# Analysis of the Writing Quality of Senior High School Students' Research Introductions

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**Abstract.** Research introduction as a genre has been a fertile subject of inquiry in recent years. However, much of the research has focused primarily on the analysis of its generic structure, paying less attention to its other equally important elements. Hence, examining the quality of research introductions using multiple criteria, particularly among novice research writers, is pivotal in the field of second language (L2) academic writing in a secondary education context. This study was conducted to examine the writing quality of research introductions among senior high school (SHS) students and to further probe whether a significant difference existed in the students' writing quality when grouped according to their chosen educational track. The data involved 60 research introductions collaboratively written and submitted as preliminary examination papers by SHS students in an online research writing course. Using a modified rubric from Tuyen et al. (2018), the research introductions were rated in terms of their content, organization, language use, mechanics, and citation, and were subjected to descriptive and inferential analyses. Triangulation using qualitative evidence was undertaken to illustrate the students' actual writing quality. The results show that the overall writing quality of the students' research introductions was poor, and there was a significant difference in their writing quality when they were grouped according to educational track.

The results indicate a need for a more holistic theoretical framework on academic writing and a call for a genre-oriented approach to teaching academic writing in a secondary education context.

**Keywords:** academic writing; research introduction; research writing; senior high school; writing quality

## 1. Introduction

Academic writing is an indispensable skillset for students. As a language skill, it is pivotal for students' academic success (Leki, 2003; Light, 2001; Schleppegrell, 2001). In schools, academic writing is especially important for students in completing academic papers such as research articles. A research article is an academic genre that is intended to contribute to the existing knowledge of the discipline in which it fits (Bhatia, 1993). It comprises several sections that students are expected to write, including abstract, introduction, methods, results and discussion, and conclusion and recommendations.

The research introduction is a critical component of a research article because it warrants a "*useful purpose of making 'the present story' relevant by placing it appropriately in the context of 'the first story', i.e., previous research in a particular field of study*" (Bhatia, 1993, p. 154). A research introduction spurs the present research and rationalizes its publication (Swales, 1990). In other words, the centrality and value of the topic under study are established through a research introduction. A well-written research introduction recounts the background and the setting, reveals gaps that exist in theory and practice, and states the purpose for which the study is conducted. Hence, it can be argued that a good research introduction is central to the readership and, later, the utilization of a research article. Writing a good research introduction is, however, not an easy task, as the process has been perceived to be "*slow, difficult, and troublesome*" for many writers (Swales & Feak, 2012, p. 327). The difficulty comes in specifically where a research writer needs to situate the present work in the global scholarship, establishing its connection with the ongoing dialogues in the field.

To date, several studies on research introductions have been conducted in different contexts (Bunton, 2002; Briones, 2012; Futász, 2006; Geçikli, 2013; Joseph et al., 2014; Ozturk, 2007; Porras & Ingilan, 2017; Samraj, 2002, 2008; Soodmand Afshar et al., 2018). However, these studies have tended to focus on research introduction as a genre, particularly analyzing moves and steps that constitute a research introduction. Such research puts much regard on structure, with little emphasis on other essential elements of research introduction writing, such as vocabulary, grammar, and mechanics. Furthermore, while previous studies (Pablo & Lasaten, 2018; Tuyen et al., 2018) have used various elements of academic writing in examining students' writing, the focus has been largely on research paper writing as a whole. We argue that the quality of research introductions should not be judged merely through the use of appropriate moves and steps, especially when subjects of investigation are texts produced by novice research writers, such as students. The use of appropriate moves and steps in a research introduction refers to a rhetorical structure where the text typically begins with

the significance of a research topic, followed by a research gap, and then the purpose of the study. Tribble (1996) asserted that an examination of student writing must encapsulate various yardsticks. This is so that a text is not evaluated on a single domain but is appraised as being the product of a combination of various skills and knowledge, each contributing significantly to the development of the whole. It is in this regard that we were prompted to conduct the present study.

While it is true that research writing at the SHS level may not be as crucial as it is at the undergraduate or graduate level, it is significant to note that SHS education is a precursor to students' university entry. Hence, championing quality research at least at the level of introduction writing as early as SHS may lead to better preparations for higher education, a stage where students are expected to write research articles not only to comply with course requirements but to obtain a degree. Besides, promoting quality research in SHS may potentially result in the production of publishable research outputs from student researchers. Hence, this study attempts to examine the quality of research introductions written by SHS students. By examining the quality of student research introductions, this study will reshape the current theoretical understanding of the writing quality of novice research writers, highlighting the need for a more encompassing framework that can capture the multifaceted nature of academic writing skills in research introduction writing. Furthermore, we hope to provide practical insights into the teaching of second language (L2) academic writing, especially in the context of research introductions among secondary students as novice research writers.

