Google Docs in Undergraduate online Composition Class: Investigating Learning Styles' Impact on Writing Corrective Feedback

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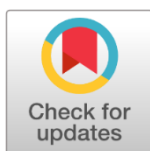*Corresponding author Email: hany.zaky@ucc.edu ; hanyamideast@gmail.com
DOI: https://doi.org/10.34256/ajir2117

Abstract: Google Docs, as a collaborative online writing tool in Higher Education, facilitates and enhances the Composition pedagogical practices in face-to-face and virtual classes. The purpose of this quantitative study is to investigate the students' learning styles' impact on their Peer Assessment using Google Docs. Participants included 149 Composition students in a Public Health College of a private university in New York City. The statistical findings of this study revealed that students' learning skills in online writing classes could drive their perceptions of using Google Docs as a Peer Assessment Writing tool. These findings highlight the high correlation between students' desire to interact after writing in English and their perceptions of using Google Docs as a collaborative writing tool. The findings also revealed statistically significant relationships between students' perceptions of using Google Docs and their preferences of receiving feedback in different language areas. An increase in students' perception of receiving feedback on their grammar, the flow of ideas, mechanics, quality of ideas, and vocabulary, in that order, strongly led to an increase in their perceptions of using Google Docs. However, the findings indicate that there was no statistically significant linear relationship between students' perceptions of their technical skills and their perceptions of using Google Docs in their online writing classes. Median Google Docs' perceptions of males and females were not statistically different. There were no statistically significant differences in students' perceptions of using Google Docs across the various age groups.

Keywords: Peer Assessment, Google Docs, Collaborative Online Writing, Online Learning Styles.

1. Introduction

Throughout the last two decades, education has been progressively changed from teacher-centered to student-centered and inquiry-based learning. The impetus of this inquiry-based learning approach is engaging learners in designed collaborative learning activities that are aligned with the curriculum objectives. The body of research in composition highlights the effectiveness of collaboration among student writers. It is the process of how learners can work together regardless of what they do. It is a process

to reach the individual full writing capacity (Zaky, 2018). During collaborative writing sessions, participants bring their background knowledge, their writing capacities, language inputs, and their expectations for improvement. The communication method, though, marks the learners' created discourse community: Would it be a tool to enhance the learner's writing endeavors or to create a psychological state of disequilibrium that might lead to participants' resistance to being part of the discourse community? Bruffee (1995) proposed that Collaborative writing is an effective

instructional tool that educators could use to form various knowledge communities in their educational settings. It is a tool to enhance learners' profound sense of independence and self-regulation as constructing their self-monitoring strategies along the course of their practice (Foote, 2009; Ornpra *et al.,* 2014; Zaky, 2018). Consequently, educators need to enhance this collaboration using the various available teaching strategies and technology tools.

The process of involving technology in writing passed through various stages. Computer-assisted Language Learning (CALL) has evolved after many years of research conversations between the technological tools and their pedagogical uses. During the last two decades, the body of research highlights the effectiveness of using the CALL trend to facilitate English Writing. Through the used technological tools, student writers can produce a higher quality composing production in a student-centered environment. The used technological tools in writing processes provide students with many opportunities to be engaged in an exploratory learning environment in the field of composing. Google Docs as a computer-based writing tool could enhance student writers composing and revision skills. It gives learners a profound sense of writing ownership (Seyyedrezaie *et al.,* 2016).

The writing productions are different in the course of the collaboration. Banerjee (2000) proposed students' duties and responsibilities during the collaborative writing sessions: First, students ought to get familiarized with the received content. Second, learners need to attest their assumptions and come to a conclusion regarding those formulated assumptions. Third, students start a sharing process once they reach a sense of ownership. Having this learning experience, students become dynamic contributors to the learning process. When learners clarify their assumptions of the received written productions, they actively share their ideas for a further improvement of the writing tasks. Nevertheless, the timing could formulate an obstacle toward completing the learning cycle. Therefore, online collaborative writing tools could give students space and time to efficiently complete the collaborative learning cycle.

Online collaborative tools could improve learners' fluency and accuracy (Elola & Oskoz, 2010). These used tools motivate students to value the received feedback from their peers (Ware & O'Dowd, 2008). The Web-based learning tools spur learners' inquiry and form the learning environment in which collaboration could occur. The body of research on LMSs (Learning Management Systems) indicates that CMCE (Computer-Mediated Communication Environment) such as wiki, discussion boards, and chats enhance learners' reflection, critical reasoning, and thinking skills. These technology-related tools are used to facilitate the process of sending and receiving feedback. This process of online collaboration enhances learners' negotiation of meaning, peer discussions, critical reflection, synthesizing that lead to knowledge construction (Zhu, 2012). Peer Assessment in an online environment, though, encourages students to provide timely feedback, search for new learning opportunities, and secure proper online interactions (Corgan, Hammer, Margolies, & Crossley, 2004, Zaky, 2020).

Google Docs, as a web-free writing tool offered by Google, is one of the technological tools that enhance the student-centered approach in writing classes. Google Docs' offered features that introduced the writing communities to a variety of options to enhance the collaborative writing practice asynchronously and synchronously. It encourages Literacy researchers to investigate new teaching trends in Composition. The process of sharing, providing, and receiving comments on the uploaded documents secures a golden opportunity to receive instant feedback (Gugino, 2018). Receiving feedback and resolving the shared issues create a space for participants to negotiate related meaning in their writing productions. Using Google Docs provides teachers with a great opportunity to conduct asynchronous or synchronous writing sessions based on their students' needs.

To this end, the focus of this study is to investigate the factors that could drive student writers while using Google Docs as a collaborative writing tool in their composition in the online environment. The body of research highlights some factors that influence the corrective feedback nature such as students' online learning styles, and preferences to receive feedback in various language areas using Google Docs. These factors

could drive students' perceptions of using Peer Assessment in online writing classes using Google Docs.

Literature review

Collaborative Learning in an Online Environment

Collaborative writing is a process of providing comments and running modifications on a shared text for a more professionally written product (Haring, & Smith, 1994; Zaky, 2018). Collaborative writing, as a learning approach, stresses both the social and intellectual interactions among the learners within a given learning environment. Experiencing collaborative writing, student writers could produce further knowledge in their writing areas, Nonaka and Takeuchi (1995) created a four-step knowledge creation model for more writing productivity: SECI (Socialization, Externalization, Combination, and Internalization). In their research, they reported that knowledge creation is a combination of explicit and tacit knowledge. Within the collaborative learning process, learners are involved in the co-construction process of knowledge as collaborative activities lead to a shared understanding of a concept. The depth of learners' interactions, quality of the shared ideas, and the used communication tools determine the knowledge construction and the shared concepts (Veerman, & Veldhuis-Diermanse, 2001). Thence, Collaborative Writing deepens participants' learning and knowledge toward a high-level of composing skills.

