Effects of Peer Feedback and Assessment on Successive Drafts of Student Narrative Writing: The Case for Student Assessor and Assessee

by

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Abstract

Writing, one of the four major language skills required in the k12 classroom, is an essential achievement for all students. This research study aimed to investigate the effects of peer feedback on the improvement in the quality of middle school student's writing performance and their perceptions in a case-based writing activity using peerScholar as an online writing tool. The notion of the design used in this study was to enhance learning whereby students would be rewarded as assessors and assessees but formal grades to be determined by the teacher. Grade eight students (n = 21) completed the writing task. After the completion of the first written drafts (first phase), students were anonymously assigned to rate and comment on three of their peers' writing tasks (second phase). Based on the rates and comments received from their peers, students were asked to reflect on and improve their writing task. Two expert independent raters randomly rated and commented on the students' first and second drafts. Participants also completed a 'background' survey, interviews, and a reflective narrative essay. The analysis of variances was computed to determine improvement in the quality of writing in consideration of revision made. Survey and interview questionnaire were analyzed for the participants' perception of writing during the writing process using the peerScholar platform, a web-based peer editing and assessment tool which provided multiple cycles of assessment. The analysis of data indicated that when controlling for the quality of the first and second drafts, there was a significant relationship between the quality of peer feedback participants provided for others and the quality of the participants' final writing task. This finding supports a prior research claim that active engagement in reviewing peers' projects may facilitate student learning.

Keywords: peer feedback, peer assessment, expert assessment, student assessor, student assessee

Declaration

This thesis entitled “Effects of Peer Feedback on Successive Drafts of Middle School Students’ Narrative Writing; The Case for Student Assessor and Assessee” was conducted under the supervision of Dr. Bruce Mann. It is my firm declaration that the information reported in this paper is the result of my work except for areas where due references cited and quotations indicated.

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CHAPTER ONE

INTRODUCTION

There is one common problem confronting many teachers; namely, students are reluctant to revise their narrative writing. Students only attach importance to their writing's grades instead of feedback provided based on the teachers' viewpoints; a situation which results in low interest and poor narrative writing quality and subsequently manifests into poor writing ability and affects students' creativity and the development of critical thinking (Lan, Wang, Hsu, & Chan, 2011).

The literature on peer feedback and assessment is substantial and continues to grow. However, there have been few prior studies that investigated the effect of written, electronic peer feedback and assessment on middle school students' narrative writing process. Many researchers have put peer feedback into writing systems which only include the receiving of peer feedback with no real interaction and cooperation on feedback among peers, such as the evaluation of the readers' feedback (Hu, 2005; Rollinson, 2005). Other studies in the past have endeavoured to gauge the effects of peer feedback and assessment on critical thinking. However, there is still an apparent need to establish more clear learning benefits in addition to the ones reported in these studies (Smits, Boon, Sluijsmans, & Van Gog, 2008). In their research, Falchikov and Blythman (2001) suggested that the difficulty of measuring the learning benefits of peer feedback and assessment is due to the "lack of evidence of cognitive development." However, further research on peer feedback and assessment has gathered substantial evidence on the cognitive benefits (Nelson & Schunn, 2009). Some studies have mixed results.

In spite of the unclear empirical evidence of the effects of peer feedback and assessment on student learning, some studies reported that students found that the peer feedback and

assessment process is helpful for student learning (Anderson, Hower, Soden, Halliday, & Low, 2001). Wadhwa, Schulz, and Mann (2006) note that online peer feedback and assessment, as an instructional method, can be incorporated into the course curriculum to provide practice to students in developing critical, evaluative and analytical skills. Although there are many ways to improve student revision, this thesis is only concerned with reciprocal online peer feedback and assessment as a means of improving successive drafts of middle school students' narrative writing.

Background and Context of the Problem

Fluency and accuracy in writing

Middle school students' fluency and accuracy in writing are critical to their success in and out of school, and therefore, writing skills are an indispensable component of the curriculum. The ability to write, in other words, to organize information into knowledge, can be viewed as tantamount to a survival skill (Graham & Perin, 2007b). Middle school students are not meeting basic writing expectations. The Education Quality and Accountability Office (EQAO) data for 2016 – 2018 show that writing achievement in grades three and six have been decreasing over the past five years (EQAO's Provincial Elementary School Report, 2017 – 2018). The EQAO is an independent agency of the Government of Ontario, which provides data that bring attention to trends and topics in education emanating from the annual assessments of Reading, Writing, and Mathematics for Primary Division (Grades 1 – 3), and Junior Divisions (grades 4 - 6). In today's classrooms, writing is often used to gauge students' understanding of content material (Graham, 2006) as well as to promote the learning of it. When students write about what is read or presented in class, it helps them gain a deeper understanding of such material (Graham & Hebert, 2010). Two fundamental problems are always inevitable for most students: they either produce a

poor quality of writing product, or they are poorly motivated in learning how to write (Lan et al., 2011).

Peer feedback and assessment as instructional method

Individual feedback and assessment are essential for learning how to write. All across disciplines, peer feedback and assessment are frequently implemented as an instructional method in k12 classrooms. This is supported, in part, by prior qualitative review studies indicating that peer feedback and assessment can improve domain-specific skills (Van Zundert, Sluijsmans & van Merrienboer, 2010). However, most classroom discourse, according to Kline, Letofsky, and Woodard (2013), is often teacher-directed rather than student-centred. In these classrooms, students see their teacher as the only audience for their papers. Westerhof-Schult and Weisner (2004) stressed the need to shift from the current asymmetrical nature of discourse in the classroom environment by focusing the 'lens' on both students and teachers as critical thinkers whose valuable knowledge and ideas are an essential asset to classroom learning. Zheng, Lawrence, Warschauer, and Lin (2014) argued that this format limits not only the number of feedback students might obtain from their peers but also contributes to the challenges students are likely to face later in office and university environment, in which the majority of documents now have at least two contributors. Even if teachers do provide students with feedback, such feedback is generally evaluative instead of giving constructive and specific feedback, which may be due to time constraints (Huisman, Saab, van den Broek, & van Driel, 2019). The latter situation in which too much emphasis is placed on an assessment by grading gives way to less emphasis on assessment as a way of helping students learn how to write (Lu & Law, 2011).

Hsu and Huang (2015), wrote, "After teachers check and award marks for tests and quizzes, another learning journey begins for the students" and in the case of writing students are

rarely asked to revise their writing for improvements based on teachers' feedback whereby the first draft becomes the final draft. Students do not share their writing drafts with their peers for editing and revising, a situation that makes students keep making the same common errors in their writing repeatedly. Moreover, students do not consistently respond to feedback and often express a sense of discouragement in receiving comments (Jonsson, 2013). Unfortunately, though, this causes students to lose that critical chance of improving their writing ability by incorporating peer feedback and assessment into their writing product. In this context, peer feedback is that practice during the writing process where feedback and assessment are given by one student to another, paving the way for middle school students to achieve mastery levels as they develop in their writing skills.

Previous studies have focused on the impact that peer assessment might have on students' learning. Specifically, when employed formatively, peer feedback and assessment can improve students' learning accomplishments (Falchikov, 2003) and their overall performance regarding specific skills and practices in various domains (Crane & Winterbottom, 2008; Tsivitanidou & Constantinou, 2016a). Additionally, the enactment of peer feedback and assessment may stimulate the development of specific skills and competencies, such as students' skills in investigative fieldwork (El-Mowafy, 2014) as well as their reflection and in-depth thinking (Cheng, Liang, & Tsai, 2015). The reflection processes can be further enhanced in the context of peer feedback and assessment, especially when it is reciprocal wherein students can benefit from the enactment of the role of both as the assessor and the assessee (Topping, 2003; Tsivitanidou, Zacharia & Hovardas, 2011).

Learning gains become evitable when students receive feedback and assessment from their peers (Hanrahan & Isaacs, 2001; Lindsay & Clarke 2001) but also when they provide

feedback and assessment to their peers (Lin et al. 2001). In the latter case, the learning gain emerges because students might be introduced to alternative examples and approaches and can also attain significant cognitive progression (Gielen, Peeters, Dochy, Onghena, & Struyven, 2010; Gielen & De Wever, 2015). Despite those benefits, few studies have focused on peer feedback and assessment; previous research in this area is scarce, especially at the k12 level. Also, the number of studies focused on peer feedback and assessment in modeling-based learning is limited (Chang and Chang, 2013). As a result, very little is known about the usefulness experienced by students during reciprocal peer feedback and assessment with regards to the enhancement of their learning (Tsivitanidou, Constantinou, Labudde, Ronnebeck, & Ropohl, 2017).

