 10 proofreading tasks (20 items total). Calleia and Howard (2018) found that 10-item assessments per mode effectively measure spelling abilities, offering a fair and reliable evaluation.

The tables below show the interpretation of the scores of students' writing skills in terms of grammar, spelling, and punctuation. The following scoring procedure guided the organization of the data needed to address the aim of the study.

For grammar, the scale provided below is categorized in the following manner: 21-25 Very High Competence, 16-20 High Competence, 11-15 Average Competence, 5-10 Low Competence, and 0-4 Very Low Competence. This interpretation of scores was adapted from Panugot (2023).

Figure 4. Level of Grammatical Competence

Scores	Interpretation	Description
21-25	Very High Competence	Students demonstrate mastery in grammar.
16-20	High Competence	Students exhibit a strong grasp of grammar.
11-15	Average Competence	Students show a moderate understanding of grammar.
5-10	Low Competence	Students struggle with grammar.
0-4	Very Low Competence	Students lack a basic understanding of grammar.

Next, for punctuation, the scores are classified as follows: 21-25 Excellent, 16-20 Good, 11-15 Fair, 5-10 Low, and scores of 0-4 are considered as Failed. This interpretation was adapted from the study of Ginting (2010)

Figure 5. Classification of Students' Ability in Using Punctuation Mark

Scores	Interpretation	Description
21-25	Excellent	Consistently identifies correct punctuation with high accuracy.
16-20	Good	Frequently identifies correct punctuation with minor errors.
11-15	Fair	Occasionally identifies correct punctuation with moderate errors.
5-10	Low	Rarely identifies correct punctuation with frequent errors.
0-4	Failed	Students lack a basic understanding of grammar.

Lastly, for spelling, the scale is categorized as follows: 16-20 Excellent in Spelling, 12-15 Proficient in Spelling, 8-11 Satisfactory Spelling, 4-7 Needs Improvement, and 0-3 Poor Spelling. Each scoring range is provided with a description, and this was adapted from the study of Cimagala et al. (2023).

Figure 6. Classification of Students' Ability in Spelling

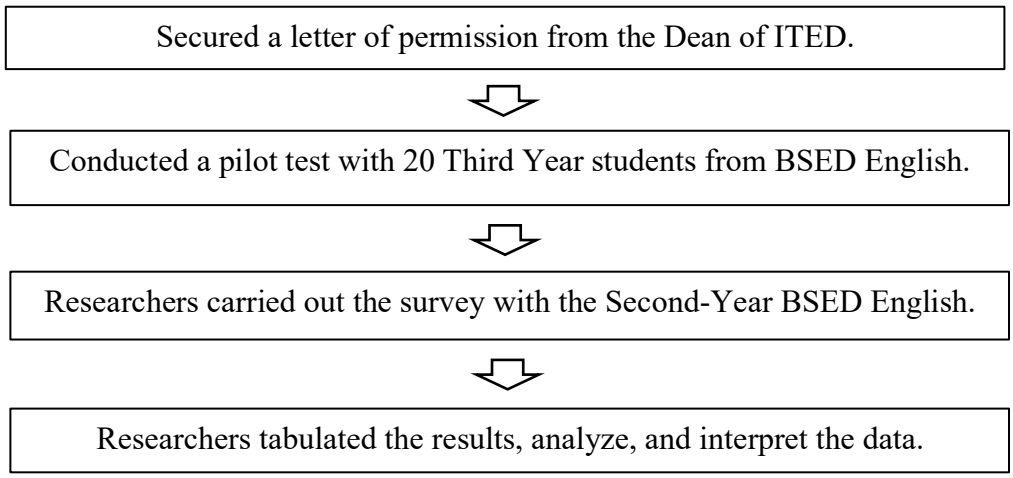
Scores	Interpretation	Description
16-20	Excellent in Spelling	Students consistently spell words with very few or no errors.

12-15	Proficient in Spelling	Students spell words correctly most of the time.
8-11	Satisfactory Spelling	Students spell words correctly in most instances.
4-7	Needs Improvement	Students frequently misspell words, affecting readability.
0-3	Poor Spelling	Students consistently misspell words, making the text difficult to comprehend.

Data Collection

In this section, the researchers outlined the data collection methods and procedures employed in the quantitative research study, designed to systematically gather numerical data to address the research objectives.