This study aims to provide an analysis into the writing quality of SHS students' research introductions. Specifically, the research seeks to address the following research questions:
1. What is the writing quality of research introductions written by SHS students in terms of:
   1.1. content;
   1.2. organization;
   1.3. language use;
   1.4. mechanics; and
   1.5. citation?
2. Is there a significant difference in the writing quality of SHS students' research introductions when they are grouped according to their educational track (academic and non-academic)?

## 2. Literature Review
### 2.1 Theoretical Bases
This study is primarily grounded on Tribble's (1996) work, which sees writing quality as having multifaceted elements, including content, organization, language use, and mechanics. Content refers to the relevance of ideas being presented within the text. Organization encompasses structure and coherence, emphasizing the logical transition within the paragraphs. Language use gives emphasis to vocabulary and grammar choice, and mechanics includes punctuation, spelling, and American Psychological Association (APA) writing

style. In this connection, Tribble (1996) further argued that a single element cannot determine the quality of a text. Various skills and knowledge, each making up the entire text, should be used as metrics for determining the text quality. Hence, assessing the writing quality of students would mean deliberately considering all these elements, ensuring that a holistic picture of students' writing skills is gained from the text they produce. Apart from Tribble's (1996) work, the present study is also anchored on Swales' (1990, 2004) creating a research space (CARS) model. The model has been extensively used in analyzing the move structure of students' research introductions (Gustilo et al., 2018; Hajan et al., 2024; Sheldon, 2011). The focus of this model is on the rhetorical structure of a research introduction, placing emphasis on how a research introduction is organized in such a way that it can convince the readers of the significance of the research problem. Based on this model, a research introduction is written following this move pattern: Move 1: establishing a territory; Move 2: establishing a niche; and Move 3: occupying the niche. This means that the writer of a research introduction begins by stating the significance of the topic in the research field, continues by indicating the research gap, and then closes by stating the purpose of the study. These theoretical perspectives of academic writing are the bases for this study. They emphasize that an analysis of the students' writing quality should consider not only the rhetorical structure but more importantly the multiple elements of academic writing.

## 2.2 Related Studies on Writing Quality of Students' Academic Writing

A number of relevant studies on writing quality have been conducted. Tuyen et al. (2018) developed a rubric for assessing undergraduate research writing on multiple academic writing components, including content, organization, language use, and mechanics. The results indicate that a carefully designed rubric could be used to assess the writing quality of undergraduate students' research. In addition, Pablo and Lasaten (2018) examined the writing difficulties and quality of academic essays of SHS students. The assessment, using a rubric adapted from Jacobs (1981) and Valdez (2016), was also based on multiple components of academic writing, such as content and ideas, organization, vocabulary and word choice, language use, formality and objectivity, and referencing. Their results reveal that the students faced several challenges in writing academic essays. These included a lack of variety of ideas, lack of connectives, incorrect word or idiom usage, poor sentence structure, use of first-person pronouns, and lack of citations. The study further found that the overall quality of students' academic essays ranged from poor to fair. Meanwhile, Nenotek et al. (2022) showed that even university students encountered serious problems in specific aspects of academic writing, such as content, organization, discourse, and mechanics. Moreover, Gamilo and Aggabao (2019) evaluated the composition writing skills of SHS students using various academic writing components to include mechanics, word choice, grammar structure, paragraph structure, and voice. The result indicate that the students performed surprisingly *poor* in grammar, paragraph structure, and voice, but performed well (*good*) in observing the structure (introduction, body, conclusion, mechanics, word choice) of a written composition. Furthermore, Roxas (2020) explored SHS students' academic writing difficulties and found that they had challenges with academic jargons, organization, grammar, and mechanics. These prevailing challenges

show that SHS students need targeted academic writing instructions for them to become better writers.

As with writing quality of research introductions across different academic disciplines, several studies have been conducted. Ozturk (2007), for example, examined the extent of variation in the structure of research introductions. The author applied the CARS model to analyze 20 research articles and a variability between the two sub-disciplines of applied linguistics (L2 writing and L2 acquisition research). The two sub-disciplines utilized distinct and almost dissimilar move patterns. For instance, in the L2 writing corpus, two distinct types of move patterns were almost similarly repeated, whereas in the L2 acquisition corpus, one type of move structure was prevalent. In addition, Samraj (2008) accentuated that the CARS model can be applied in analyzing research introductions in different disciplines; however, these various disciplines do not follow similar patterns. Likewise, Abdullah's (2016) study investigated the introduction sections of two different disciplines, namely research articles from English language teaching (ELT) and civil engineering (CE) corpora. The study indicated that differences in structural patterns of ELT and CE research introductions do exist. Moreover, Adel et al. (2020) found a variety of move structures in the introduction sections of research articles in psychology, Persian literature, and applied linguistics. The existence of variety in macrostructural patterns of research introductions is explained by Kanoksilapatham (2011) as an indication of the "*possible and expected idiosyncrasy of individual writers or groups of writers*" (p. 66).