Technology-enhanced writing class

Integrating information and communication technologies into a computer-based writing environment can enhance interactions among students and the teacher over the conventional writing environment and thereby improving students' writing skills (Yang, Ko, & Chung, 2005). The advent of new technology innovations and their integration in the classroom provide the potential to improve peer feedback as a vehicle for in-depth explanatory for students regardless of their classrooms. This allows students to do more revision as well as share their writing products with their peers in less stressful ways and saves valuable class time. New and easily adaptable social technologies on the World Wide Web seem highly promising for facilitating the implementation of peer feedback and assessment (Kollar & Fischer, 2010). However, there is limited evidence of empirical research in this field for middle school students. In fact, despite the advantages of peer feedback and assessment revealed in some studies, peer feedback and assessment have been criticized for some potential weaknesses (Tsai & Chuang, 2013). For

instance, when students are not provided with a structure for giving commentary, peer feedback and assessment have been shown to have a little practical effect on writing (Hansen & Liu, 2005; Rollinson, 2005). There are relatively few studies already conducted on how to guide students to accomplish peer feedback in a more structured way. In a study of the 'Effects of Peer E-Feedback on Turkish EFL,' Ciftci and Kocoglu (2012, p. 65) revealed that "because the studies in relation to peer feedback and assessment using computer-mediated communication (CMC) have different foci (synchronous versus face-to-face, and asynchronous versus face-to-face), it is difficult to draw a conclusion and generalize findings."

Since designing technology-enhanced writing class is on the rise in the middle schools, many aspects of using technology in writing classes need to be investigated. One question of interest remains 'What effects do web 2.0 tools such as the peerScholar platform have on the middle school students to help them achieve success in 'writing'? Therefore, the objective of this study is to analyze the reciprocal effect of peer feedback and assessment provided using a cloud-based writing classroom platform on middle school students' narrative writing process.

The changing process of peer feedback and assessment

Online peer feedback and assessment has a long history and has become increasingly popular since the advent of the internet and is significantly changing the process of assessment (Falchikov & Goldfinch, 2000; Lu & Law, 2011) in large and small classrooms and in massively open online classes (Sun, Harris, Walther, & Baioochi, 2015). There are some innovative educational methods used in online peer feedback and assessment. The 'Post-and-Vote' model of expert – peer feedback and assessment is a method and formula for assessing student work. For the successful application of the expert-peer online assessment, two components are essential: accountability and anonymity. In their experimental comparison of these components in a Web-based peer assessment, Wadhwa et al. (2006) established that students' accountability improved

the quality of peer comments. Mann (2012), however, notes that the real proof of the expert-peer online assessment method and formula resides in the 'testing.' As applied to the present study, the post-and-vote model of expert-peer online assessment method and formula was analyzed for its effects on middle school students' narrative writing process.

Based on studies of students providing feedback and assessment, Nicol (2012, 2014) concluded that when students are asked to make judgments about the work of their peers, they start the reviewing process by comparing the peer work against an internal representation of their own work. In this case, their own work becomes the standard or the benchmark for any comparison. This researcher also suggested that when reviewing, students not only compare their work with that of their peers, but they also compare and evaluate the work of one peer against that of another. Revision during the writing process triggers reflection. The earlier work of Nicol (2013) found that through reflection, students connect new concepts to what they already know, and she refers to these mental processes related to providing peer feedback as "reflective knowledge building." Reviewing the work of peers helps students to actively generate their internal feedback and assessment that is directly used to build new knowledge and understanding. A study by van Popta, Kral, Camp, and Martens (2017) suggests that providing online peer feedback and assessment has "potential learning benefits from the peer feedback and assessment provided and requires students to use different cognitive processes under specific instructional circumstances." Results from the review indicated so far in this background suggest that students can learn from providing and receiving peer feedback and assessment. However, research on context and student factors involved seemed rare.

Reliability and validity of expert and peer assessment

The reliability and validity of peer assessment is often a significant concern for educators (Tseng & Tsai, 2007). In a review of the topic on the validity of expert and peer assessment, Topping, Smith, Swanson, and Elliot (2003) found a high validity of expert and peer assessment. He found peer feedback and assessment to be effective in varied educational settings and for learners across a wide range of ages and competence. Falchikov and Goldfinch (2000) further reviewed forty-eight quantitative peer assessment studies and found that peer assessment scores resembled more closely teacher assessments when academic products and processes were rated. 'Rating' refers to assigning a 'number grade' (scoring); 'academic product' refers to the learning product (or student's work) being assessed; and 'processes' refer to criteria used in evaluating the learning product as well as commenting on the strength and weakness of the learning product being assessed. Cho, Schunn, and Wilson (2006) noted that although students' conceptions of validity may be different from educators and reliability contingent on the number of peer feedback and assessment, students may expect reliable feedback and assessment from their peers. However, the studies viewed by these researchers were conducted in traditional paper-and-pencil peer assessment. Research particularly addressing the issue regarding expert-peer online assessment is rare and does apply a variety of methods. The present study employed a model of the expert-peer online assessment called "Post-and-Vote" (Mann, 2012, 2013) using an automated system, peerScholar, to examine the reliability and validity of peer feedback and assessment of this study. Later, in this thesis report, the interpretations of the post-and-vote method are presented as they relate to the present study.

Affects of Peer accountability on the quality of peer feedback and assessment

Peer accountability affects the quality of peer feedback and assessment (Patchan, Schunnb, & Cark, 2017). It influences the consistency of both the quality of peer feedback and peer assessment and that the peer feedback and assessment approach is an essential part of a shift towards more participatory forms of learning in the classrooms (Kollar & Fischer, 2010). It is therefore not surprising to know that there is a large number of peer assessment systems now available with methods focused on examining the effects of peer feedback and assessment on student writing. Each system is either focused on the quality and helpfulness of peer feedback comments or the reliability and validity of peer assessment ratings. Later in this thesis report, the interpretations of peer accountability are presented as a variable in the effect of peer feedback and assessment on the successive drafts of middle school students' narrative writing.

Topping (2010) noted that little research about the impacts of peer feedback and assessment on student writing has been conducted in elementary schools. Van Zundert et al. (2010) suggested that research on peer feedback and assessment applied in contexts other than higher education should be a focus of future work, to extend the generalizability of peer feedback and assessment. Since it is believed that students in middle school have the capability needed to engage in and benefit from peer feedback and assessment (Hwang, Hung, & Chen, 2014) while serving as both assessor and assessee (Kollar & Fischer, 2010; Topping, 2010: van Gennip, Segers, & Tillema, 2010), this clearly suggests a gap in the literature. In recognition of this gap in the literature, the focus of the current study was to explore the respective effects of providing and receiving peer feedback and assessment on middle school students' narrative writing process using a web 2.0 tool.

Statement of the Problem

Culham (2018) and Ayres (2017) have observed in middle school classrooms that there has been little or no amount of revision that occurs during the narrative writing process. The peer feedback and assessment and editing systems are rarely used to teach narrative writing and engage students in peer feedback and assessment activities (Luxton-Reilly, 2009).

Summary

The introductory section was a presentation of background, context, and a statement of the problem addressed in this thesis report. The next section, literature review, will examine the application of a contemporary model of needs for peer feedback and assessment to review the literature on student narrative writing. This will be followed by an explanation of key concepts in a model of online peer feedback and assessment.

CHAPTER TWO

LITERATURE REVIEW

This section is a review of the relevant literature on peer feedback and assessment; the cognitive benefits as well as the issues. The first part of this section discusses the development and teaching of narrative writing followed by a report on the three recent educational innovations as they are applied to the present thesis research, namely: the D.E.C.L model of context assessment, the post-and-vote model of expert-peer online assessment, and peer accountability. The second part reviews the cognitive benefits and criticism of peer feedback and assessment, technology and writing, as well as other essential components. The final section addresses the hypotheses on which the present study is premised.