Figure 7. Data Collection Diagram



First, the researchers obtained a permission letter from the Dean of the Institute of Teacher Education (ITED) at Davao del Norte State College (DNSC) and a request letter to conduct a survey with Second Year BSED English students. Second, a pilot test was conducted with 20 Third Year BSED English students to identify potential issues and assess the validity of the questionnaires. Third, the main survey was administered to the target respondents. The researchers personally distributed the questionnaires, explained the instructions, and collected the responses on the same day. Lastly, the data were tabulated, analyzed, and interpreted using appropriate statistical methods.

Statistical Treatment

The relationship between the independent variable (IV) and the dependent variable (DV) was examined in this section using Pearson's correlation. The intensity and direction of the linear relationship between the independent variable and dependent variable were numerically summarized using correlation coefficients. Pearson's correlation coefficients (r) ranged from -1 to +1, indicating positive or negative correlation.

Mean – This was used to determine the level of auto-correction usage and students' proficiency in writing skills.

Standard Deviation – Standard deviation measured how dispersed the data was in relation to the mean. Low standard deviation meant data were clustered around the mean, while high standard deviation indicated data were more spread out.

Pearson r. – This was utilized to ascertain the significant relationship between auto-correction usage and students' proficiency in writing skills.

Results and Discussion

This chapter presents the key findings of the study, encompassing the perceived ease of use and perceived usefulness of auto-correction tools, as well as the results of the writing skills assessment.

Descriptive statistics, including mean and standard deviation, were employed to analyze the perceived ease of use and usefulness of the tools. Writing skills were evaluated based on scores across specific indicators, namely grammar, punctuation, and spelling. Individual scores for these components were aggregated to determine the overall writing skills score. Pearson's correlation analysis was conducted to investigate the relationship between auto-correction tool usage and writing skills.

With technology widely accessible, it can reduce resource waste and improve task efficiency (Islami et al., 2021). Since students use technology in many aspects of life, balancing its use with a strong foundation in writing skills is crucial to ensure proficiency with or without tools like auto-correction. Therefore, this study explored the relationship between auto-correction usage and writing skills among Second-Year BSED English students at Davao del Norte State College.

Table 1 Levels of Auto-Correction in terms of Perceived Ease of Use and Perceived Usefulness

Tables 1.1 and 1.2 presents the level of auto-correction usage among auto-correction users in Second-Year BSED English students of Davao del Norte State College. The survey was used to gather data from the respondents and this data served as the basis to determine the use of auto-correction in two indicators such as the perceived ease of use and usefulness. The Technology Acceptance Model by Fred Davis was used to know the impact of the use of auto-correction on students' writing skills. This model highlighted two key beliefs that are related to technology use, these were Perceived Usefulness (PU) and Perceived Ease of Use (PEOU).

Table 1.1 Level of Auto-Correction Usage in Perceived Ease of Use Results

Descriptive Statistics			
Perceived Ease of Use	**Mean**	**Std. Deviation**	**Descriptive Rating**
1. Before submitting my academic essay, I check my grammar using auto-correction.	4.141	1.078	Often
2. I am confident in writing when I use auto-correction websites.	4.008	0.883	Often
3. I believe that auto-correction websites really simplify my writing tasks, making everything so easy.	4.141	0.945	Often
4. I use auto-correction websites because it is accessible and user friendly.	4.133	0.967	Often
5. I use auto-correction because it gives prompt feedback for my writing errors.	4.188	0.911	Often
6. Using auto-correction websites saves my time in correcting my writing errors.	4.339	0.875	Often
7. Using auto-correction websites makes me more thorough when something goes wrong in writing a text.	4.148	0.923	Often
8. Using auto-correction websites helps me to correct the clarity of my writing effortlessly.	4.305	0.892	Often
9. With the help of auto-correction websites, I can plan my paragraph well.	3.977	0.968	Often
10. Auto-correction websites encourage me to do independent proofreading.	3.938	1.041	Often
Overall	**4.132**	**0.773**	**Often**

Table 1.1 shows the level of auto-correction usage in perceived ease of use results. It can be observed that all the domains have yielded OFTEN in the descriptive rating with an overall mean score of 4.132. The mean here reflected the overall value that summarized the general response of the group (Laerd Statistics, 2018). Since the overall result revealed OFTEN, this indicated that students utilize auto-correction on a regular basis but not always. Meaning, they have integrated these to a point where these tools have become a common part of their writing process. It also indicated that generally, students perceive auto-correction tools easy to access because of their efficiency in addressing their writing needs.