Sociocultural theory determines the foundation of Collaborative Writing. One of the related theoretical constructs to Collaborative Writing and feedback mechanism is ZPD. It refers to "the distance between the actual developmental level as determined by independent problem solving and the level of potential development as determined through problem-solving under adult guidance or in collaboration with more capable peers" (Vygotsky, 1978). In the same vein, what a learner can do within the peer-reviewing is what he/ she will do independently in the future. The learner's ability transformation in the ZPD occurs as a result of a dialogic collaboration with peers (Poehner, 2011). Consequently, providing learners with the proper mediation such as feedback,

dynamic assessment dialogically connects both provided instructions and assessment as a single activated task. The body of research highlights, though, the effectiveness of a computerized-based learning environment toward a high implementation of dynamic assessment to enhance learners' academic skills (Poehner & Lantolf, 2013; Poehner, Zhang, & Lu, 2015).

The research on Collaborative Writing proposed its positive impact on the audience's sense of ownership, writing motivations, critical thinking, closer attention to the writing accuracy, word choices, and coherence (Kessler *et al.,* 2012; Yeh *et al.,* 2011). During its practice, less proficient writers learn from more proficient ones. More advanced writers could write more critically in terms of receiving and providing feedback in different language areas (Yeh *et al.,* 2011). During the writing shared process, participants build their shared responsibility. Using the available technological writing tools, though, activates and accelerates these contributions. Therefore, teachers should adapt their teaching strategies to integrate the technological tools that might transform their teaching environment to meet all their students' learning preferences (Oxnevad, 2013). Google Docs, like other available collaborative writing technological tools: Wiki, blogs, chat rooms, and forum learning logs, deems to be an effective, free, and easy-to-use digital tool.

Online Collaborative Feedback

Online assessment becomes popular since the time of the internet invention. Online technological tools, though, provide student writers with several opportunities to engage in a constructive feedback process (Chao, & Lo 2009). The body of research highlights the importance of providing feedback in online writing classes for more active interaction among learners (Ge 2011, Jorge, & Katia, 2017, Zaky 2020). Receiving and providing feedback is the central aspect of writing programs around the globe, yet there is inconsistency among researchers and compositionists regarding its full potential to guide student writers.

Different types of feedback have different impacts on students' engagement. Based on the research conducted by Sheppard (1992), feedback could be analytical feedback (indicating errors

types and locations), and holistic feedback (indicating a general request for clarifications). However, Robb *et al.,* (1986) highlighted four main categories for feedback in writing: First, direct feedback is when the assessors provide assesses with all of their texts' errors such as grammatical, syntactical, or stylistic ones. Second, coded feedback is when the assessor provides the assesse with the errors using a designed coding system. Third, uncoded feedback is when assessors highlight assesses texts' errors without labelling what kind of these problems. Fourth, marginal feedback is considered the most indirect feedback. During marginal feedback, assessors provide assesses with the number of errors in the margin of specific lines, and assesses, in turn, should be back to check and spot these errors for improvement.

Furthermore, Ellis (2009) highlights the importance of the written corrective feedback (CF) in writing classes. He proposed six tactics for effective CF in writing courses: First, direct feedback is when the assessor highlights the error location and provides the modification. It is beneficial if the assesses do not know the correct form of their errors. Second, indirect feedback is when the assessors indicate that there is an error yet does not correct the mistake. It could be used as an instructional tool to guide student writers to critical thinking and guided learning-related issues. Third, metalinguistic feedback is when assessors provide assesses with some metalinguistic clues of the text errors. Assessors can also share a general description of the text errors and assesses in-turn move to spot these errors and rectify them. This error coding process could improve student writers' accuracy over time.

Fourth, unfocused feedback is when assessors focus on all text errors. To this end, assessors highlight all the available errors from the shared text. This approach is different from the focused feedback in which assessors intensively highlight all the text errors regarding a specific writing area. In this respect focused CF proves high effectiveness with the learners' writing productions over time as those learners focus on one single error and then obtain a piece of rich evidence to modify their work. It develops student writers' understanding of the written errors besides promoting their attention to these errors within subsequent productions. Fifth, electronic feedback is when assessors highlight the error location and share a hyperlink to clarify the issue and suggest various ways to rectify the problem. Lots of Written English Corpora such as Google and various online programs such as "Mark My Word" enables educators to add some related-metalinguistic comments to their students' shared texts. Electronic feedback, also, paves the way for more revision transparency and more targeted comments on the shared texts. Sixth, the reformulation feedback is when a professional assessor provides feedback regarding the text's academic integrity and professional used style.

The failure to design proper online Peer Assessment sessions results from the lack of understanding the impact of the variables that are likely to influence the feedback process. Realizing these related factors secures the first step to creating a more effective pedagogical decision. Given the complexity of feedback, the body of research emphasized that there is no clear-cut strategy to implement in writing classes. This raised argument is between researchers who propose the importance of feedback for more accuracy in writing and those who do not assure the effectiveness of some strategies of CF with their learners' populations. To this point, the nature of corrective feedback could positively or negatively impact student writers' perceptions of peer-reviewing. Moreover, the nature of the population, the learning tasks, and the kind of the received feedback could positively or negatively impact students' perceptions.

Google Docs

Web 2.0 introduced many useful writing technological tools such as blogs, Wiki, and Google Docs. Each created tool has its unique features in the field of writing: Wiki is the tool to edit, modify and delete content (Lamy & Hampel, 2007; Li & Zhu, 2017), "Blogs" is used to share content on the web, and Google Docs is used to have both Wiki and Blog's features of sharing, editing, deleting and modifying the information online (Wikipedia, 2010; Abdul Rabu et al., 2020). It relies on a WYSIWYG interface which does not require special commands as for Wikis (Dekeyser and Watson, 2006). With Google Docs, writers could view their entire document and trace their writing history of the same document. Writers, also, could use

various offered features such as Google Documents, Google Spreadsheet, Google Presentation, and drawing. To this point, Google Docs provides learners with a variety of tools to manage and facilitate their collaboration in the online environment.

Google Docs is an easy-to-use digital writing tool. The tool is proper to facilitate digital writing workshops and online writing classes. It allows a group of participants to share their editing simultaneously and to follow the suggested feedback of others: It is an effective way in asynchronous and synchronous teaching approaches. This unique assortment of features makes Google Docs a powerful digital tool in collaborative writing workshops. Moreover, using different related features such as drawing makes Google Docs a tool for more creativity in an online environment (Chinnery, 2008). For example, educators could share a needed-to-edit text and therefore student writers could work together to edit the same text and follow their editing trail. The instructor could also use the storytelling feature in which he/ she share the story beginning and each student could contribute in-turn. Overall, Google Docs is an effective tool for teaching in Asynchronous and Synchronous mood without restrictions on students' contributions. It is a friendly used technological tool in writing classes (Perron & Sellers, 2011).