Development and Teaching of Narrative Writing

Narrative writing is defined broadly as a story writing, a piece of writing characterized by the main character in a setting which comes in contact with a problem or engages in an enjoyable, significant, or entertaining activity or experience (Froma, 2000). There are genres of narration, including fictional stories, personal narratives, biography, and memoir. The process of narrative writing is a complex one that requires the coordination of many high-level metacognitive skills. To produce a quality written narrative, a writer must generate and organize ideas, develop and act on a plan, review and revise what has been, and simultaneously self-monitor performance (Flower & Hayes, 1981; Olinghouse & Leaird, 2009). Also, the narrative writing process involves understanding story components, language skills, vocabulary, mechanics, conventions, attention to audience perspective, and the ability to focus on abstract topics (Roth, 2000).

Generally, writing is a slow and challenging process for students that affect both the quantity and quality of output as well as their editing and revision effort. Intervention in the area of narrative writing can be guided by adapting Graves' (1985) four general principles of strong writing programs such as time, topic and choice, response, and learning community. Students need to spend substantial time engaged in the act of writing to derive appreciable gains and develop a positive attitude toward the writing process. Regarding topic and choice, this principle states that students should choose writing topics so they will value and take ownership of their written products. For the third principle, response, it is recommended that the writer first focus on the idea and content of the written product and then on the mechanical aspects to reinforce the notion that communication is the primary purpose of writing. The fourth principle, establishing a learning community of learners, demonstrates that writing is a social activity to be shared with others. In this way, students can exchange their writing with one another – giving and receiving peer feedback and assessment in a supportive environment. These four principles were initially formulated to address the motivational component of writing. Still, they are equally applicable to promoting the acquisition of the knowledge, techniques, and strategies used by skilled writers in all phases of writing. The present study is concerned with the fourth principle; establishing a community of learners through reciprocal peer feedback and assessment.

Academic achievement in narrative writing

Academic achievement is considered as a token of a good indicator in the language learning process (Benjamin & Chun, 2003). In narrative writing, achievement can be discussed as either a product or as a process: the product concerns with the final written text and the process concerns with how that text came about (Von Koss Torkildsen, Morken, Helland, & Helland, 2016). So, the approach to writing instruction, narrative writing inclusive, is either a

process approach or product approach. It should be noted that some reviews of the literature document the effectiveness of many different writing methods, including teaching strategies for planning, revising, paragraph and sentence construction, word processing as a tool for writing, among others (Graham & Sandmel, 2010). The product and process approaches are popular, yet very different approaches used in the writing classroom. What differentiates a process-driven approach from a product-driven one is that the outcome of writing, the product, is not preconceived. The process-driven approach does not renounce all interest in the product (i.e., the final draft). The goal is to achieve the best outcome possible.

Over the last 20 years, product and process-based approaches have dominated much of the teaching of writing in the EFL/ESL classroom (Hasan and Akhand, 2011). The possibility could be that while in some classes, the product-based approach might prove successful, and the process-based approach might be useful for another (Agustiana, 2016). What differentiates these two is the basis of their emphasis. The processing writing constitutes a shift in emphasis in the teaching of writing from the product of writing activities (the finished text) to ways in which text can be developed (Hasan & Ahkand, 2011).

Writing as a Product

Writing as a product is a model that perceives writing as static, as well as an object that can be fragmented and analyzed**.** Ghufron (2016) argued that the emphasis of this approach is on the steps involved in drafting and redrafting a piece of work, making the students' final product to a coherent and error-free text. To achieve that, the students will initiate, copy, and transform a model text. The product-based approach emphasizes mechanical aspects of writing, such as focusing on grammatical and syntactical structures and imitating models (Agustiana, 2016). This approach is primarily concerned with the correctness and form of the final product and highlights

the learner's final piece of writing instead of how it is produced. (Hasan & Akhand, 2011). Whosoever thinks genuinely about writing does this almost automatically, and it helps us understand and deal with the complex interrelationships of a text. However, the danger is that educators will try to advise students about every aspect of a text all at the same time, and less important aspects of a piece of writing may assume more importance than more critical elements. This 'controlled practice' of a highlighted text, usually in isolation, makes a student become overwhelmed with all the bits and pieces the student-writer needs to address. Finally, it disregards the fact that the reader's impression of a piece of writing should be of the WHOLE text, not just selected elements.

Writing as a Process

The process approach (sometimes referred to as Writers' Workshop; Calkins, 1983; Graves, 1983) to writing instruction is one of the most popular methods for teaching writing. The process writing had evolved since the 1980s when pioneers such as Graves (1983) and Calkins (1983) began advocating the use of this method for teaching writing (Pritchard & Honeycutt, 2006). There has been a change, moving from a linear, step-by-step model to a recursive model of the writing process (i.e., movement across and among processes of planning, drafting, receiving feedback, revising, and editing for sharing or publication. Findings from the earlier study of Graham & Perin (2007) provided evidence that this approach improves the writing of students.

Writing as a process as a model views writing as ongoing, either in a linear progression or a circular (recursive) fashion. It tends to place emphasis more on the varied classroom tasks which promote the development of language use such as brainstorming, group discussions, and re-writing. Tangpermpoon (2008) defined the process approach as an activity in which writing is

regarded as the discovery of meaning and idea. Schmitt (2002) indicated that the process approach considers the composing act as a recursive, explanatory, and generative process. Harmer (2007a) argued that the process-based approach emphasizes that writing emerges as the result of a distinct process that advances through several stages. Myles (2002) believes that the process approach to writing is only appropriate when learners have the opportunity to receive peer feedback and assessment on their written text. This approach tends to focus more on the varied classroom activities which promote the development of language use: brainstorming, group discussion, re-writing, etc. Therefore, the process approach allows students times to reflect and seek input as they reshape their plans, ideas, and language (Myles, 2002). This approach can also have any number of alternatives: the stage-model theory, the recursive-cognitive process model, and the conversation or social constructionist model. Matsyda **(**2003) states that the chief concern of the process model is to find what writers do when they write by focusing on different stages that the writers will go through.

The Stage-model theory

This viewpoint sees the writing process as a series of distinct, sequential steps: planning, prewriting, drafting, and revising. This alternative does not view the writing process as something that circles back on itself. Simply stated, the writer revises as he or she drafts, or that that the writer has to stop in halfway in the drafting process and rethink his/her plan. The stage-model is a good model for structuring writing assignments and tutorials in the writing classrooms where it fits into the constraints of time that schools force on students, but it may not be an accurate reflection of what happens when they write.

The recursive-cognitive process model

This model is based on the work of Flowers and Hays (1981) and others who argued that the writing process is recursive (stages are re-visited constantly) and that it is rooted in the memory and thinking patterns of the student-writer, as well as the communication situation at hand. The recursiveness in writing makes writing a process, which is continuously evolving, rejecting ideas, which may not be important and thereby making it a dynamic process of composition (Pek & Wong, 2015).

Composing involves plans and processes, which the writer brings about in the writing process. While adopting the fundamental tripartite structure of the stage-model theory (planning, translating [drafting], reviewing [revising]), this model places the structure in the context of the flamboyant situation and the memory and thinking patterns of the writer. How does this structure impact the writer? First, while generally tackling invention, global revision, and local revision in that order, there may be a need to backtrack (or look forward) to other stages during the composing moment. Second, a question should be asked of the writer regarding the "context" of the assignment: previous assignments, what was discussed in class, the expectations of the teacher, etc. Third, there is a need to question the student's recollection and organization of knowledge about the topic and try to get him/her to see where and how to use those memories and ideas in the text.

Social Constructionist Model

The conversation or social constructionist model argues that a writer is actually tapping into a whole social context when he/she writes. This means that the writer responds to a multitude of voices and other texts when he/she writes **(**Evenson, 2002). Simply put, writing is part of a broader dialogue where learning is socially and culturally constructed, with learners

shouldering the responsibility of learning and the teacher playing a role of a facilitator (Lee, 2017). A piece of writing then is constructed socially, as an integral part of social communication when learners (student writers) interact with the teacher and their peers and develop their cognitive abilities. In other words, in a writing assessment, students engage in social interaction with teacher and peer to obtain assistance and writing abilities accordingly. A learner can learn and improve their current and potential level of competence with the assistance of an adult or capable peer (Wood, Bruner, & Ross, 1976; Vygotsky, 1978*).*

The D.E.C. L. Model of Context Assessment

D.E.C.L. is a context assessment model that describes the emphasis of four factors on student achievement. 'Context' refers to the affordances, constraints, opportunity, the composing environment, and the delivery mode of the feedback and assessment. This is linked to the theory of social learning, which suggests that students learn best when learning is situated in a context in which they interact with each other and the teacher in meaningful and purposeful ways. "D.E.C.L." stands for delivery, environment, content, and learner factors that comprise "achievement" – the main factors that comprise student achievement (Mann, 2005). The predominant emphasis in traditional K12 and post-secondary education is a strong LEARNER focus.