According to Siwi (2023), the willingness to accept auto-correction software depends upon the level of satisfaction of users, that is, if the software is simple and user-friendly. The easier the system is to utilize, the more likely the users are to use and engage with the technology (Tahar et al., 2020). This was shown in the highest-rated statement that says, "Using auto-correction websites saves my time in correcting my writing errors" with a mean score of 4.339. This implied that due to the efficiency that the websites give to students, it made students more interested in utilizing it often because it saves their time. This idea is the same with Brandon (2023) who stated that technology saves time because it improves efficiency in writing academic essays for students.

Mean ranking was followed by *"using auto-correction websites help me to correct the clarity of my writing effortlessly"* with a score of 4.305. This result is supported by Strain-Moritz (2016) as her study revealed that students acknowledge putting minimal effort into revising their papers since they simply use spellcheck to correct errors and improve the structure of their paragraphs instead of editing sentences on their own. This shows how students see the use of technology, such as auto-correction, in simplifying the process of improving writing without exerting too much effort.

The next in rank stated, *"I use auto-correction because it gives prompt feedback for my writing errors"* with a mean score of 4.188 which still indicated **OFTEN**. A study conducted by Escalante et al. (2023) revealed that several students expressed their views on how AI-generated detailed feedback easily provided them with clear and specific feedback when doing their written works. They stated that AI did not only identify errors but suggested replacements to improve their work. This implied that since technology like auto-correction easily simplifies the writing process by offering immediate feedback to students, they perceive the ease of use of these tools which led them to use it more often.

However, due to the reliability that came from the power of this feature, results revealed as shown in Table 1.1, students frequently complete the task with ease, and some also consider that it does not encourage proofreading on their own, "Auto-correction websites encourage me to do independent proofreading." which gained the lowest rate with a score of only 3.938. This result can be aligned with the study of Vinkatesh wherein perceived ease of use is defined as the extent to which an individual believes that using a specific system requires little effort (Vinkatesh, 2003, as cited in Chavez et al., 2024). Aside from that, Stain-Moritz (2016) cited Jackowski-Bartol (2001) saying that students stopped double-checking their work as they believed that technological tools like spell-check was already accurate. Although this item was rated as "Often," it still falls below the general average like the other items, which could imply that students might rely heavily

on auto-correction tools and may not feel as motivated to engage in independent proofreading, potentially indicating a perceived reduction in the need for personal review efforts.

Table 1.2 Level of Auto-Correction Usage in Perceived Usefulness Results

Descriptive Statistics			
Perceived Usefulness	**Mean**	**Std. Deviation**	**Descriptive Rating**
11. Auto correction websites provide me with an alternative word choice to make my writing more varied.	4.289	0.915	Often
12. Using the auto-correction website, it gives me suggestions on passive voices sentences to make them more direct/concise.	4.117	0.902	Often
13. Auto-correction websites give me suggestions on wordy sentences to make them clear.	4.219	0.878	Often
14. Auto-correction websites really help me to correct my grammar	4.258	0.863	Often
15. I was satisfied with the grammar advice I received.	3.977	0.855	Often
16. I do accept all the suggestions which are given by auto-correction websites to fix my grammatical mistakes	3.789	1.047	Often
17. When auto-correction websites provide feedback, I apply it to my other written tasks.	3.852	1.073	Often
18. I believe that auto-correction websites help me learn more about grammar	4.195	0.905	Often
19. When using auto-correction websites, I read extended explanations of errors	4.039	0.991	Often
20. I believe using auto-correction websites impacts my academic achievements.	4.078	0.977	Often
Overall	**4.081**	**0.769**	**Often**

Meanwhile, in terms of Perceived Usefulness, the results revealed the same descriptive rating as the Perceived of Ease of Use which is "Often". According to Burgess and Worthington (2021), a person's perceived usefulness of a technology influences their intention to use it. In other words, the more highly they value technology, the more likely they are to use it consistently. As shown in Table 1.2, the overall descriptive rating of "Often" indicates that students perceive auto-correction as highly valuable, reflecting consistent appreciation for its use.

This appreciation is evident in the questionnaire item with the highest mean score of 4.289: *"Auto correction websites provide me with an alternative word choice to make my writing more varied."* This shows that students value how auto-correction enhances word choice. It aligns with Rudian et al. (2023), who found that learners use such tools to improve language skills. This implies a strong preference for tools that boost lexical diversity and support creative language use.