All these studies substantially informed the current study, highlighting the need to investigate SHS students' research introductions using multiple criteria with supplemental evidence from their actual writing. However, it appears as though the past studies do not lend directly to introduction writing in the context of student research, especially introduction writing by novice research writers. Recognizing this pivotal point, it becomes imperative to analyze the writing quality of research introductions written by SHS students using multiple indicators. Such an analysis is especially crucial since the goal of any research writing course is to train students not only to demonstrate appropriate structure in their writing but also to exude relevance, clarity, and formality.

## 3. Methodology
### 3.1 Research Design
This study is mainly descriptive-quantitative in nature, with supplemental qualitative data supporting the quantitative analysis. The use of such a research design was necessary in this study because it enabled us to quantify the writing quality of students' research introductions with supporting qualitative examples. This aligns with Leedy and Ormrod's (2001) definition of a descriptive-quantitative design, describing descriptive-quantitative research as a method that investigates the situation as it occurs in its present state, which involves the description of attributes of a specific phenomenon based on an observational basis. As applied in this study, the description was particularly sought to provide

the numerical descriptions of the writing quality of students' research introductions, with exemplification from qualitative evidence.

### 3.2 Participants

The research setting was a private university in Metro Manila, Philippines. The present research was limited to the context of the SHS program of the university. At present, the university's SHS program offers four educational tracks, namely academic, technical-vocational-livelihood, arts and design, and sports. The participants of the study were SHS students from two educational tracks: the academic track and the technical-vocational-livelihood track. According to the Department of Education (2015), the academic track is designed for SHS students who intend to pursue higher education or careers along four specific strands: 1) accountancy, business and management (ABM); 2) science, technology, engineering, and mathematics (STEM); 3) humanities and social sciences (HUMSS); and 4) general academic (GA). Conversely, the technical-vocational-livelihood (henceforth, non-academic) track is designed for students who intend to pursue careers specializing in vocational learning or technical-vocational livelihood. We selected these two educational tracks primarily because they were the tracks in the university with the highest number of student enrollees. The participants comprised 60 groups of students who were enrolled in *Practical research 2: Quantitative research*, an online research writing course supervised by the lead researcher. There were 32 groups of students from the academic track and 28 groups from the non-academic track. Each group was composed of five to eight students as members. Considering the diversity of students composing each group, the sample size was relatively large enough, enabling us to examine truthfully the writing quality of the SHS students' research introductions in the university. The course was supervised online, both synchronously and asynchronously, because of the restrictions brought about by the COVID-19 pandemic. The selection of the participants was purposive in that only those groups of student researchers whose research papers passed the plagiarism check of 10% similarity index using Turnitin were considered. We believe that the use of such sampling technique was critical in the study, as it could ascertain the naturalness of the students' research introductions. It is also important to note that the research introductions collected were the first drafts of students' outputs, which implies that no revisions had been made incorporating the teacher's comments or suggestions yet, thereby ensuring the authenticity of the data.

### 3.3 Research Instrument

A modified scoring rubric consisting of five writing components, namely content, organization, language use, mechanics, and citation, was used as instrument to analyze the writing quality of the students' research introductions. The rubric uses a 4-point Likert scale, where 1 is the lowest (*poor*) and 4 is the highest (*excellent to good*). This scoring rubric was initially developed and validated by Tuyen et al. (2018) for assessing academic writing skills in research writing among undergraduate students. The original form of the rubric consisted of only four writing components, with the exclusion of citation. We added citation as an additional criterion to be assessed because the use of citations is obligatory in a research introduction (Swales, 1990, 2004). In addition, we modified the descriptions of the organization criterion because they were too broad, as in the

case of "appropriately organized paragraphs or sections" and "logical sequence". Such descriptions are not directly tailored to research introduction writing because a research introduction has a distinctive structure, following Swales' (1990, 2004) CARS model. Hence, descriptions of organization were modified specifically integrating this model. That is, in the modified version of the rubric, the organization criterion included this descriptor: "Paragraphs organized with increasing specificity (i.e., first showing the importance of the topic, next indicating a research gap, and then stating the problem)."

The modified rubric was subjected to expert validation. The selection criteria for the validators were that they (1) must possess at least a master's degree in ELT or at least have completed academic units for a master's degree in ELT, with relevant publications in refereed academic journals; and (2) have more than five years of teaching experience as an English language teacher handling academic writing for secondary students. Given these criteria, there were two validators of the rubric. Both of them had more than five years of experience teaching academic writing courses to secondary students and had research publications on academic writing in Scopus-indexed journals. As to educational attainment, one had a master's degree in ELT and the other had completed academic units for a master's degree in ELT. Corresponding revisions on the rubric were made after the expert validation. After the revision, the rubric underwent pilot testing using 20 selected research introductions as a sample. Data from the pilot testing were run for reliability and internal consistency tests, indicating a Cronbach alpha of 0.84, which could be interpreted as *good*.