Effective formative writing assessment of which feedback is critical is tied to everyday classroom teaching and learning in the enhancement of the quality of students' writing (Graham, Hebert, & Harris, 2015). In recent years, peer feedback and assessment have been adapted as a strategy for "formative assessment" or "assessment for learning" (Lu & Law, 2011)**.** Assessment for learning, therefore, sees students play an active role in the classroom; it is a student-centred approach to assessment that involves the active engagement of students in setting goals for their

learning and growth, monitoring their progress toward these goals, and determining how to address any gaps (Andrade, 2013).

The present study adapted the D.E.C.L. model. The D.E.C.L. is an "omnibus" model (Mann, 2005). Omnibus means that factors comprising the model can be used for more than one purpose; needs assessment, instructional design, and formative assessment. It has the inherent factors of a balanced assessment system (BAS). D.E.C.L. stands for delivery, environment, content, and learner factors that comprise student achievement (Mann, 2005). The factors are based on Richey's theoretical and conceptual bases of instructional design (Richey, 1986).

The D.E.C.L. provides a framework for evaluating assignments to determine if they genuinely demand the intellectual activities required for students to experience. Further, it helped, in the present study, to assess student writing, especially as to how well students meet the demands the assignment presents.

Delivery

Four variables comprise the "delivery factor": scope, sequence, strategies, and presentation of the delivery.

Scope. The scope refers to the microstructure of the present study. The scope of the present research on student narrative writing is defined by the size of the instructional chunk, the time allotted, and the number of drafts. In the present study, the narrative writing assignment was chunked as follow: type of writing reviewed, tasks were listed (generating ideas, creating outlines, writing the first draft, providing and receiving peer feedback and assessment, revising, etc.), and a timeline was established. A timeline in a pedagogical context can be explicitly or finely differentiated as a marker of specific activities and routines (Bernstein, 2000) – the project

of which provides points of reference for locating, coordinating, and recording pedagogical social action.

Sequencing. It is one of the basic organizational structures that makes writing cohesive and clear (Sessions, Kang, & Womack, 2016). It allows students to order their thoughts using time frame, numerical or spatial order, and logical development (Staton, 1984). The sequencing of writing peer feedback and assessment in the present study is defined by the phases of the peerScholar platform, the facilitating web tool, which determined the ordering of events or activities, and their pacing in the schedule of the present study.

Strategy. It denotes the choice of objectives, rubrics, and instructions to students, and time all of which are fundamental to good classroom writing feedback and assessment practice in recognition of writing as a process, apart from being a product (Lee, 2017). Strategy in the present study is defined, including other things, a time allotted for creating a draft, for peer feedback and assessing, for rewriting, as well as the decision made about the number of peers and experts assessing each student.

Presentation. Basically, writing skill requires a well-structured way of the presentation of thoughts in an organized and planned way (Braine & Yorozu, 1998)**.** Regarding the form of presentation, the present study adapted Gagne's theoretical framework in which he correlated the events of instructions with the associated internal mental processes to promote effective learning (Gagne, Briggs, & Wagner, 1992). The present study adapted six of the nine Gagne's events of instruction: 1) maintaining attention, 2) securing a response, 3) providing reinforcement, 4) sustaining interest; 5) facilitating retention and 6) assessing performance. Presentation refers to the control of writing conventions and mechanical correctness (i.e., spelling, capitalization, punctuation, and grammar) (Troia, 2014). The latter was made easier to accomplish with the use

of peerScholar, the facilitating web tool. The presentation was also determined by participants in the present study, uploading drafts of their narrative writing and evaluating their classmates using the peerScholar automated marking system. Steve Joordens and Dwayne Paré at the University of Toronto conceived and developed peerScholar, a web-tool which maintained by Pearson Education. Using peerScholar as a web-supported assessment, a learner can maintain control over their work and their peer feedback and assessment. Joordens and Paré conducted two experimental studies (n=120 in each) in which peerScholar was used to examine 'mark agreement' between and within groups of experts (graduate teaching assistants) and peer (undergraduate students) markers (Mann & Joordens, 2018).

Environment

Two variables comprise the environment factor: climate and setting.

Climate. In the present study, the climate was a publicly funded elementary school of the Toronto Catholic District School Board (TCDSB) in Toronto Canada. The school which is located in the suburban area of Scarborough serves approximately 350 students from kindergarten/Early Learning Program to Grade 8. An academic program is designed from the Ontario Curriculum and the Ontario Catholic Graduate Expectations. Regarding resources, the school is equipped with some learning resources that help the teaching and learning process including but not limited textbooks, manipulatives, few pieces of laptops, chrome books and iPads, apps and websites, etc. The school is a beneficiary of the TCDSB Educational Research Department which helps to improve learning by supporting and fostering evidence-informed approaches; promoting reflective inquiry by collaborating with educators and educational partners committed to research that informs practice.

Setting. It denotes the research site. The present study made use of school's computer lab, and an operational Bring Your Own Device (BYOD) system including personal electronic devices such as iPad, iPhone, etc. all of which formed part of the selection criteria for participants and classroom or research site. The peerScholar platform and the Ontario Elementary Curriculum and related documents of the Ontario Ministry of Education were used.

Content

Content refers to ideas or meaning expressed in writing, and it is assessed in terms of the extent to which those ideas are elaborate, developed, logical, consistent, engaging, and creative as well as relevant to the task requirement (Bae, Benler, & Lee, 2015). In the present study, the domain, narrative writing task was taught as generative learning and intellectual skill draft, edited draft, and final draft, aimed to develop the participants' language and academic skills, but such skills are developed subconsciously through the content dealt with. Three variables comprise the content factor: domain, task, and critical thinking required.

Domain. The domain in the present study is narrative writing, which can be taught as generative learning and intellectual skill draft, edited draft, and final draft. Concerning learning domains involved, it was expedient to consider the extent of the motor (typing ability) and intellectual skills, verbal information learning and cognitive strategies (self-correcting) to augment or supplant learner precepts which the present study took into consideration.

Task. A task in writing refers to real-world language use for purposeful communication (Willis, 2004) or a classroom activity similar to those that learners might engage in outside the classroom (Lightbown & Spada, 2006) and therefore an essential unit of instruction (Richards & Rogers, 2001). Javed, Juan, and Nazli (2013) argue that a real-life communicative writing task in a language classroom should be one that is logical and coherent (grammatical or structural unity

and coherence). These researchers further state that the unity of sense or meanings are also essential for high-quality writing. The task of the present study is comprised of narrative writing and re-writing involving learnings in manipulating, producing, or interacting while participants' attention is focused on mobilizing their grammatical knowledge to express meaning.

Critical thinking. Some philosophers concur that critical thinking comprises different abilities such as identifying a problem and also its underlying assumptions, analyzing and understanding that problem, applying inferences and inductive and deductive logic in elaborating it, and assessing the veracity of the premises and sources of data (Paul & Elder, 2006). The receiver of information should analyze the received data and comment on it; hence, his/her role is very critical**.** Cohen (2010) and Tittle (2010) argued that in critical thinking, the design of a classroom should move away from a model that largely neglects thinking to one that prioritizes it as bearing paramount importance. Content, from the standpoint of critical thinking, is something alive only in mind as modes of thinking driven by questions which appear in textbook to be developed in the learners' minds (Lunenburg & Lunenburg, 2014). In the present study, a narrative writing task emphasized a story and a personal identification with a character or characters. In this framework, the present study used a sequel of a popular and award-winning Disney World movie for children as a writing task because of its ability to hook children audiences, activate the pleasure of principle, and facilitate retention. The framework also helped participants to identify problem, conflict, solution, and character(s) with the help of graphic organizers and story maps.

Learner

Four variables comprise the learner factor: attitude, competence, capacity, and demographics.