While the highest mean score emphasized a positive feature, the lowest-scoring statement *"I do accept all the suggestions which are given by auto-correction websites to fix my grammatical mistakes,"* with a mean of 3.789, revealed another aspect of student perception. It suggests that although students frequently use auto-correction, they remain hesitant and selective in accepting its suggestions. This reflects critical thinking and awareness of the tool's limitations. Similarly, in the study of Rudian et al. (2022), they found that while auto-correction can detect and fix errors, it may not always provide reliable or accurate feedback essential for language learners.

According to Nuryakin et al. (2023), student satisfaction with auto-correction tools influences their intention to use them again. Positive experiences drive continued use, as seen in the descriptive ratings. Likewise, Burgess and Worthington (2021) noted that frequent use is tied to how valuable students perceive the tools. Given the benefits, this positive perception likely encourages sustained and increased use in academic writing.

Lastly, as mentioned by Geddam et al. (2024), the study's findings highlighted that both the perceived usefulness and ease of use of auto-correction tools were important in driving their intent usage. This suggested that the combination of perceived usefulness and ease of use plays a critical role in influencing students' decisions to adopt and consistently utilize auto-correction tools, as both indicators enhanced their overall satisfaction and engagement with the technology.

Table 2 Writing Skills Assessment in terms of Grammar, Punctuation and Spelling

Table 2.1 presents the average score in writing skills among auto-correction users in Second-Year BSED English students of Davao del Norte State College in terms of Grammar, Punctuation, and Spelling. As shown in the table, the indicator that garnered the lowest mean score of 14.523 with a standard deviation of 3.765 is Grammar, indicating *average competence*.

Table 2.1 Writing Skills Assessment Results

Descriptive Statistics			
	Mean	**Std. Deviation**	**Descriptive Rating**
Grammar	14.523	3.765	Average Competence
Punctuation	15.422	4.819	Fair
Spelling	17.328	2.456	Excellent in Spelling

Writing Skills Assessment in terms of Grammar

Grammar received the lowest mean score of 14.523 and a standard deviation of 3.765. It suggested that students generally find grammar more challenging compared to spelling and punctuation. The moderate standard deviation indicated variability in grammar scores, with some students performing notably better or worse than the average. The result aligned with another study which suggested that challenges in mastering grammar are prevalent and can significantly impact overall writing proficiency. The variability in scores indicated that while some students excel, others struggle (Ghabool et al., 2012, as cited in Alghazo et al., 2020).

Writing Skills Assessment in terms of Punctuation

Punctuation received a mean score of 15.422 with a standard deviation of 4.819, indicating a *fair level of competence.* This showed that students have a good understanding of punctuation rules, but they might still face difficulties in using them correctly and consistently in their writing. This aligned with the study conducted by Ginting (2018), suggested that students' ability in using punctuation marks in descriptive writing was categorized into low. It can be classified that out of 53 students, only 1 student (2%) achieved an excellent score of 80. Ten students (10%) were categorized as Good, 17 students (32%) as Fair, 13 students (24.5%) as Low, and 12 students (22.5%) as Failed. Punctuation is a key part of writing in English, but many people don't pay enough attention to it. Therefore, additional support is needed to help students apply these rules effectively.

Writing Skills Assessment in terms of Spelling

Spelling received the highest mean score of 17.328 with a standard deviation of 2.456, indicating *proficiency in spelling*. The overall average score of writing skills received a mean score of 42.273 with a standard deviation of 8.839. This was supported by Cimagala et al. (2023),

suggested that there was a remarkable improvement in spelling performance. A whopping 93.3% of students achieved an "Excellent" level of spelling proficiency, while the remaining 6.7% remained "Proficient." The results suggested that students excel in spelling, with most achieving high proficiency.

Table 3 Relationship Between Auto-correction Usage and Writing Skills

Table 3.1 shows the statistical findings on the relationship between auto-correction use and auto-correction users' writing skills in Davao del Norte State College's Second Year BSED English students.

Table 3.1 Relationship between Auto-Correction Usage and Writing Skills Statistical Decision Result

	Pearson r	**p-value**	**REMARKS**
Writing Skills vs. Auto-correction	-0.112	0.208	Not Significant

The study used Pearson's r to examine whether there is a relationship between auto-correction and writing skills scores. Pearson's r is -0.112, indicating a negative and weak association between the two. However, with a p-value of 0.208, the analysis revealed insufficient evidence to support a significant association between writing skills and auto-correction tool usage. Consequently, no significant correlation between the two variables was found at the 0.05 significance level.