To this end, the collaborative writing process is complicated as it requires participants to assign roles, plan, brainstorm, draft, review, revise and edit (Calvo et al., 2011). Therefore, it could be well implemented by using technology that allows for asynchronous and asynchronous editing and tracking changes. Web 2.0 technologies, though, such as Twitter, Facebook, Wiki, blogs, and Google Docs allow their users to exchange knowledge without time and place restrictions. Google Docs, as a teaching platform, offers many tools to facilitate the collaborative environment. It provides teachers with the technological keys to monitor their students' writing progress and to provide feedback to effectively manage the learning process. It would be beneficial for educators to research how Google Docs, as a collaborative writing tool, facilitates student writers' progressive writing skills. Investigating factors that could drive learners to actively engage in collaborative writing through

Google Docs should receive more research. Teachers and student writers have different responsibilities to manage the online workload. They, however, agree on the importance of including some corrections on the shared texts' forms and content. How the feedback should be given is driven by many factors; therefore, investigating these factors could help compositionists and student writers to diagram feedback dynamics asynchronously or synchronously in online environments.

Participant causal attributions in online writing tasks

Learners form a natural tendency to explore the reasons for their success and failure in any learning experience. William et al., (2004) investigated the causes learners could attribute their success or/ and failure to and reported that effort, strategy, task, interests, and peers are the main factors. However, Pishghadam and Zabihi (2011) revealed that students who attribute their failure and success to internal factors hold a higher achievement level in writing tasks. Student writers' perceptions regarding the factors that direct their online writing feedback depend on the feedback design. Tang and Liu (2018) proposed that including affective feedback during the CF enhances the positive mindset and increases the learners' motivation while writing. However, this practice could be influenced by factors that undermine learners' experience of providing and receiving feedback in online classes. To this end, the teacher needs to be observant and consider the factors that might impact individual students' active engagement in the online writing processes.

Research Design

Purpose of Study

The purpose of this quantitative study is to investigate the undergraduate student writers' perceptions regarding the factors (Gender/ Used Technology/ Peer Assessment Preferences/ Age) directing their satisfaction of Peer Assessment's use in terms of their learning styles in Undergraduate Online Composition classes using Google Docs.

Research Questions

The following four questions guided the current study:

RQ 1. What is the relationship between student writers' perceptions of their technological skills and their perceptions of using Google Docs in online English Classes?

RQ 2. What is the relationship between undergraduate student writers' online learning styles and their perceptions of using Google Docs in their online Peer Assessment?

RQ 3. What is the relationship between students' preferences of receiving feedback on their online writing tasks in different language areas (word choice, mechanics, grammar, the flow of ideas, quality of ideas) and their perceptions of using Google Docs as a collaborative writing tool?

RQ4. To what extent are there differences in students' perceptions of Peer Assessment integration in their online Composition classes using Google Docs based on sex and age?.

Methodology

Participants

This study was conducted during the academic year 2019/ 2020. The population of this study was the undergraduate students who were registered in the Composition classes in the College of Public Health in a private university in New York, USA. The students were required to experience the Peer Assessment using Google Docs in their online Composition classes. The school offered three Composition courses toward the degree completion: Composition I, Composition II, and Narrative Medicine.

All students who were enrolled in Composition courses during the fall 2020 academic year were invited to participate. The researcher shared the online survey link through their email with a short description of the study and its importance.

Research Site

This study was conducted at a private university in New York City. It was conducted in the school of Public Health using the school platform. The school had 800 students during the 2019/ 2020 scholastic year. The enrolled students were distributed among the college offered courses. There were 200 students enrolled in the English offered courses during the fall, 2020. One hundred forty-nine students completed the survey, yet there were one hundred forty-five usable surveys.

Instrumentation

In this current study, the researcher used a cross-sectional survey. It enables the researcher to collect his data at a single point in time (Howell, 2014). It provides the researcher with sufficient data to answer his research questions. The used survey includes four sections: Background Information, Students' Learning Styles in online English Writing (16 items), Students Perceptions of Peer Assessment (16 items), and Students' preferences of receiving Peer Assessment (5 items). The last three sections include 37 items, which are answered using a five-point Likert Scale ranging from strongly disagree (1) to strongly agree (5). The researcher conducted a pilot study to validate his modified survey. The Questionnaire was employed to measure different, underlying constructs: Students' Perceptions of their Writing in English, Students' Perception of Peer Assessment, and Students' preferences of receiving Peer Assessment.

Table 1 A Cronbach's alpha for reliability

Reliability Statistics

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.967	.969	37

All included constructs consist of 37 questions. The scale had a high level of internal consistency, as determined by a Cronbach's alpha of .967 (See Table 1).

Results

Data Analysis

The researcher used the Statistical Package for the Social Sciences (SPSS .27) to analyze the results of this quantitative study. The researcher followed the following steps to apply his analysis: First, checking participation rate and responses' biases. Second, conducting the descriptive, and inferential statistics at the .05 significance level to answer his research questions. The researcher, therefore, ran descriptive, Regression, Pearson Correlation, One-way ANOVA, and t-test statistical analyses to examine the influence of each of the predictor variables on the independent variable (See Figure 1).

Characteristics of Participants

The researcher distributed the validated survey in the offered Composition classes during fall 2020. Students could take the survey electronically by following the link sent to their official e-mails. One hundred forty-nine (149) respondents completed the survey out of 200 individuals who were included in the sample (74.5% response rate), however, one hundred forty-five (145) responses were usable. The participants varied to some extent in their demographic descriptors such as age, gender, and technological skills. The demographic characteristics of the participants are presented in the next section.

Study Sample

The researcher used the collected 149 surveys to run his analyses. In response to the question of gender, 20% of respondents classified themselves as male, and 80% classified themselves as female.
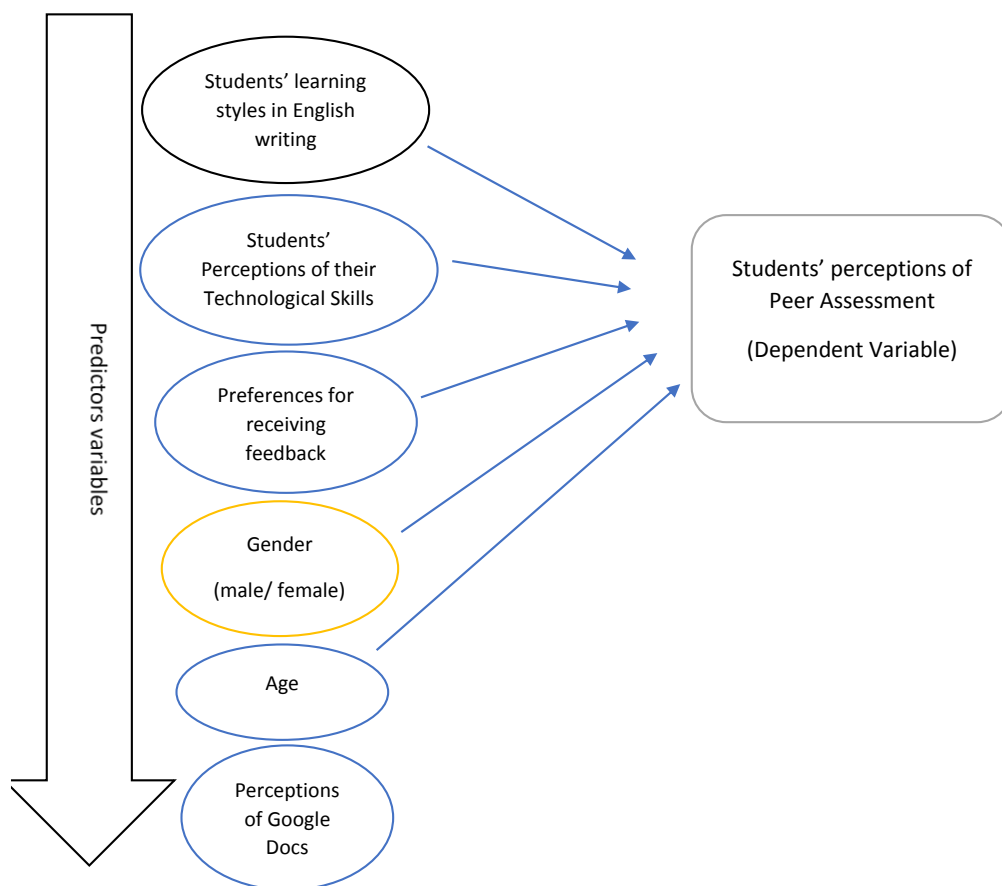