Attitude. Attitudes are likes and dislikes, with roots in social, emotional, behavioural, and cognitive experiences and can have a direct impact on students' performance in specific learning tasks (Mann, 2005). Graham, Bergninger, and Fan (2007) refer to writing attitude as the writer's feeling about his/her passion, which ranges from happy to unhappy. Writing attitude is also the writer's evaluation of their writing. Anxiety is reflected in the behaviours of apprehensive writers as they write, in the attitudes with which they express about their writing, and in their written products. Earlier work of McKenna, Kear, and Ellsworth (1995) indicates that students who showed a positive attitude towards writing are more eager to involve in writing task than their peers who hold negative attitude on the same task. In their study, Graham et al. (2007) found that writing attitudes can be a significant predictor of writing achievement. These researchers found that students who had positive writing attitude got better achievement in writing task than those with a less favourable attitude towards the same task. Attitude can also be a value-laden (e.g., academic, personal, professional), or motivational (e.g., goals, interests, perseverance). Students' "attitude" can have a direct effect on student performance in specific learning tasks. The participants' positive attitudes and perceptions about learning and the researcher's classroom was a critical success factor during the present study.

Competency. It is the result of conscious activity, either a learning experience or another life event (Mann, 2005). Javed et al. (2013) suggest that competency is an assessable knowledge, skills, and abilities that distinguish superior performance from an average one. In writing, competency includes the ability to write clearly and accurately for a general audience, write effectively in relation to a specific genre (i.e., narrative writing), and adapt one's mode of writing to different audiences and purposes, use of appropriate conventions as well as the ability to engage in the writing process. Competency also includes the use of multiple drafts, revisions,

editing, and review. Writing skill is to construct grammatically correct sentences and to communicate meaning to the reader. Javed et al. (2013) enumerated specific narrative writing skills as narrating stories, incidents, events with a proper sequence in chronological order.

Capacity. It concerns the innate talents and abilities of the students (Mann, 2005). The capacity theory of writing provides a framework within which to consider the development of writing skills. According to the capacity of writing, children's writing processes function as though they are encapsulated because of linguistic processing limitations, and therefore knowledge telling might be a useful strategy for beginning writers because it enables children to generate text, although many of their linguistics processes are not sufficiently fluent in enabling the processing interactions characteristics of more skilled writers (McCutchen, 1996). Evaluating students' writing performance must be based on multiple samples of varied types of writing to reliably estimate a student's actual writing capacity to write (Troia, 2014). This is so because writing task is heavily influenced by topic and generic knowledge, motivation, application of writing skills, task parameters, and so forth. These are the variables that fluctuate across writing occasions and genres of writing (Graham & Hebert, 2010). The present study, therefore, made use of consistent scoring by using other raters to validate scoring judgments independently.

Demographics. Generally, demographic data includes information about income, age, sex, race, cultural background, level of education, etc. Regarding demographics, some evaluators like to collect demographic data that apply to their data interpretation (Mann, 2005). The present study benefited from the rich student diversity of the local school where the current research was conducted. In writing, demographic also refers to the audience. The present study took into consideration the audience for narrative writing task used. The Sequel to Frozen narrative task

used in the present study was tailored for an audience and writers interested in their identity with regards to who they are and what they see each day.

Post-and-Vote Model

The post and vote model of expert-peer online assessment is a method of collecting and analyzing peer feedback and assessment data using a variety of web tool features (i.e., posting and replying to discussions, online chat, student progress tracking, grade maintenance, student viewing area, among others). The model emerged in the late 1990s and have since evolved over the years given the rise in the need to manage the high volume of student postings in 'discussion board.' However, two key components remained unchanged: 1) using web tools together as a system of tools for an intended purpose (Mann, 2005); and 2) increased student involvement in the assessment process (Sluijsmans, Brand-Gruwel, & van Merrienboer, 2002).

The Post-and-vote model is a partially open, four-step of web-based peer assessment. In the present study, the post-and-vote-model is both a focal system of peer feedback and assessment as well as a focal system of web-based peer feedback and assessment using the features provided by peerScholar, the facilitating web tool. Mann (2006) outlined the general format for using the post and vote model is as follows: 1) student accesses the discussion board for comments about an assignment and preliminary ideas for possible submission; 2) student uploads individual assignment for subsequent viewing by peers for peer feedback and assessment; 3) student "votes' by assigning a number grade (assessment) and a written comment (feedback); and 4) student then waits for "concatenated" votes and comments from peers and instructor.

"Student's final mark" in the Post and Vote Model is determined as an average of the instructor's and student assessors' marks, a formula called the Post-and-Vote model of Expert-

Peer Online Assessment Formula. The Post-and-Vote Model of Expert-Peer Online Assessment and its formula use standard statistical methods for increasing accuracy rates from multiple assessors. This method and formula were applied in 1999 to evaluate Australian aboriginal students' unique way of learning from a computer that could not be appropriately assessed using conventional means (Mann, 2005).

Reliability and Validity of Post-and-Vote Model

In peer feedback and assessment, reliability refers to the consistency and agreement of rater in rating peers (Jackson, 2014). Generalizability theory is frequently used to assess rater reliability rather than classical test theory. Studies in which generalizability is used to determine rater reliability incorporate error terms from multiple sources (i.e., person, rater, group, and the interaction among them) (Webb & Shavelson, 2005) whereas classical test theory is the mathematics behind creating and answering test and measurement scales with the goal to improve the reliability and validity of tests (Kohli et al., 2015)**.** Validity in peer feedback and assessment is the comparison of peer ratings to the actual scores assigned by a teacher or an expert.

Reliability and validity is a consistent challenge for the acceptance of peer feedback and assessment in general among students and teachers in the primary, secondary and higher educational institutions (Falchikov & Goldfinch, 2000**;** Van Zundert et al., 2010). Both instructors and students are wary of peer assessment with regards to its reliability and validity. They seem to be uneasy about whether a rater would grade, for example, a writing paper for the second or third time the same, or whether peer-generated grades reflect deep paper quality (Cho et al., 2006). These researchers argue that peer feedback and assessment could be as reliable and valid as instructor ratings since instructors may rush to evaluate papers due to vast heaps of

papers whereas peers are shouldered with the responsibility of assessing a small stack of papers, and thus they devote more attention during the feedback and assessment process. In the case of the latter, each paper could be assigned to multiple peers. Friendship is one influencing factor of this challenge regarding a potential scoring bias. In the present study, to alleviate scoring bias, indicators for reliability and validity were examined. Reliability can be expressed as inter-rater and intra-rater agreement (or the consistency agreement). Brown, Glasswell, and Harland (2004) defined inter-rater agreement as different assessors awarding the same score to the same performance typically expressed as Cohen's Kappa or Krippendorff's alpha when each assessor also assesses multiple performances. Inter-rater consistency, as used in the present study, refers to the pattern in the distribution of scores across a set of assessors expressed by Spearman correlation in the case of two assessors or by a Cronbach's alpha when each assessor evaluates multiple performances. Validity typically addresses the degree to which a specific measurement instrument captures performance. Previous studies have examined the validity of peer assessment instruments mostly by comparing peer assessment scores with an instructor or an expert - rater (Yoon, Park, Myung, Moon & Park, 2018)**.** The reliability and validity of peer feedback and assessment can be estimated by considering the degree of agreement with the average scores obtained from students (Magin, 2001). If raters are not trained in the application of rubrics, the reliability and validity of assessment cannot be improved (Chang, Tseng, Chou, & Chen, 2011).

In his study, Mann (2012) conducted two tests of the reliability and validity of post-and-vote method with undergraduate education students by calculating a Pearson product-moment correlation and the corresponding coefficient of determination that compared the average grade assigned by pre-service teachers with the grade assigned independently by the course instructor. The findings of his studies showed that post-and-vote web-based peer assessment was valid with

the group of pre-service teachers, and generalizable to undergraduate classes engaged in similar tasks. In the present study, the post-and-vote method was applied with middle school students to examine and analyze the reliability and validity of student assessment and the democratization of the assessment process using the peerScholar platform, an automated peer editing tool. To clarify: "voting" in the sense as used in the present study means "assign a mark," which is peer assessment. The student participants also gave "justifying comments," which is peer feedback.

Similarly, the experts (inter-raters) independently assigned marks to the second submission using the features in the "assess phase" of peerScholar. In the present study, the reliability and validity of the scores on performance assessment were based on 'observable attributes,' the content relevance and representativeness. Also, the reliability and validity of the scores were based on 'student contribution.' the written feedback comments and the peer assessment (the number grade). The reliability and validity were determined through correlations of different raters, the experts, who measured the same performance using the same instrument, the structured rubric, given to the student participants. Interpretations of validity, reliability, and generalizability from the data are presented later in this thesis report.