According to the study's findings, there was no significant correlation between the average score on the writing skills assessment of Davao del Norte College's Second-Year BSED English students, which was rated as "Average Competence" in grammar, "Fair" in punctuation, and "Excellent in spelling," and the students' perceived ease of use and perceived usefulness, both of which were generally rated as "Often." Regarding their usage frequency of auto-correction tools, the findings showed that their perceived usefulness and ease of use had no effect on their writing abilities based on the outcomes of their writing assessment (spelling, grammar, and punctuation). Thus, at the 0.05 level of significance, the null hypothesis—which claimed that there was no significant relationship between the use of auto-correction and writing skills of Second-Year BSED English students at Davao del Norte State College—is not rejected.

Now, this result contrasted with the majority of existing studies. Most studies revealed a strong correlation between technology in general and writing skills. However, in this study, the results suggested that these tools neither improve nor decline students' foundational writing skills.

These neutral findings resonated with Figueredo and Varnhagen (2006), as cited in the study of Bailey and Withers (2018), whose study investigated whether there will be distractions when students use spelling and grammar checkers in content revisions or not. Findings have shown

that while these tools did help correct surface-errors, they do not hinder nor improve writing skills beyond surface-level fixes.

Similarly, Tran and Nguyen (2021) conducted action research which explored the influence of digital tools such as Paragraph Punch, ProWritingAid, and LMS web-based platforms to EFL students' writing performance. The study showed no significant impact on foundational writing skills of students particularly in lexical resources, and grammatical range and accuracy. Moreover, a study conducted by Cramer and Smith in 2002, as cited in Marzuq et al. (2024), has examined the involvement of technology rich instruction in student writing. The study compared two groups: one exposed to technology and one not. Although technology led to some improvement in achievement, it did not enhance student writing in areas like organization and voice. Still, the researchers emphasized that technology use in education should yield positive outcomes.

In a similar manner, according to the study conducted by Fan and Ma (2022), it explored the effects of auto-correction tools, such as Automated Writing Evaluation (AWE) systems, on students' writing skills. Specifically, the study examined whether these tools significantly improved grammar, punctuation, and spelling. While auto-correction tools aided in spelling, they had little effect on grammar or overall writing quality. The findings suggested that relying solely on such tools may not meaningfully enhance writing skills, as they offer quick fixes for surface errors but do not promote deeper grammatical understanding or critical thinking.

To further support the results, Ismael et al. (2022) found no significant relationship between auto-correction usage and improvements in grammar in their study at three universities in Sulaimaneyah City. The relationship between auto-correction and writing skills appears complex, fluctuating based on how students use and learn from these tools. Additionally, spelling having no significant relationship with auto-correction usage also aligned with the study conducted by Rimbar (2017) which reported that spell-checkers (that have features of auto-correction) had little to no cognitive impact on students' spelling errors.

While the results are somewhat aligned with Ismael et al. (2022), key differences remain. Their study found a strong correlation between auto-correction usage and punctuation ability, unlike this study's finding of no significant link. They also reported frequent spelling errors in handwritten texts and noted that auto-correction impaired memory, suggesting a stronger impact on writing abilities than observed in this study.

Furthermore, according to Sanchez et al. (2023), students who overuse auto-correction tools struggle to master vocabulary, syntax, and writing mechanics, leading to inaccurate handwritten compositions. This showed a significant relationship between auto-correction use and writing skills, supporting earlier findings that technology often affects writing performance. A study by Ofrita et al. (2023) found a complex impact of auto-correction on students' writing skills. While tools like Grammarly improve specific errors such as grammar and spelling, they may not significantly boost overall writing accuracy. The findings suggest that although students benefit from immediate feedback, reliance on these tools may hinder deeper writing skill development. Also, Hasan and Sulaiman (2023) examined auto-correction tools' impact on writing skills. While these tools correct surface errors like spelling and grammar, their effect on overall writing quality

was minimal. The study suggested that overreliance on auto-correction may prevent students from deeply understanding writing conventions and critically engaging with their errors.

As observed, there were discrepancies between the overall findings of this study and previous studies conducted, and this can be explained through several factors. For example, the different methodological methods and instruments used. This study used a quantitative approach with a standardized writing test, while Ismael et al. (2022) employed qualitative methods comparing technology-assisted and manual writing. Sanchez et al. (2023) used a mixed-methods design, combining interviews and writing tasks with and without auto-correction tools. These methodological differences likely contributed to the varied results.