### 3.4 Data Gathering Procedure

The data were gathered from the 60 groups of students, who were supervised by the lead researcher in the online research writing course. The data gathering involved each group of students proposing a research topic and then submitting a research concept with justifications, spotlighting the usefulness of the proposed research topic in their educational track. This was the initial phase of the data gathering procedure because having an approved research topic was necessary for the students before they could conduct a literature review and write a research introduction. The proposed research topics of the groups were wide-ranging, encompassing a variety of areas as applied to their respective educational track. For example, a group of students from the academic track had a research topic on the stress management strategies of ABM students. The research topics were assessed for approval by the lead researcher in terms of their novelty, relevance, and practicality. Upon approval of their research concepts, the groups were later assigned to locate, retrieve, and read relevant literature and studies online and were asked to present a literature review matrix as an output. Based on their literature review matrices, the groups were instructed to develop research introductions, which were to be submitted as their preliminary examination papers in the research writing course.

The student researchers worked online collaboratively in writing their research introductions. They were given two weeks to develop their research introductions. After completing their research introductions in two weeks, the

groups were asked to submit their research introductions online via Canvas, the learning management system (LMS) utilized in facilitating the research writing course. Consequently, each research introduction was retrieved, screened, and subjected to a plagiarism check via Turnitin. The criteria set for selecting the samples of the study were: (1) the research introduction must be complete, with no missing subsections, and (2) it must pass the 10% similarity index via Turnitin. After ensuring that the research introductions were complete and had a similarity index not higher than 10%, they were prepared for data analysis. Early in the semester, the intention of the lead researcher to conduct the study among the students was communicated through informed consent sought from their parents/guardians. The lead researcher was the instructor of the student groups in the research writing course whose outputs are examined in this study.

### 3.5 Data Analysis

Both descriptive and inferential statistics were used for the data analysis. The research introductions were rated by two independent raters who are experts in the field of academic writing and research. The raters were experienced English language teachers, one with a master's degree in ELT and the other having completed academic units for the same academic degree. They both had relevant research publications in refereed academic journals. To increase the trustworthiness of the data, the raters first evaluated the research introductions independently, and then agreements were sought to finalize the ratings of the individual raters for each research introduction. While rating academic essays could be subjective at times considering raters' individual experiences, we believe that by undertaking such an important step, the analysis was drawn from a shared understanding of the data between the raters, hence increasing the trustworthiness of the analysis.

The following steps were followed in rating the research introductions. First, a meeting was held for the raters to develop a common understanding about the nature of the study, including the data and the rubric used for analysis. Second, an actual data analysis followed where the raters independently read and reread the research introductions and then assessed each with respect to its content, organization, language use, mechanics, and citations using the rubric. Third, another meeting was held for the raters to finalize the rating to be assigned for each research introduction. In cases where the ratings provided by the raters were not consistent for the research introductions, the raters had to agree on what rating should be assigned after thorough re-examination of the data. To provide numerical descriptions of the writing quality of students' research introductions, the frequency distribution of the ratings was determined. To determine the frequency distribution, the ratings across the 60 research introductions were tabulated per criterion based on the 4-point scale responses. For example, for the content criterion, the number of research introductions having 1 as the rating were added together to determine the fraction of the research introductions being considered as poor. Furthermore, the mean scores of each criterion in the rubric as well as the standard deviation (SD) were calculated to ascertain the writing quality of students' research introductions. To determine whether a significant difference existed in the writing quality of the students' research introduction

when they were grouped according to educational track, an independent sample *t*-test was run. The analyzed data were presented visually using figures and tables, and these were substantiated with qualitative evidence using actual excerpts from the students' research introductions to exemplify their writing quality.

## 4. Results and Discussion
### 4.1 Writing Quality of Students' Research Introductions
The data in Figure 1 show the frequency distribution as regards the writing quality of the SHS students' research introductions. Generally, the results indicate an unsatisfactory writing quality of students' research introductions. This is manifested in the preponderance of poor ratings attributed to organization (68%), language use (58%), mechanics (55%), and citation (58%). In addition, although it was rated as mainly average (52%), the content of the students' research introductions was also rated poor (25%). Such results suggest that the SHS students had difficulty in writing good-quality research introductions. Notably, of all the writing components, organization appeared to be the most problematic, as none of the research introductions analyzed in this study were rated *excellent to good* in terms of this component. This particular result indicates that the students could not write coherent paragraphs that make up a good research introduction.
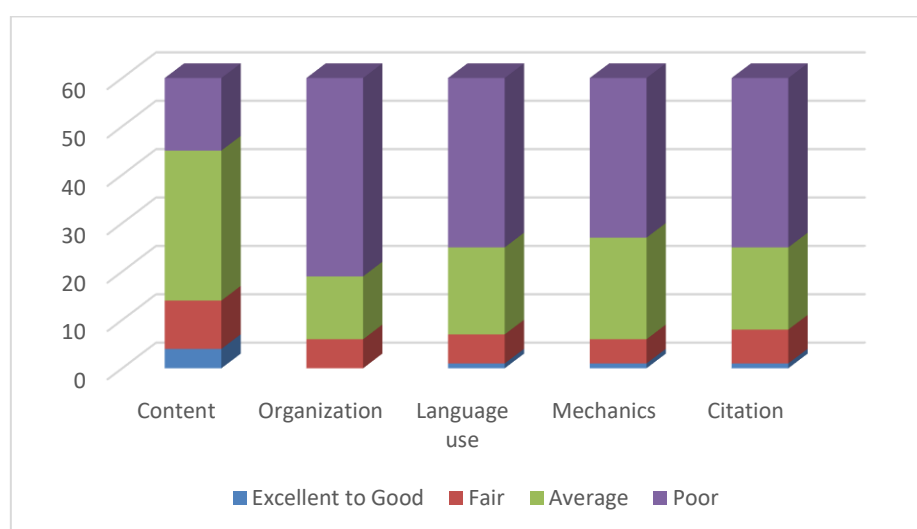