Peer Accountability

In peer feedback and assessment, accountability for a given performance dimension takes place when a student is held responsible for the quality of completed work on that performance dimension. Accountability is especially crucial for ensuring high-quality participation when students are given a task (Patchan et al., 2017). These explicit accountability approaches would include: 1) grades for comment quality based on teacher overview; 2) grades for comment helpfulness by peer rating, and 3) grades for consistency based on reviewer weights. Student assessor can be "accountable," told in advance that the instructor will be grading the quality of

their peer assessment. Being "accountable" requires that students be accountable to both the teacher and their peers. Students knowing that they will receive grades or points from peer assessments is a powerful incentive for students to prepare for and participate in group work of a course (Cestone, Levin & Lane, 2008).

Integrating peer accountability as a condition in peer feedback and assessment do help improve the quality of peer comments (Topping et al., 2005; Tsai et al. 2001) and eventually the quality of writing. Although, there is no empirical evidence on the effect of peer accountability on peer grading and comments in online peer assessment to support this claim (Wadhwa et al., 2006). However, studies on the effect of accountability on the consistency of quality of peer feedback and peer assessment ratings indicate that constructing helpful comments could have a broad influence on peer assessment and consistent ratings are grounded in commenting (Patchan et al., 2017). In their study, 287 undergraduate students' peer feedback comments and assessment ratings were coded for rating consistency, comment helpfulness, amount of feedback, and feedback features which are the effects of explicit accountability on rating and comment quality. The study examined rating consistency using reliability coefficient generated by "SWoRD," "comment helpfulness" measured as a mean of the "received feedback review ratings," "amount feedback" measured the volume of feedback (i.e., length per comment X number of comments) as well as the sum of the number of comments provided across dimensions. Feedback features were coded for using classification to detect whether comments included criticism, a solution, and localization. The results of their study indicated that peer accountability improved the quality of the feedback comments provided by the assessors; increased volume and number of long comments, and sometimes the total number of criticism, solutions, and localized comments (specifying where problems occur in a writing activity). In a

recent experimental comparison of accountability (more accountable vs. less accountable) and anonymity (anonymous vs. named) in Web-based peer assessment, Wadhwa et al. (2006) found that more accountability improved the quality of student peer feedback and assessment. However, the peer evaluation process also reduces student motivation to participate unless its use is clearly communicated and aligned with students' expectations and values for its use (Chen and Lou, 2004). Therefore, the present student sought to examine the effects of accountability on the consistency of peer ratings and quality of peer feedback with a focus on two main aspects: feedback (comment) and assessment (ratings/number grade) and improved writing quality.

Peer Feedback and Assessment

Many teachers confuse feedback with assessment (Lu & Law, 2011). The present study treats feedback and assessment separately; peer feedback as giving comments on the work or performance of peers and peer assessment as applying criteria for assigning grade or rate to the work of peers. The present study investigates the effects of peer feedback and assessment on the successive drafts of middle school students' narrative writing as a learning outcome for the assessor and assessee.

Peer Feedback

Feedback refers to all of the post-response information that informs learners about their actual form of learning or performance to regulate the further process of learning in the direction of the learning expectations strived for (Narciss, 2008, 2012; Shute, 2008). Falchikov and Blythman (2001) also refer to peer feedback as giving comments on the work or performance of peers, which involves reflective engagement on the part of the receiver. Liu and Hansen (2002) describe peer feedback as an activity during which learners provide and receive feedback on their peer's writing in the written mode in pairs or small groups. The source of peer feedback is the

learner's peer, in which student of equal-status (grade level) provides feedback. In the present study, the term 'peer feedback' refers to a peer feedback activity as a whole, including both the process (i.e., peer interaction and collaboration) and product (i.e., the actual feedback/comment provided by peers) of the activity. Peer feedback is used in the current research to denote the use of learners as sources of information and interactants for each other in a way that the learners take on the roles and responsibilities usually carried out by trained teachers in commenting on and critiquing each other's drafts in the process of writing. A typical peer interaction when learning how to write is reciprocal peer feedback, where student writers receive feedback comments from peers and at the same time provide peers with feedback comments; simultaneously playing the roles of the feedback providers and receivers (assessor and assessee) (Tsivitanidou et al., 2017).

In recent years, the process of providing and receiving peer feedback has been increasingly facilitated online. Asynchronous and written peer feedback is the most popular instance of online peer feedback (van Popta et al., 2017). The rapid advance of educational technologies and their increased usage in post-secondary and some secondary and primary classrooms have caused students to read online feedback (henceforth e-feedback) provided by an unseen virtual instructor, by their peers and also reciprocate in the same manner and sometimes by an unseen virtual instructor or by the computer itself (Ciftci & Kocoglu, 2012*).*

Noted effectiveness and benefits of peer feedback. The examination of theories related to peer feedback, in general, demonstrates instructional benefits. The use of peer feedback in writing instruction has drawn support from several theories from different disciplines, including writing (Vygotsky 1987; Liu & Hansen 2002; Zhu & Mitchell, 2012). These theories include process writing theory, collaborative learning theory, interactionist theory, and sociocultural

theory. The process theory, which was first published in the manifesto of Donaldksi Murray, focuses on the process of writing, and views writing as a dynamic, nonlinear, and recursive process of meaning-making and knowledge-transformation rather than a product-oriented activity (Flower & Hayes 1981; Chenoweth & Hayes 2001). Peer feedback, in the process-oriented writing classroom, serves as a significant component that facilitates the process of writing by providing opportunities for learners to find and negotiate meaning, to explore effective ways of expressing meaning, to practice a wide range of language and writing skills, and to assume a more active role in the learning process (Hu, 2005). The collaborative learning theory, rooted in Lev Vygotsky's zone of proximal development, posits that feedback obtained from peers has the potential to contribute to learning, which is considered a socially and collectively constructed activity. Hu and Lam (2010) argue that peer feedback could facilitate peer interaction and collaboration. It creates 'a facilitative socio-interactive environment in which learners receive social support and scaffolding from peers. It is through collaboration among peers that students acquire knowledge such as linguistic knowledge and writing skills (Liu & Hansen 2002). The interactionist theory, credited to many contributors such as Lev Vygotsky, Jerome, and Bruner, among others, emphasizes the critical role of various types of implicit and explicit feedback on language development. According to this theory, the decisive role of peer feedback in writing development is to that writers need to engage in meaning negotiation. This theory also implies that the interaction during peer feedback facilitates learning by providing learners with sufficient comprehensible input so that learners can modify their own output. (Hyland & Hyland, 2006). Although the theories discussed above have their criticism, these theories do provide theoretical insights into peer feedback research and inform the pedagogical use of peer feedback in the classroom (Lee, 2017).

It is generally agreed that feedback plays a vital role in learning. Hattie and Timperley (2007), for instance, argue that feedback is one of the most potent variables influencing learning. Other researchers have demonstrated that peer feedback enhances learning by enabling the learners to determine their weaknesses and strengths and receiving concrete ideas on how to improve their work (Xiao & Lucking 2008). Several beneficial characteristics of peer feedback have been identified for students. Peer feedback enhances the learning of both assessors and assessees (Li et al. 2010) by strengthening the critical thinking skills of the assessors and by providing timely feedback to the assessees. This increases the time spent thinking about, comparing, contrasting, and communicating about learning tasks. Furthermore, these researchers suggest that assessors review, summarize, clarify, diagnose misconceived knowledge, identify missing knowledge, and consider deviations from the ideal. Assessors who provide high-quality feedback have better learning outcomes (Li et al., 2010). Liu and Carless (2006) argue that the process of peer feedback engages students actively in learning and helps develop self-management and judgment, strengthens the capacity for self-assessment, and helps to develop subject knowledge. These researchers further indicated that learning to provide peer feedback may even prepare students for life beyond the classroom. In a study of 54 second-language learners, de Guerrero and Villamil (2000) concluded that partnered peer feedback offers an opportunity for both reader and writer to participate in and learn from the activity.