Figure 1 Dependent and Predictor Variables

Table 2 Frequencies Results of the Demographic Section of Participants (n = 145)
What is your gender?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Male	29	20.0	20.0	20.0
	Female	116	80.0	80.0	100.0
	Total	145	100.0	100.0	

What is your age?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	18-24	39	26.9	26.9	26.9
	25-34	73	50.3	50.3	77.2
	35-45	26	17.9	17.9	95.2
	+ 46	7	4.8	4.8	100.0
	Total	145	100.0	100.0	

Have you ever had training in how to provide Peer Reviewing to classmates or peers?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	65	44.8	44.8	44.8
	No	80	55.2	55.2	100.0
	Total	145	100.0	100.0	

In response to the question of the age, 26.9 % are 18-24 years old, 50.3% are 25-34 years old, 17.5 % are 35-45 years old, and 4.8% are over 45 years old. The majority of the participants are relatively young. Sixty-five participants, 44.8%, reported that they receive some training in Peer Assessment before their practice. However, 80 (55.2%) reported that they did not receive any training ahead of their practice (See Table 2).

Descriptive Statistics

Frequency distribution tables were prepared to organize the collected data. The participants were asked to rate their responses on a 5-point Likert scale with 1 strongly disagree to 5 strongly agree. The researcher calculated the means and standard deviation for each of the survey items. The process deepened the researcher's understanding of the individual responses.

The statements that rated the highest response means were "When I read academic texts in English, I draw diagrams and visuals for notes" mean = 13.80, and "I enjoy writing an essay with someone else in English" mean = 12.66. The statements that rated the lowest response means were "I can get more ideas in writing in English after I discuss with others" mean = 11.74, and "I feel comfortable reading my classmate's feedback on my English writing" mean = 11.92. Notably, the means for most statements were on the "Disagree" side of the scale (less than 2.5).

Learning Styles in English Writing

In view of the descriptive statistical analyses displayed in Tables 3, 16 items formed four major dimensions to measure the learning styles of English Writing. The participants were asked to rate their responses on a 5-point Likert scale with 1 strongly disagree to 5 strongly agree:

First, desire to interact after writing in English overall mean is 72.9517 (items 1-6) (See Table 2), the top item in this dimension is item 4, mean, 12.63, "When I write the first draft of an essay in English, I would like someone to read it aloud ". Second, the overall mean of interpersonal learning styles is 62.7931 (items 7-11), the top item in this dimension is item 7, mean, 13.80, " When I read academic texts in English, I draw diagrams and visuals for notes". Third, intrapersonal learning styles overall mean is 24.1862 (items 12-13), the top item in this dimension is item 12, mean, 12.05, " I understand academic texts in English better when I listen to someone". Fourth, the role of discussions before writing overall mean is 24.2207 (items 14-16); the top item in this dimension is item 16, mean, 12.48, " After writing an essay in English, I like to discuss it with someone" (See Table 3).

Students' Perceptions of Peer Assessment

In view of the descriptive statistical analyses displayed in Table 4, 16 items address students' perception of using Peer Assessment in their writing. The participants were asked to rate their responses on a 5-point Likert scale with 1 strongly disagree to 5 strongly agree. These 16 items form three dimensions to measure students' perceptions of using Peer Assessment: First, interests of specific areas of receiving Peer Assessment are items 1-6 with an overall mean, 73.2000, the top item in this dimension is item 3, mean, 12.43, " I prefer to receive oral peer feedback on my English writing ". Second, value Peer Assessment are items 7-14 with an overall mean, 97.0069, the top item in this dimension is item 7, mean, 12.28 " I prefer feedback on my English writing from a peer whose English proficiency level is about the same as mine".

Table 3 Descriptive Statistics of the Four Learning Styles Dimensions in online English Writing Classes

Descriptive Statistics

N		Minimum	Maximum	Mean	Std. Deviation
Desire to Interact after writing in English	145	66.00	90.00	72.9517	4.52820
Interpersonal Learning Styles	145	56.00	76.00	62.7931	3.99461
The Role of Discussion before Writing	145	22.00	30.00	24.2207	1.79300
Intrapersonal Learning Styles	145	22.00	30.00	24.1862	1.79113
Valid N (listwise)	145				

Adapted from Zaky (2020) surve

Table 4 Descriptive Statistics of preference dimensions to Peer Assessment

	N	Minimum	Maximum	Mean	Std. Deviation
Value Peer Assessment	145	88.00	120.00	97.0069	6.45335
Interests of Specific areas of Peer Assessment	145	66.00	90.00	73.2000	4.66607
How to Receive Peer Assessment	145	22.00	30.00	24.6897	1.92396
Valid N (listwise)	145				

Adapted from Zaky (2020) survey

Third, how to receive Peer Assessment are items 15-16 with an overall mean, 24.6897, the top item in this dimension is item 16, mean, 12.56 " I prefer peer feedback to teacher feedback " (See Table 4).

Students' Areas of Preferences to Receive Peer Assessment

Descriptive statistical analyses, displayed in Table 5, address students' preferences of how to receive Peer Assessment in areas of mechanics, grammar, quality of ideas, the flow of ideas, and vocabulary. The participants were asked to rate their responses on a 5-point Likert scale with 1 strongly disagree to 5 strongly agree. The preferences of receiving Peer Assessment in areas of language are different in terms of their means: Vocabulary (mean = 12.06), the flow of ideas (mean = 11.99), mechanics (mean = 12.05), grammar (mean = 12.03), and the quality of ideas (mean = 12.04) (See Table 5).