Aside from that was the type of respondents chosen, where researchers used English majors for this study. The study of Pitukwong and Saraiwang (2024) involved 280 Chinese EFL undergraduates in a pre- and post-intervention writing test using technology models Icourse and Icourse+Pigai. Despite about 10 years of English learning, those students showed poor academic writing. In contrast, English majors likely had stronger skills and language knowledge. These demographic differences may explain the differing results.

Another factor was the limited scope of indicators for the dependent variable, which was the student's writing skills, where this study only explored grammar, punctuation, and spelling. Boukhechba and Bouhania (2020) included vocabulary in their study of 18 Algerian LMD students using auto-correction tools. Their findings showed these tools improved writing quality by reducing focus on spelling errors, allowing attention on other writing aspects. This suggests a relationship between tool use and writing skills, implying that this study's limited focus may have made it harder to detect such a link.

Given the discrepancies observed in the findings of this study when compared to existing literature, factors like methods, instruments used, demographic background, and the limited scope of indicators for the dependent variable significantly contributed to the differing results from the similar studies. The use of a quantitative approach and standardized testing in this study contrasted with qualitative or mixed methods in others, which might have limited the depth of the analysis. Also, the selection of English majors, who may have possessed stronger foundational writing skills than others might possibly reduce the observable impact of auto-correction tools. Moreover, the focus on grammar, punctuation, and spelling, rather than including other language features like vocabulary and style to widen the range of the study, may have further narrowed the scope of the findings.

Thus, the results of this study, which showed no meaningful connection between the variables, highlighted how the effects of these tools can vary depending on the specific context. Future research should take these factors into account to gain a clearer and more detailed understanding of how auto-correction tools might relate to writing skills in various situations.

Conclusions and Recommendations

Conclusion

This study explored the relationship between the auto-correction usage and its effects on writing skills among Second-Year BSED English students at Davao del Norte State College, in terms of grammar, punctuation, and spelling. The results provided important insights into the impact of these tools on students' writing skills. After a thorough study, the following conclusions were drawn.

1. In terms of Auto-correction, the findings of this study revealed that students perceived auto-correction tools as beneficial and user-friendly. Students rated the perceived ease of use and usefulness of auto-correction tools positively, highlighting their convenience in time management and error correction.

2. In the context of Writing Skills, the high proficiency in spelling among students suggested that auto-correction tools may be more effective in this area, while the struggles with grammar and punctuation reflect that these tools alone are insufficient for addressing all aspects of writing complexity. This indicated that although auto-correction tools can aid in error correction and improve certain elements of writing, they do not substitute for a strong command of foundational writing skills.

3. The statistical analysis indicated a weak negative correlation between the use of auto-correction and the students' performance in writing skills, with no significant relationship found between the extent of auto-correction use and their abilities in grammar, punctuation, and spelling. This aligned with the Technology Acceptance Model (TAM), which suggested that while perceived ease of use and usefulness can encourage the adoption of technology, these tools do not necessarily lead to a significant improvement in all areas of writing skills.

Recommendations

Based on the results of the study, the researcher formulated the following recommendations:

4. *For the School Administrators.* Policies should be established that would promote the responsible use of technology (in general) in teaching writing. Its role is not a substitute for learning foundational writing skills but a support tool. Aside from that, there should be seminars for teachers and students that highlight the importance of balancing usage of technological tools with manual editing in writing.

5. *For the parents.* It is recommended that parents should show support to their children to continue enhancing their writing skills without the use of any technological tool. Parents should make the home a comfortable space for students to practice their skills and should guide their children in properly using technology in writing academic papers.

6. *For the teachers.* Teachers could give students with writing drills. These writing drills are essays, paragraphs, or short responses that are manually written by students without any use of auto-correction websites. After that, they can self-edit their work. In self-editing, they can use checklists to review errors in grammar, punctuation, and spelling. Moreover, students can review feedback from auto-correction websites to compare their self-edited work and make improvements.

7. *For the students.* It is important that students learn to discipline themselves in proofreading and editing their work without relying entirely on auto-correction tools. They should learn to spot their own errors to strengthen their foundational writing skills. Knowing that their usage of auto-correction did not improve nor decline their writing skills makes it possible that they were only using these tools for immediate use, not for learning purposes. That is why it is important for students to identify their own errors, understand why those errors occur, and correct them.

8. *For the future researchers*. In general, this study only explored among Second-Year BSED English students' writing skills and their auto-correction usage. The researchers suggest extending the study by including students from various college programs to find out if auto-correction impacts writing skills differently across disciplines or may consider making the students write an essay rather than implementing a test to assess the impact of auto-correction tools on more authentic and complex writing tasks.

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