Regarding online peer feedback, some authors argue that online peer feedback plays an even more critical role in online learning (Lynch, 2002; Pallof & Pratt, 2001) compared to traditional face-to-face learning. Providing peer feedback gives students more critical insight and activates processes of reflection. Research by Nicol (2012) indicates that giving online peer feedback involves meaning-making and knowledge building. The study also shows that in

providing online feedback, students connect new concepts to what they already know. In a more recent study, Nicol (2012) argue that in the online feedback process, students construct explanations for their peers (reflective knowledge building) and as a result, the students' own knowledge and understanding are enhanced as a by-product of the production of these explanations. Furthermore, Nicol (2014) concluded that depending on the depth of the mental processing, the new conceptual knowledge will be incorporated into existing knowledge networks and will become a personal asset that can be used by students and adapted and applied to the new learning context. The act of providing evaluative judgments as part of peer feedback is a 'knowledge-building' process.

The results of the studies cited in this research clearly and coherently indicate that peer feedback plays an essential instructional role in the writing classrooms by providing "students with the information that either confirms what they already know or change their existing knowledge and beliefs" p. 2 (Mory, 2004) cited in Ertmer, Richardson, Belland, Camin, Connolly, and Coulthard (2007). Some studies have suggested that there might be a difference in learning effects between receiving and providing written peer feedback in online learning. These studies have indicated that the learning effects of giving online peer feedback can have a lasting impact as long as students invest time and effort into actively constructing content-oriented responses. Liu et al. (2001) concluded from their study that using peer feedback in an online format to provide written comments requires students, peer assessor, to read, compare or questions ideas; suggest modification; and even reflect on how well one's own work compares with others.

Although some research studies indicate that peer feedback is more beneficial, most studies have only focused on college students. More than that, studies comparing the effects of

peer feedback on assessors and assessees on secondary and primary school students are rare. Contrary to the fact that peer feedback is a two-way process, many studies on peer feedback appear to focus on the value attributed to the receiver. The present study explores the added value of peer feedback on the provider.

As discussed above, there is an assertion that students can gain more from providing and receiving peer feedback other than merely submitting their written work to their teachers. Drawing from the work of Liu and Hansen (2002, p.1), peer feedback is defined, for the purpose of this study, as the use of students as the sources of information and interactions for each other in a way that a student takes on the roles and responsibilities usually carried out by a teacher in commenting and critiquing each other's drafts in both written and numeric format during the writing process. The purpose of peer feedback is to improve the writing quality of their peers based on the amount, level, value, worth, quality or success of the written products or outcomes of learning of peers of similar grade level. In this context, the focus of peer feedback is on helping students to identify the strengths and weaknesses inherent in their performance and to improve it, possibly, through a subsequent formative assessment.

Peer feedback and writing. In the context of writing, there is a general perception that peer feedback plays a more beneficial role in text revision (Yu & Lee, 2016). Zhoa (2010) investigated 18 Chinese EFL learners' use and understanding of teacher and peer feedback. The findings of this study showed that the participants incorporated less peer feedback (46%) compared to teacher feedback (74%) in their revisions. However, the findings also indicated that only 58% of teacher comments, compared to 83% of peer comments, were incorporated into revisions with their importance or value being understood by the student writers. These findings

posit that student writers clearly understand peer feedback and that they may benefit more from peer feedback than teacher comment.

In a study of the impact of peer feedback in comparison to that of teacher feedback on students' writing performance in an academic writing context, Eksi (2012) collected data from peer responses from first drafts, revisions, and comments from the instructor on the last drafts and student reflections in journals of 48 participants. One group received training on effective peer feedback while the other group received teacher feedback on their draft writings. Frequency counts in this investigation showed that both groups improved writing quality; the peer-reviewing group made many surface-level changes and gradually increased deep-level changes.

Huisman et al. (2019) investigated the impact of peer feedback on students' academic writing performance by synthesizing the results of 24 quantitative studies reporting on higher education students' academic writing after peer feedback. These researchers found that peer feedback significantly moderated the impact that peer feedback had on students' writing compared to when no feedback is provided at all.

According to Davies (2006), peer feedback when used as formative – with no grades involved, it benefits students the most. Also, Van Zundert et al. (2010) upon the review of 26 peer assessment research studies found that empowering students to revise their work on the basis of peer feedback improved domain-specific skills such as assembling words into meaningful sequences – the ability to build sentence structures and construct meaning using context, planning and organizing ideas, and the ability to generate unique ideas, among others.

Although, peer feedback is often seen as a critical component of the learning process (Graham et al., 2015), exactly how specific feedback features contribute to the effectiveness of feedback during writing assignments still remain unclear (Molly & Boud, 2014; Shute, 2008). In

their study, Patchan, Schunn, and Correnti (2016) investigated not only students' likelihood of implementing a comment but also the quality of their revision. The empirical test included the analysis of over 7,500 comments from 351 reviewers to 189 authors. Each comment was coded for the presence of praise, a problem description, a suggested solution, implementation, and revision quality. The researchers found only two feedback features (praise and localization) increased students likelihood of implementation. In the context of their study, praise refers to a comment that describes a positive feature of a paper and localization is a comment made directly in the margin of the document, stating clearly what problem occurs. The results of their study indicate that high-prose and substance issues lead to more significant improvement in the text quality. The results further suggest that when writers attend to substantive areas in their revision, they are more likely to improve their writing. Examples of high-level prose include issues such as transitions, appropriate evidence, among others whereas examples of low-level prose include problem such as grammar, word choice, spelling, among others. However, Patchan et al. (2016) revealed that the control variables to account for the amount of feedback such as writer ability, reviewer ability, an interaction of writer ability, the total number of comments received, and the number of implementable comments received didn't significantly predict whether a student implemented a comment or whether a student improved the quality of their draft.

Regarding peer feedback-giver, relatively less research has investigated the possible benefits for those who offer feedback to their peers (Topping, 2010). Berggren (2015), through a qualitative approach, investigated how giving peer feedback could improve the writing development of the peer feedback-givers. With a focus on two classes of Swedish lower secondary students, the study examined data from their drafts, feedback criteria checklist, and feedback forms. Findings from this study revealed that the peer feedback-givers raised the

awareness of audience and genre, and the feedback process stimulated their revisions and improved their writing at the global level, particularly the content. In their study, Lundstrom and Backer (2009) examined whether giving or receiving was beneficial to ELS university student writers. The control group (the 'feedback-receivers') didn't offer peer feedback to their peers' writing but only received peer feedback. The experimental group (the 'feedback-givers') didn't receive peer feedback but only give feedback to their peers. Findings from the analysis of students' writing ability at the beginning and end of the semester showed that the feedback-givers made significant gains in their writing compared to the feedback-receivers evidenced by the more increases on global (i.e., organization, cohesion, and development) than local aspects (i.e., vocabulary, mechanics, and grammar).

While the studies of Berggren (2015) and Lundstrom and Baker (2009) and others revealed positive benefits for feedback givers, the results of some studies, for example, Trautmann (2006) and Rosalia (2010) showed a contradiction. In Trautmann' (2006) experimental study on the extent to which university students learned through receiving versus giving feedback, the results showed that receiving peer feedback was more beneficial than giving feedback in triggering revision in students' research reports. Using a mixed-methods approach, Rosalia (2010), investigated the impact of peer feedback-giving on the feedback-givers through data from interviews, writing proficiency tests, peer comments, and documents (i.e., field notes and writing samples. Findings from this study revealed that the experience of giving feedback did not improve students' writing quality on time persuasive writing test although essays written by peer feedback-givers showed a greater range of metadiscoursal features.

In view of the two categories of studies discussed, current studies showed that peer feedback-giving illustrate some positive impacts on feedback-givers' writing performance and

text revisions. However, the conflicting findings may be due to the different contexts (i.e., school setting and ESL/EFL) in which the studies were carried out as well as the research methods (qualitative, quasi-experimental, and mixed-methods) used. Thus, more classroom-based research with multiple sources of data (writing drafts, text revisions, interviews with teachers and students can be conducted to investigate this issue from a broader perspective.

A plethora of recent studies suggests that peer feedback serve different purposes in students' text revisions, indicating that peer feedback approaches should be integrated into the writing classroom (Lam, 2013). These studies have provided generally positive evidence to support the use of peer feedback in writing classes compared with early studies (i. e., Connor & Asenavage, 1994; Carson & Nelson, 1994; Zhang, 1995; Paulus, 1999). This string of early research studies is significant given that researchers provided empirical evidence regarding the effectiveness of peer feedback in writing. Although, the long-term impact of peer feedback on students' writing development and firm causal evidence are still unclear. Aside from the more immediate impacts of peer feedback on text revision and writing quality, experimental and ethnographic research can be conducted to examine the impact of peer feedback on different effects of students' writing development (i.e., organization, content, fluency, and accuracy) over a more extended time period (e.g., one or more academic years).