Inferential Statistics

The last step in the data analysis process was to perform inferential statistics. The researcher used Linear Regression, Pearson's correlation, Independent-samples t-test, and one-way ANOVA to answer his research questions. The correlation analysis allows the examination of the relations among the dependent and independent variables. It was used to explore the extended correlations among students' perception of Peer Assessment use, those students' perceptions of their learning styles as writing in English, the preferences of receiving Peer Assessment in the different Writing areas. As mentioned, there are two types of variables in this study: Dependent variable which is students' perceptions of using Google Docs in Peer Assessment, and predictor variables which are age, gender, students' perceptions of their technological skills, students' perceptions of their learning styles in online English writing, and preferences for receiving feedback in different language areas: Mechanics, quality of ideas, the flow of ideas, grammar, and vocabulary (See Figure 1).

Data from the survey were collected, checked for accuracy, and analyzed through Statistical Package for Social Sciences (SPSS) .27 to answer the research questions.

Research questions

RQ 1. What is the relationship between student writers' perceptions of their technological skills and their perceptions of using Google Docs in online English Classes?

To answer this research question, the researcher used Part A of the questionnaire to measure students' perceptions of their technological skills and their perceptions of using Google Docs in their online writing classes. Students were asked to rate their degree of agreement or disagreement for each statement on a 5-point Likert scale with 1 equalling strongly disagree and 5 equalling strongly agree regarding their perceptions of using Google Docs. They also rat their technological skills on a scale with 1 equalling unfamiliar to 4 advanced. A Pearson's product-moment correlation was run to assess the relationship between students' perception of using Google Docs and their perceptions of their technological skills. There were 145 usable survey responses. There was no statistically significant linear relationship between students' perceptions of their technological skills and their perceptions of using Google Docs in their online writing classes, R (143) = -.068, p > .05 (See Table 6).

RQ 2. What is the relationship between undergraduate student writers' online learning styles and their perceptions of using Google Docs in their online Peer Assessment?

To answer this research question, the researcher used Part B (Items 1-16) of the questionnaire to measure students' perceptions of students' writing learning styles in English Writing and part A of students' perception of using Google Docs in their online writing. In both parts, students were asked to rate their degree of agreement or disagreement for each statement on a 5-point Likert scale with 1 equalling strongly disagree and 5 equalling strongly agree. The researcher calculated the aggregated score for each section.

The linear regression was run to understand the effect of students' learning style in online writing on their perceptions of using Google Docs in Peer Assessment. Residuals were normally distributed as assessed by visual inspection of a normal probability plot (See Figure 2).

Table 5 *Descriptive Statistics of Students' Preferences of Peer Assessment*

	N	Minimum	Maximum	Mean	Std. Deviation
1-Mechanics	145	11	15	12.05	.892
2-Grammar and Structure	145	11	15	12.03	.935
3-Quality of ideas.	145	11	15	12.04	.927
4-Flow of ideas.	145	11	15	11.99	.924
5-Vocabulary and usage	145	11	15	12.06	.899
Valid N (listwise)	145				

Adapted from Zaky (2020) survey

Table 6 *Correlation Coefficient of Students' perceptions of their Technological Skills and Using Google Docs in Online Writing*

Coefficients[a]

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.	95.0% Confidence Interval for B	
	B	Std. Error	Beta			Lower Bound	Upper Bound
1 (Constant)	13.283	.547		24.298	.000	12.202	14.364
Students' Perceptions of Their Technological Skills	-.143	.175	-.068	-.814	.417	-.489	.204

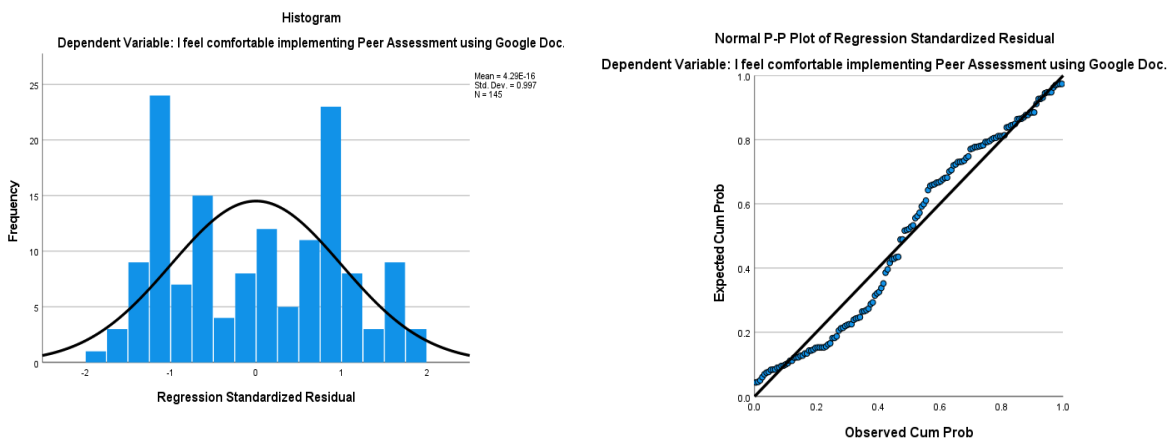a. Dependent Variable: Students' Perceptions of Using Google Docs in Online Peer Assessment

Figure 2 Students' Perceptions of Their Learning Styles Against Their Perceptions of Using Google Docs in Online Writing

Table 7 Correlation Coefficient Between Students' Learning Style of Writing Online and Their Perceptions of Using Google Docs

Model		Unstandardized Coefficients		Standardized Coefficients			95.0% Confidence Interval for B	
		B	Std. Error	Beta	t	Sig.	Lower Bound	Upper Bound
1	(Constant)	7.748	2.010		3.855	.000	3.775	11.721
	Learning Styles in English writing	.026	.010	.208	2.541	.012	.006	.046

a. Dependent Variable: I feel comfortable implementing Peer Assessment using Google Doc.

Table 8 Correlation Coefficient Between Students' Learning Styles' Dimensions and Their Perceptions of Using Google Docs in Online Peer Assessment

Model		Unstandardized Coefficients		Standardized Coefficients			95.0% Confidence Interval for B	
		B	Std. Error	Beta	t	Sig.	Lower Bound	Upper Bound
1	(Constant)	7.694	1.905		4.040	.000	3.929	11.460
	Desire to Interact after writing in English	.113	.046	.368	2.470	.015	.022	.203
	Interpersonal Learning Styles	-.037	.050	-.107	-.741	.460	-.136	.062
	Intrapersonal Learning Styles	-.095	.094	-.123	-1.008	.315	-.281	.091
	The Role of Discussion before Writing	.064	.104	.083	.622	.535	-.140	.269

a. Dependent Variable: I feel comfortable implementing Peer Assessment using Google Doc.

Visual inspection indicated a linear relationship between these two variables. There were 145 usable survey responses. There was a statistically significant, strong positive correlation between students' learning styles in online English writing and their perceptions of using Google Docs, *R* (143) = 20.8, p < .05 (See Table 7). Noticeably, the highest strong positive correlation is between students' desire to interact in English after writing and their perceptions of using Google Docs in their online writing, R= 36.8, p < .05 (See Table 8).