**Figure 1: Frequency distribution of writing quality of participants' research introductions**

In addition, as can be gleaned from the statistics in Table 1, the results show that, generally, the writing quality of the students' research introductions could be described as poor (M = 1.63, SD = 0.63). Specifically, students' research introductions were poor in terms of organization (M = 1.42, SD = 0.67), language use (M = 1.55, SD = 0.75), mechanics (M = 1.57, SD=0.72), and citation (M = 1.57, SD = 0.77).

**Table 1: Writing quality of participants' research introductions**

| Component | Mean | SD | Interpretation |
| --- | --- | --- | --- |
| Content | 2.05 | 0.83 | Average |
| Organization | 1.42 | 0.67 | Poor |
| Language use | 1.55 | 0.75 | Poor |
| Mechanics | 1.57 | 0.72 | Poor |
| Citation | 1.57 | 0.77 | Poor |
| Overall | 1.63 | 0.63 | Poor |

*Note:* 3.25–4.00 (excellent go good); 2.50–3.24 (fair); 1.75–2.49 (average); 1.0–1.74 (poor)

These results suggest that the participants' research introductions lacked fluent expressions and ideas and were very difficult to follow, with little paraphrasing, lack of logical sequence, and deficiency in the use of connectives. An excerpt from Research Introduction 11 below exemplifies this problem of students' academic writing on organization. As can be seen, the students begin the introduction with the purpose of the study, followed by the statement of the research gap, and then, again, the purpose of the study. This structure is not a logical organization for a research introduction since research introductions would typically start with the centrality claim, followed by the research gap and the purpose of the study. In addition, the research gap that the students attempt to establish in this example, though with a citation, was lifted directly from the source, without paraphrasing. The absence of connectives to make the transition between paragraphs smooth is also evident.

> *This study aims to know if the decreasing passing rate of Certified Public Accountant (CPA) Licensure Exam's would affect the decision of the Accountancy, Business and Management (ABM) students in taking Accountancy in college. In this research, the researchers may know if majority of ABM students wanted to become a Certified Public Accountant. The researchers would also like to know if in those students that will take Accountancy in college, is majority of them would really like to pursue being a CPA despite of it's decreasing passing rate.*
>
> *According to Adams et al. (1994). To my knowledge, however, no studies have examined these relations in the past 10 years, a period in which the accounting industry and undergraduate accounting programs have undergone substantial changes. Given that the Department of Education and the Commission of Higher Education has not set clear rules and regulation on the process of college course decisions of senior high school students, the researchers prompted to identify the factors that affect the college course preference of Accountancy, Business, and Management (ABM).* (Research Introduction 11, academic track)

The results also indicate that frequent mistakes in word choice and usage; errors in punctuation, spelling, and APA style; and lack of citations to support the arguments/claims were observed in students' research introductions. A segment from Research Introduction 41 below shows students' poor word choice and lack of citations. For example, the use of the phrase "not right come", apart from being

ungrammatical, seems to be irrelevant as far as the context of the sentence is concerned. In addition, the general definition of *bullying* as a form of behavior mentioned in the paragraph lacks citation to support it.

> *School used to be fun and enjoyable but there are things that not right come. Sometimes people tend to hurt other people yet there are some that intentionally hurt them. Sometimes they think it was funny and tend to hurt others especially the sensitive one. It was considered as bullying. What is Bullying? There is no general definition but as we know that it was generalized as this behavior that can be hurt others through physical, verbal, social and cyber. For example, through name-calling, spreading lies about someone, or excluding them from the group, kicking and punching someone. Verbal bullying is probably much more common, and it is also harder to spot because bullies will often say that it was 'only a joke'. Emotional bullying also leaves no obvious marks or bruising.* (Research Introduction 41, Non-Academic Track)

Moreover, an excerpt of Research Introduction 54 below shows that the students attempted to provide an in-text citation with the use of a link to the source. However, such an in-text citation is incorrect because APA style requires the use of the author's last name and the year of publication for in-text citations. Another observation is that there is no period as a punctuation mark to end the fourth sentence. Furthermore, the spelling for the word "highschool" is also wrong as it should be "high school", with "high" separated from "school" by a space.

> *Bullying in school is a worldwide problem that most of us encounter. According to the consolidated report of Department of Education (DepEd) bullying case on elementary and highschool of both private and public schools on 2014 rose by 21% or a total of 6,363 cases, compares with the 5,236 on 2013. This translates to 31 daily bullying cases from a divisor of 201 school days. The statistics was disclosed by Rep. Gerald Anthony Gullas Jr., a member of the house committee on basic education (http.asksonnie.info) Republic Act No. 10627 This requires all elementary and secondary schools to adopt policies to prevent and address the acts of bullying in their institutions.* (Research Introduction 54, Non-Academic Track)

Nonetheless, in terms of content, the results show that the quality of the students' research introductions was average (M = 2.05, SD = 0.83). This suggests that although treatment of the topic in students' research introductions is hardly adequate and analysis is done at a basic or general level, readers gain little insight from students' research introductions. Primarily, the results on the writing quality of students' research introductions suggest poor quality. This poor quality of students' research introductions was observed in all the writing components examined in this study, except for content.

The study specifically found that students' research introductions were poorly organized. They lacked connectives and did not follow the general-to-specific pattern. As a result, ideas were very difficult to follow. Such a result indicates that in terms of cohesion and coherence in writing, students' writing was poor. Cohesion and coherence are two essential aspects of the organization. While

cohesion ensures that phrases and sentences are linked plausibly, coherence warrants that the organization of the discourse, such as a research introduction, contains all the relevant elements and that they fit together logically (Hinkel, 2004). This means that a good research introduction does not only contain cohesive devices but more importantly presents ideas in a smooth and logical manner. In addition, organization in research introductions is often associated with Swales' (1990, 2004) CARS model. Following this model, the writer begins writing the research introduction by establishing the territory, followed by establishing a niche, and then occupying the niche. In other words, a good research introduction first shows the relevance of the topic, then indicates the research gap or what has not been studied yet, and then announces the present study or the purpose of the study. Such organizational pattern was hardly seen in the student research introductions analyzed in this study. Students' difficulty with organization in academic writing, especially in the aspect of cohesion and coherence, has been well noted in previous research (Ahmed, 2010; Elkhayma, 2020).

Furthermore, the research introductions of the students were marked with frequent errors in word choice and grammatical structure. This particular result demonstrates students' poor lexical and grammatical competence. Vocabulary and grammar are essential elements of academic writing that all students should demonstrate because they are expected to write in correct English (Coxhead, 2011). The finding on the poor writing quality of students' research introductions with respect to language use is consistent with the findings of previous studies (Gamilo & Aggabao, 2019; Pablo & Lasaten, 2018). This study also discovered that students' research introductions exhibited errors in punctuation and spelling and, in most cases, did not adhere to the APA style of writing. This is an indication that SHS students are not oriented on academic writing conventions. Because research writing is an academic genre, students need to develop the skills to use appropriate conventions required in writing a good research introduction. Students' problems with regard to writing conventions were also highlighted in the study of Pablo and Lasaten (2018). Additionally, in the present study, students' research introductions were also deficit of citations. It was observed that if citations were present, students did not conform to APA citation standards. Citations are especially important in research writing, more particularly in research introduction writing because they are obligatory in a research introduction (Swales, 1990, 2004). Through citation, a writer can provide support to their arguments or claims, thus increasing their validity. The difficulty of students in adhering to appropriate style in citation has also been proven in Pablo and Lasaten's (2018) study.

### 4.2 Difference in the Writing Quality of Research Introductions according to Educational Track

Table 2 below displays the results in relation to the difference in the SHS students' writing quality of research introductions when grouped according to educational track. The *t*-test result shows that there was a significant difference in the writing quality of research introductions between SHS academic (M = 1.85, SD = .70) and non-academic track (M = 1.38, SD = .42) students, with $t(51.29) = 3.20$, $p = 0.002$.

**Table 2: *t*-test results comparing academic and non-academic students on writing quality of research introductions**

| SHS track | n | Mean | SD | t | df | *p* | Interpretation |
|---|---|---|---|---|---|---|---|
| Academic | 32 | 1.85 | .70 | 3.20 | 51.29 | 0.002 | Significant |
| Non-academic | 28 | 1.38 | .42 | | | | |

*Note: p* = 0.05 level of significance

These results suggest that educational tracks influence students' writing quality of a research introduction. The results further indicate that students in the non-academic track may have more difficulty in writing a quality research introduction as compared to those in the academic track. As exemplified by the excerpts from the two research introductions below, the academic track students seemed to have better writing quality as compared to the non-academic track students. For instance, in terms of organization, Research Introduction 5 is more logical as it uses the general-specific pattern of writing, where the students begin by establishing the significance of the topic "the use of technology", followed by a supporting example, the use of "social media". On the other hand, Research Introduction 36 begins immediately with the description of the study's focus and then proceeds to establish the importance of the topic, "pregnancy," hence employing the specific-general pattern. Note that these excerpts were the introductory paragraphs of both research introductions. Inasmuch as organization is concerned, research introductions should be structured in a manner that is persuasive enough for the readers to accept the significance of the research problem drawn from its broader context. Thus, using the general-specific pattern of writing within a research introduction where readers can smoothly follow through the author's ideas is pivotal.