A linear regression established that an increase of students' perceptions of their learning styles in English writing is associated with the increase of their perceptions of using Google Docs of 8.1% (The slope coefficient represents the change in the dependent variable for a one-unit change in the independent variable), *F (4.14) = 3.095.* 95% Confidence Interval (CI) is between .006 and .046. This slop coefficient is statistically significant, p < .05 (See Tables 8/9). There is a positive correlation between students' perception of using Google Docs and their perceptions of their English online writing learning styles (See Figure 2).

RQ 3. What is the relationship between students' preferences of receiving feedback on their online writing tasks in different language

areas (word choice, mechanics, grammar, the flow of ideas, quality of ideas, and organization) and their perceptions of using Google Docs as a collaborative writing tool?.

Table 9 ANOVA of Students Perceptions of Their Learning Styles and Their Perceptions of Using Google Docs

Model		Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	22.478	4	5.619	3.095	.018[b]
	Residual	254.184	140	1.816		
	Total	276.662	144			

a. Dependent Variable: I feel comfortable implementing Peer Assessment using Google Doc.
b. Predictors: (Constant), The Role of Discussion before Writing, Intrapersonal Learning Styles, Interpersonal Learning Styles, Desire to Interact after writing in English

Table 10 Pearson's Correlation of Students' preferences of Receiving feedback and Their Perceptions of Using Google Docs

		I feel comfortable implementing Peer Assessment using Google Doc.	Peer Assessment receiving preferences
I feel comfortable implementing Peer Assessment using Google Doc.	Pearson Correlation	1	.207*
	Sig. (2-tailed)		.013
	N	145	145
Peer Assessment receiving preferences	Pearson Correlation	.207*	1
	Sig. (2-tailed)	.013	
	N	145	145

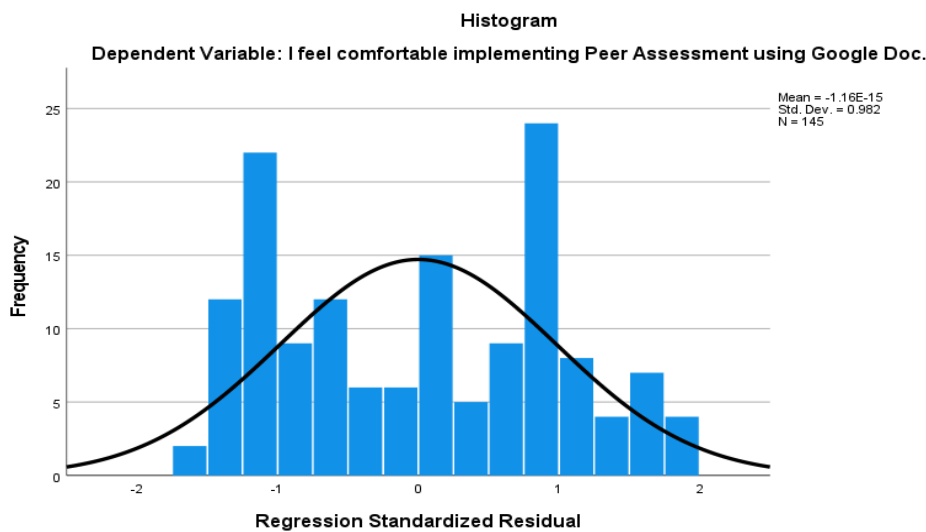*. Correlation is significant at the 0.05 level (2-tailed).

Figure 3 Students' Perceptions of Using Google Docs by Their Preferences to Receive Feedback in Different Language Areas

Table 11 Correlation of Students' Perceptions of Peer Assessment in Writing and Their Preferences for Receiving Feedback in Different Language Areas

		Perceptions of Google Docs	Mechanics	Grammar	Quality of ideas	Flow of ideas.	vocabulary usage
Perceptions of using Google Docs	Pearson Correlation	1	.146	.293**	.140	.178*	.130
	Sig. (2-tailed)		.079	.000	.093	.032	.119
	N	145	145	145	145	145	145
Mechanics	Pearson Correlation	.146	1	.723**	.644**	.581**	.645**
	Sig. (2-tailed)	.079		.000	.000	.000	.000
	N	145	145	145	145	145	145
Grammar	Pearson Correlation	.293**	.723**	1	.592**	.635**	.675**
	Sig. (2-tailed)	.000	.000		.000	.000	.000
	N	145	145	145	145	145	145
Quality of ideas	Pearson Correlation	.140	.644**	.592**	1	.811**	.722**
	Sig. (2-tailed)	.093	.000	.000		.000	.000
	N	145	145	145	145	145	145
Flow of ideas	Pearson Correlation	.178*	.581**	.635**	.811**	1	.744**
	Sig. (2-tailed)	.032	.000	.000	.000		.000
	N	145	145	145	145	145	145
Vocabulary usage	Pearson Correlation	.130	.645**	.675**	.722**	.744**	1
	Sig. (2-tailed)	.119	.000	.000	.000	.000	
	N	145	145	145	145	145	145

**. Correlation is significant at the 0.01 level (2-tailed).

*. Correlation is significant at the 0.05 level (2-tailed).

Table 12 Mean, Standard Deviation, and Standard Error Mean of Male and Female Perceptions of Peer Assessment

	What is your gender?	N	Mean	Std. Deviation	Std. Error Mean
Students' Peer Assessment using Google Doc.	Male	29	12.83	1.365	.253
	Female	116	12.85	1.397	.130

Table 13 Mann-Whitney **U**-*test of Students' Perceptions of Google Docs by Gender*

	I feel comfortable implementing Peer Assessment using Google Doc.
Mann-Whitney U	1657.500
Wilcoxon W	2092.500
Z	-.124
Asymp. Sig. (2-tailed)	.901

a. Grouping Variable: What is your gender?

To answer this research question, the researcher used Part A of students' perception of using Google Docs and Part D (Items 1-5) of students' perceptions of their preferences of receiving Peer Assessment in their composition classes. In both parts, students were asked to rate their degree of agreement or disagreement for each statement on a 5-point Likert scale with 1 equalling strongly disagree and 5 equalling strongly agree. The researcher ran the descriptive statistics to compare the means of students' perceptions of the areas of receiving Peer Assessment (See Table 5), and Pearson' R (Correlation) to explore the relationship of the variables.

A Pearson product-moment correlation was run to assess the relationship between students' perceptions of using Google Docs in online writing and their preferences for receiving feedback in different language areas. The preliminary analyses showed that there were no outliers (See Figure 3). There were statistically significant relationships between students' perceptions of using Google Docs and their preferences of receiving feedback, R (143) = 20.5, p < .05 (See Table 10). There was a statistically significant, strong correlation between students' preferences to receive feedback on their grammar and their perceptions of using Google Docs, R (143) = 29.3. There was a statistically significant, strong correlation between students' preferences to receive feedback on their "flow of ideas" and their perceptions of Peer Assessment using Google Docs, R (143) = 17.8. An increase of students' perceptions of receiving feedback in terms of their mechanics correlates with their perceptions of using Google Docs, R (143) = 14.6. An increase in students' perceptions of receiving feedback in terms of their quality of ideas leads to an increase in their perceptions of using Google Docs, R (143) = 14.0. An increase in students' perceptions of receiving feedback in terms of their vocabulary leads to an increase in their perceptions of using Google Docs in their online writing, R (143) = 13.0 (See Table 11)

RQ4. To what extent are there differences in students' perceptions of Peer Assessment integration in their online Composition classes using Google Docs based on sex and age?