> *In this day and age, the use of technology has become very rampant and efficient that people are also pushing forward and making it possible to build things inside these modern machines. One foremost and recognized example for such is what the world knows today as the "social media." Currently, many are still unaware for as to how this entire social media functions — yet, on the other hand, a huge number of individuals around the globe are almost considered to be dependent on them.* (Research Introduction 5, academic track)

> *Based on the title of the research, It is all about teenage pregnancy and the factors that affect in committing early teen pregnancy. And the research may show some results or reasons that affect teen's committing early pregnancy. Teenage Pregnancy nowadays are becoming one of the main problem in the society, it gives more information to people especially teen's that teenage pregnancy must stop in our society today.* (Research Introduction 36, non-academic track)

The results on the writing quality of students' research introductions when grouped according to educational track reveal that there was a significant difference in students' writing quality between SHS academic and non-academic track students. This result implies that educational tracks have a significant influence on students' academic writing skills. As found in this research, the students in the non-academic track had more difficulty in writing a good research

introduction as compared to those in the academic track. The academic writing difficulty of students in the non-academic track may be attributed to the fact that their educational track does not require as many academic writing tasks as the academic track considering its heavy focus on technical skills development. Thus, this may have propelled these students to spend more time mastering technical skills rather than doing academic writing. Such finding corroborates the claims made in previous studies on research introductions, accentuating that different disciplines are typified with a variety of rhetorical patterns of research introductions (Abdullah, 2016; Adel et al., 2020; Kanoksilapatham, 2011; Ozturk, 2007; Samraj, 2008). It is noteworthy to underscore that because research introduction is an academic genre typified with its distinct styles (Bhatia, 1993), students of academic writing regardless of their discipline should demonstrate sufficient academic writing knowledge that can help them become better research writers.

### 4.3 Implications of the Study

The overall results of the present study have theoretical and pedagogical implications in L2 academic writing, especially research writing in the context of secondary education. On a theoretical level, this study has renewed the current theoretical understanding of the writing quality of secondary students as novice research writers. Based on the study results, there is clearly a need for a more encompassing theoretical framework that can cater to the complex nature of academic writing skills in research introduction writing. While the CARS model of Swales (1990, 2004) has been useful in understanding the move patterns inherent in research introductions, such a framework cannot account for other elements necessary for the individual to write a high-quality research introduction. A theoretical model that considers both the micro and macro features of research introduction writing is a pivotal guide for novice research writers when writing a research introduction. The model could also serve as a comprehensive basis for teachers in designing and implementing targeted L2 academic writing curricula and instructions.

On a pedagogical level, several implications can be outlined from the results of this study. First, teachers should understand that research is an academic genre (Bhatia, 1993); as such, the teaching of research writing should be strongly informed by the genre approach to teaching writing. This suggests that teachers should explicitly teach the different linguistic and rhetorical devices necessary for writing a research article. This is not, however, to discredit other approaches to teaching writing, such as process and product approaches. Indeed, such approaches have also been found to be effective in improving L2 students' academic writing (Hasan & Akhand, 2010; Ramos et al., 2019). While it is important that teachers explicitly teach the different cohesive devices and their uses in writing, students should be made to realize that such knowledge does not automatically translate to their competence in academic writing (Waller, 2015). In other words, teachers should still teach students how to structure their writing by looking at the semantic relationship of ideas within and among paragraphs so that the whole text to be produced is logical, connected, and holistic. In writing a research introduction, it is then suggested that teachers introduce students to

Swales' (1990) CARS model as it helps them to transition their ideas smoothly and convincingly. With the use of this model, students should be exposed to authentic learning materials, such as actual published research articles. As such, students get to see how the model operates in real-world contexts and, with the right amount of scaffolding from their teacher, can apply it to their advantage later. The employment of real-life activities in L2 writing classrooms not only helps students become oriented with contextualized linguistic elements but also aids in the development of their critical thinking skills (Castillo-Hajan et al., 2019).

Additionally, teachers should continue to develop and enrich students' vocabulary and grammar. It is important to note that, without strong foundational knowledge of vocabulary and grammar, it is almost impossible for students to write. Hence, before introducing students to more complex rhetorical devices in academic writing, such as organization and style, vocabulary and grammar should first be strengthened. This does not mean, however, that teaching vocabulary and grammar needs to be too explicit or done separately. In fact, Tanpoco et al. (2019) asserted that English subjects in the SHS should start with at least a review of the basic rules in English grammar, such as usage of verbs, pronouns, and prepositions, among other linguistic components. Additionally, having exposure to authentic resources where students can actually see words and structure common in the genre of the discourse community they are part of would perhaps be one of the effective ways to improve students' lexical and grammatical competence. However, of note is that teachers should not be too concerned about linguistic accuracy (Rillo & Alieto, 2018). Hence, the teaching of language use in academic writing should enable students to construct meaningful sentences that result in a connected whole, rather than grammatically correct sentences that are of less value.

Moreover, teachers should pay equal attention to mechanics when teaching research writing. Mechanics is an essential component of academic writing since it engenders formality. While this may be the simplest among all the components, many students would still find this aspect difficult to master. For example, the APA style of writing remains one of the biggest problems in research writing for students, as found in this study. Hence, it is imperative that teachers impose upon their students from the very beginning the writing style they are expected to conform to and why they are so required. According to Wei et al. (2024), making students aware of not only the complexity of academic writing rules but also why the rules are crucial can help them avoid problems with academic norms. Furthermore, students should be made aware of the repercussions of plagiarism in a research writing class. To avoid plagiarism, teachers should develop students' citation skills. Students should be taught not only to cite but how to cite properly following the required citation standards. In addition, it is equally important to remind students that their arguments or claims will never be valid without citations, especially in introduction writing where they are expected to prove the centrality of their chosen topic in the eyes of the discourse community.

Finally, there is a dire need to rethink writing pedagogy in secondary contexts to make it more responsive to students' needs. Hajan et al. (2019) concluded that

there is no such thing as the best method for teaching academic writing because the best method is that which caters to students' writing needs. As found in this study, students' writing quality varies depending on their chosen educational track. This is clearly a manifestation that the teaching of academic writing cannot be detached from students' academic disciplines. In other words, learning activities should be relatable to students, and each should help them develop a deeper understanding of their field. For example, students who choose STEM as their academic strand should be taught research writing following the needs of that strand. In other words, they must be introduced to the various STEM-related terminologies and the rhetorical structure of research articles in that field (Hajan et al., 2024).

### 4.4 Limitations of the Study
Despite the results and implications of this study, specific limitations should be considered. This study was mainly quantitative with only supplemental qualitative data. Thus, it may have failed to reflect a deeper understanding of students' writing quality of research introductions. The number of research introductions analyzed in this study was limited to 60 only, collected from 1 university, and the results cannot represent the entire case of SHS students in general. In addition, analysis of students' research introductions based on a rubric without considering teachers as supplementary sources of data could be less encompassing as compared to when the analysis includes teacher voices. Likewise, because writing samples analyzed in this study came from a private school only, the results of this study may not be generalizable to SHS students in public high schools. Lastly, this study has examined one section of the research article, that is, the introduction. The results can therefore not be taken into account for the writing quality of students for other parts of a research paper.

### 5. Conclusions
In conclusion, this study has provided insight into the writing quality of SHS students' research introductions and the extent to which educational track influences their writing quality. The results showed that the SHS students' writing quality of research introductions was poor for all the examined criteria, with organization being the poorest. Likewise, there was a significant difference in the writing quality of the students' research introductions when they were grouped according to their chosen educational track. The study has advanced the theoretical understanding of academic writing in a secondary education context, suggesting a need for a more holistic framework to account for the complex nature of academic writing skills in research introduction writing. Furthermore, the study has uncovered how disciplinary backgrounds play an important role in students' writing abilities, proposing that when planning and implementing writing instructions, students' disciplinary differences should be given primary attention. Hence, adopting a genre-based approach to teaching academic writing for novice research writers such as the SHS students is indispensable. By implementing the genre-based approach to teaching academic writing, it could be warranted that writing instructions address the students' idiosyncratic writing styles demanded in their chosen disciplines.

## 6. Recommendations

In light of the conclusions of the study, the following recommendations are made for future research. An in-depth qualitative study that endeavors a deeper analysis of students' writing quality of research introductions guided by clearly defined theoretical frameworks with other forms of qualitative data to include student interviews or surveys is necessary. This is because the present study was mainly quantitative with minimal supplemental qualitative data. Such a study will provide a comprehensive qualitative insight into the students' writing quality. More writing samples of students from various SHS strands are needed to yield a more conclusive result regarding students' writing quality. Having teachers as additional participants who could provide firsthand information as regards their students' writing quality could result in a different perspective toward students' writing quality, thus increasing rigor in the analysis. A comparison of students' writing quality of research introductions from private and public senior high schools will also be interesting to pursue because of the unique considerations that prevail in such school types. Finally, other sections of research article written by SHS students, such as methods and discussion, are worth investigating as these may contribute to establishing unique findings about students' academic writing skills.

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## 8. Declaration

We declare no conflict of interest in the conduct and publication of this study.

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