To answer this research question, the researcher used Part A of students' perception of using Google Docs in online Writing courses. Students were asked to rate their degree of agreement or disagreement on a 5-point Likert scale with 1 equalling strongly disagree and 5 equalling strongly agree. The researcher identified the independent variables (sex, age) using the available data from the demographics section and used Mann-Whitney U-*test* and One-way ANOVA to answer his research question (See Tables 2/12).

Mann-Whitney U-*test* was run to determine if there were differences in students' perceptions of using Google Docs in online writing between males and females. The distributions of students' perceptions of using Google Docs for males and females were similar, as assessed by visual inspection (See Figure 4).

Median Google Docs's perceptions for males and females were not statistically different (13.00), U= 1657, z = -.124, p =.901, using an exact sampling distribution for U (See Tables 13, 14, 15).

One-way ANOVA was conducted to determine if there were differences in students' perceptions of using Google Docs across the age groups. There were not extreme outliers with the collected data, as assessed by inspection of the boxplot. There was heterogeneity of variances, as assessed by Levene's test for equality variances (p = .04) (See Table 16). There were no statistically significant differences in students' perceptions of using Google Docs across the various age groups, Welch's F (3, 28.975) = .867, p = .469 (See Tables 16, 17, 18). Data are presented as mean ± standard deviation. Students' perception of using Google Docs increased from 18-24 of age (n= 39, 12.54 ± .28), to 35-45 of age (n = 26, 12.85 ± .6), to 25-34 of age (n = 73, 13.00 ± .32) to + 46 of age (n =7, 13.00 ± .6), in that order, yet the differences between these age groups were not statistically different, F (3.141) = .968, p= .410. Tukey post hoc analysis revealed that the increase from age group 18-24 to age group 25-34, .462, 95 % CI (-1.18 to .26) was not statistically different (p = .339), Additionally, no other group differences were statistically significant (See Table 19).
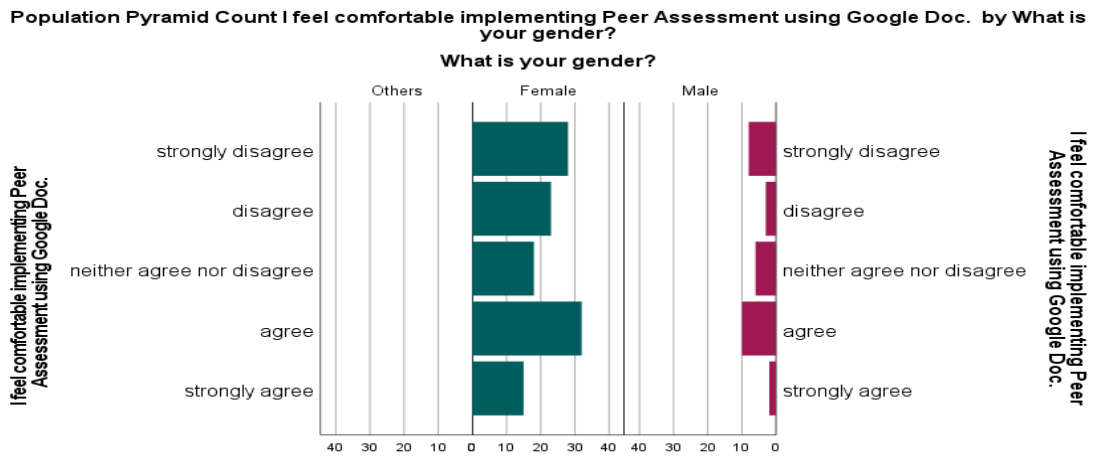
Figure 4 Students' Perceptions of Using Google Docs by Gender

Table 14 Median of Students' Perceptions of Using Google Docs based on Their Gender

Median

What is your gender?	Students' perceptions of Peer Assessment using Google Doc.
Male	13.00
Female	13.00
Total	13.00

Table 15 *Means, Medians, and Standard Deviations of Students' Perception of Google Docs by Age Groups*

			Std. Deviation	Std. Error	95% Confidence Interval for Mean		Minimum	Maximum
	N	Mean			Lower Bound	Upper Bound		
18-24	39	12.54	1.502	.240	12.05	13.03	11	15
25-34	73	13.00	1.394	.163	12.67	13.33	11	15
35-45	26	12.85	1.287	.252	12.33	13.37	11	14
+ 46	7	13.00	.816	.309	12.24	13.76	12	14
Total	145	12.85	1.386	.115	12.62	13.08	11	15

Table 16 Test of Homogeneity of Variances of Students' Perceptions of Google Docs Use by Age groups

		Levene Statistic	df1	df2	Sig.
I feel comfortable implementing Peer Assessment using Google Doc.	Based on Mean	2.852	3	141	.040
	Based on Median	1.598	3	141	.193
	Based on Median and with adjusted df	1.598	3	128.277	.193
	Based on trimmed mean	2.717	3	141	.047

Table 17 Robust Tests of Equality of Means of Students' Google Docs' Perceptions

	Statistic[a]	df1	df2	Sig.
Welch	.867	3	28.975	.469

a. Asymptotically F distributed.

Table 18 ANOVA of Students' Perceptions of Using Google Docs by Their Age Groups

	Sum of Squares	Df	Mean Square	F	Sig.
Between Groups	5.585	3	1.862	.968	.410
Within Groups	271.077	141	1.923		
Total	276.662	144			

Table 19 Multiple Comparisons of Google Docs' Perceptions by Age groups

Tukey HSD

(I) What is your age?	(J) What is your age?	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval Lower Bound	Upper Bound
18-24	25-34	-.462	.275	.339	-1.18	.25
	35-45	-.308	.351	.817	-1.22	.61
	+ 46	-.462	.569	.849	-1.94	1.02
25-34	18-24	.462	.275	.339	-.25	1.18
	35-45	.154	.317	.962	-.67	.98
	+ 46	.000	.549	1.000	-1.43	1.43
35-45	18-24	.308	.351	.817	-.61	1.22
	25-34	-.154	.317	.962	-.98	.67
	+ 46	-.154	.590	.994	-1.69	1.38
+ 46	18-24	.462	.569	.849	-1.02	1.94
	25-34	.000	.549	1.000	-1.43	1.43
	35-45	.154	.590	.994	-1.38	1.69

Discussion

The researcher used a modified survey to collect his data in the offered Composition courses in the College of Public Health of one of New York Private University. The College had 800 registered students during fall 2020. Two hundred were registered in the offered related Composition courses. One hundred forty-nine completed the survey, yet one hundred forty-five surveys were usable. The participants were diverse based on the information from the survey and the available data from the college administration. 80% of the participants were female and 77.2% were under 34 years old.

55.2% of the participants reported that they had not had any Peer Assessment training.

Descriptive Statistics

The researcher ran the descriptive statistics for all the used survey items to get a clearer picture of the participants' perceptions. Means and standard deviations were calculated for each item. Regarding students' Learning styles in the online environment: First, desire to interact after writing in English overall mean is 72.9517. Second, the overall mean of interpersonal learning styles is 62.7931.

Third, intrapersonal learning styles overall mean is 24.1862. Fourth, the role of discussions before writing overall mean is 24.2207. Students' desire to communicate after writing and their interpersonal preferences could impact the online writing practices. Furthermore, the means of students who value Peer Assessment is 97.0069, and the mean of those who have interests in specific areas of Peer Assessment is 73.2000.

The participants' preferences regarding language areas to the Peer Assessment are varied with their calculated means and standard deviation: Vocabulary and word choice (mean = 12.06), Mechanics (mean = 12.05), quality of ideas (mean = 12.04), grammar (mean = 12.03), and flow of ideas (mean = 11.99).

Inferential statistics

The researcher built his research on four research questions. Inferential statics was used to answer the four research questions. The results indicate that there was no statistically significant linear relationship between students' perceptions of their technological skills and their perceptions of using Google Docs in their online writing classes.

There was a statistically significant, strong positive correlation between students' learning styles in online English writing and their perceptions of using Google Docs. Noticeably, the highest strong positive correlation is between students' desire to interact in English after writing and their perceptions of using Google Docs in their online writing.

A linear regression established that an increase of students' perceptions of their learning styles in English writing is associated with the increase of their perceptions of using Google Docs. There is a positive correlation between students' perception of using Google Docs and their perceptions of their English writing learning styles in an online environment. There were statistically significant relationships between students' perceptions of using Google Docs and their preferences of receiving feedback. An increase in students' perception of receiving feedback on their grammar, the flow of ideas, mechanics, quality of ideas, and Vocabulary, in that order, strongly led to an increase in their perceptions of using Google Docs. Median Google Docs's perceptions of males and females were not statistically different. Moreover, there were no statistically significant differences in students' Perceptions of Using Google Docs across the various age groups.

Pedagogical Recommendation

The statistical findings of this study revealed that students' learning skills in online writing classes could drive their perceptions of using Google Docs as a Peer Assessment Writing tool. Additionally, these findings highlight the importance of students' desire to interact after writing in English.

The findings also revealed the influence of students' preferences of receiving feedback from their peers in terms of the different language areas such as grammar, the flow of ideas, mechanics, quality of ideas, and Vocabulary, in that order. Thence, two pedagogical implications and some related teaching recommendations are addressed:

1-The body of research proposed that providing learners with the proper training sessions has a positive impact on students' perceptions of using feedback in writing classes. Students should have training sessions to effectively manipulate the used technological tool and providing writing constructive feedback (Zaky, 2020). Thence, educators could use Lam's (2010) suggested model "A think A loud Method". In this model, teachers train their students to provide constructive feedback using Google Docs. Lam proposed four stages for more constructive feedback: Assessors could ask for clarifications, raise questions, explain the text problem, and make some improvement suggestions. These four stages increase students' awareness of the writing text and their assessees' preferences of receiving the feedback.

2-Educators ought to run a writing diagnostic evaluation ahead of their Peer Reviewing sessions. The results of the diagnostic assessment should be shared with the student writers. Within the shared report, teachers should highlight the areas for improvement. Consequently, student writers could be aware of their academic needs. Teachers, then, could provide their students with the opportunities to initiate their Peer Assessment sharing their preferences with the partners (See Figure 5).
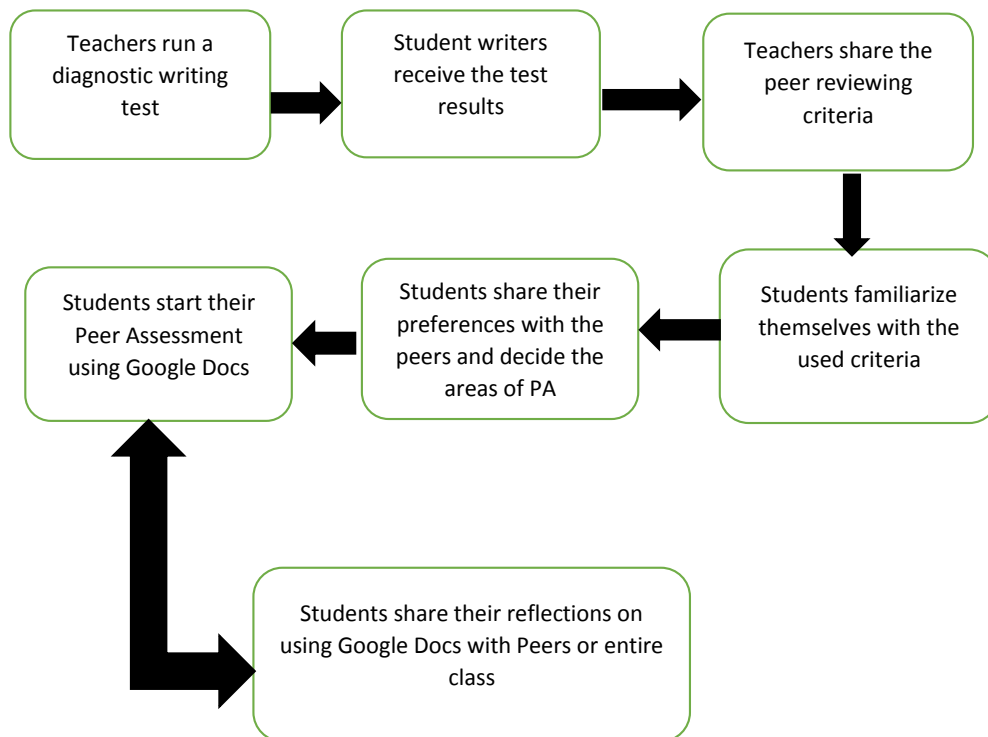
Figure 5 The pedagogical model of using Peer Assessment with Google Docs

Research Limitations

The current study revealed some interesting findings regarding students' learning styles' impact on their Peer Assessment using Google Docs. However, there are some limitations regarding the use of convenience sampling and the design of the study. Redesigning the study to include a qualitative part could reveal different findings.

Conclusion

In this study, the researcher surveyed student writers regarding their Peer Assessment using Google Docs in online writing classes. The researcher aimed to evaluate students' perceptions of whether or not Google Docs is an effective online collaboration tool. The results revealed that the majority of students prefer Google Docs as a collaborative writing tool to provide and receive feedback in their online practice. This study opens the way to identify the factors that could drive student writers' satisfaction with using Google Docs. Identifying these factors provide online writing instructors with the golden tools to effectively motivate their learners to actively engage in the online Peer Assessment using Google Docs as a free collaborative writing tool.

To this point, Peer Assessment could be well-structured in the online environment in terms of students' preferences of receiving feedback and their learning styles. Peer Assessment using Google Docs could secure a free learning opportunity for students writing skills improvement.

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