Noted Criticisms of Peer Feedback. Although the effect of peer feedback on learning is widely acclaimed, the number of studies that investigated learning effects is limited (Van et al., 2009; Van Zundert et al., 2010). Some research show that feedback does not automatically translate into positive results (Narciss, 2008; Shute, 2008); its efficacy is not entirely positive. Hattie and Timperley (2007) argue that the constructive effects of affective feedback, whether positive or negative, are limited because they do not address the cognitive content of the work

under review and therefore affective feedback fails to bring about greater task engagement and understanding because it usually provides little task-related information. Also, as students are not experts in a subject area, peer feedback is susceptible to variation. Students sometimes have doubt about their peers' knowledge and their own in a particular subject area (Hanrahan & Isaacs, 2001), as well as the skills required to provide peer feedback (Van Gennip & al., 20l0; Walker, 2001). Students often have difficulty assessing their roles in the peer feedback process. This leads to some students to exhibit excessive levels of passivity or authoritativeness. Besides, some students are not quite aware of the intended purpose of peer feedback and therefore result in providing surface-level errors for which they need to be encouraged of their peers' ability to engage and assist them in revision thoughtfully and must also be instructed and guided in how best to undertake the task. Other critics of peer feedback (Tsui & Ng, 2000) argue that students often focus on non-revision based changes. This situation, according to authors, causes the process to be ineffective because students are often unsure of their group roles and unfamiliar with the purpose of the feedback process (de Guerrero & Villamil, 2000).

Peer Assessment

Peer assessment is the quantitative evaluation and qualitative feedback of a learner's performance by another learner (Patchan et al., 2016). Topping et al. (2000) referred to peer assessment as an arrangement for peers to consider the level, value, work, quality or successfulness of the products or outcomes of learning of others of similar status. It is typically implemented in classrooms with the intention to develop the knowledge or skill of all learners involved. This form of peer assessment combines summative assessment (i.e., peers evaluate an individual's work to assign a grade) and formative assessment (i.e., peers provide constructive feedback that could help an individual improve his or her work) (Patchan et al., 2016). Student

involvement in assessment has a thirty-year or more history and is becoming more prominent (Falchikov & Goldfinch, 2000) during which time peer assessment has been adapted as a strategy for "formative assessment" (Cheng and Warren, 1999) or assessment 'for' or 'of' learning (Geilen et al., 2009**.** In most formative peer assessment models, students act as both assessors and assessees. As assessors, students review peers' work and provide constructive feedback. As assessees, students receive feedback and may make improvements accordingly. Through such processes, peer assessment becomes a strategy for formative assessment and a tool for reflection. This process is referred to as reciprocal peer assessment in which students assess each other's work. It aims to support peers in identifying the strengths and weaknesses of their work, as well as to provide tips for improving their work (Topping et al., 2003).

In a reciprocal peer assessment process, all students take on both roles as assessors and assessees. The role of an assessor imposes the need for a student to assess peer's work and therefore requires such student to possess specific peer assessment skills including defining criteria, judging peers' performance as well as providing feedback. The role of an assessee comes as next stage in a reciprocal peer assessment, which involves the review of peer feedback and revision of student's own work. When student switch role from being an assessor to being an assessee, in the context of reciprocal peer assessment, so does also with the required skills (Geielen & Wever, 2015). Since student assessor is a novice in their discipline, and may not have elaborate domain knowledge, the assessee needs the skills to filter peer feedback before revising their work; knowing that peer feedback can include correction information as well as flawed peer feedback comments (Tsivitanidou et al., 2017)). In a traditional classroom, too much focus has been placed on an assessment by grading, while too little emphasis is placed on assessment as a way of helping students learn (Lu & Law, 2011). In recent, peer assessment has been adapted as

a strategy for ‘‘formative assessment’’ or ‘‘assessment ‘for,’ for of learning’’ and for involving students as active learners (Gielen et al., 2010; Topping et al., 2000).

Online peer assessment has become widely popular since the arrival of the Internet and has significantly altered the process of assessment (Tseng & Tsai, 2007). This is so because an online assessment has many advantages over face-to-face assessment (Yang & Tsai, 2010). It enables students to communicate with peers and to reflect on and continuously revise their work based on assessment (Yang & Tsai, 2010). Most ‘Online systems’ do have such functions as assignment submission, storage, communication, and review management (Lin, Liu, & Yuan, 2001). Online systems, therefore, have the potential to increase the willingness of students to engage in peer assessment by allowing students to anonymously grade peer when and where they like (Tsai & Laing, 2009). Also, these systems enable teachers to monitor the online activities and progress of their students more closely (Lin et al., 2001), and also would allow researchers the ability to collect information about students or participants of a research projects by automatically recording data about assignments, online participation and communication (Tsai & Chuang, 2013). These authors, based on their study, posit that online systems can also allow teachers to automatically assign students to review more heterogeneous or homogeneous work based on background features such as gender, achievement, and preferences.

Noted effectiveness and benefits of peer assessment. Assessment has an essential influence on the strategies, motivation, and learning outcomes of students. Research on peer assessment has gathered substantial evidence on pedagogical (Falchikov & Blythman, 2001), cognitive (Nelson & Schunn, 2009; Tseng & Tsai, 2007), meta-cognitive, and effective advantages (Strijbos, Narciss, & Dunnebier, (2010) of peer assessment on student learning (Topping, 2003).

Topping (2010) reviewed six experimental and quasi-experimental designed studies of peer assessment identifying strengths and weaknesses as well as variables related to possible outcomes of peer assessment. These studies are discussed next.

Van Zundert et al. (2010) study revealed that training and practice improve the reliability of peer assessment and positively affect student attitude. Male students appear more positive in attitudes to peer assessment that females (Van Zundert et al., 2010) although gender differences clearly warrant further attention. Peer assessment, re-observing, and rescoring yield better performance but takes time. The findings regarding training and practice are consistent with previous studies conducted on the effect of peer assessment training at the university level which have shown to impact positively on students' writing performance and feedback exchange in most aspects of academic activities (van den Berg et al., 2006). Besides, subsequent studies on peer assessment training have shown effectiveness in influencing learning and articulating judgment, particularly when peer assessment training is conducted within a specific time framework. Almahasneh & Abdul-Hamid (2019) investigated the effects of using peer assessment training on writing performance and writing improvement among Arab EFL high school students (n=120). This study employed a quasi-experimental research design in determining the causal relationship between the independent variable and the dependent variable to see if there was a statistical difference in the impact of PA training on the writing performance to answer the following research question: "What is the effect of using PA training on the writing performance of Arab EFL high school students?" The result of the study revealed a significant difference in the writing performances between the experimental and control groups. The findings suggest that students who receive peer assessment training write a better draft compared with those students who were only given conventional training in writing an essay, and without

the benefit of peer assessment. The study also revealed that peer assessment allows students to use success criteria (based on the use of vocabulary, grammar, spelling, and other writing mechanics as necessary) to comment on and quantify the strength of each other's work. This helps students identify their own strength or performance. A result suggests that, when students properly received peer assessment training, they can successfully improve their writing skills.

Van Steendam, Rijlaarsdam, Sercu, and Van den Bergh (2010) et al. (2010) introduced two variables; peer assessment yields greater psychological safety and lowers value diversity than teacher assessment. Strijbos et al. (2010) revealed that more specific and elaborated feedback leads to better performance; the focus being the quality and the quantity of feedback in peer assessment. Gielen et al., (2010) study focused on peer assessment but not to the extent to which justification of peer assessment improves performance. Cho and MacArthur's (2010) study of experimental design point out that non-directive peer assessment yields higher gains than directive. Van Steendam et al. (2010) explained that practicing without modeling peer assessment results in cognitive confusion, whereas observations serve to filter information productively and focus the assessor. By combining the findings from these authors (Cho & MacArthur, 2010; Van Steendam et al., 2010), Topping (2010) concluded that a non-directive feedback of peer assessment is effective since it is related to greater psychological safety and lower value diversity suggesting that peer assessment leading to grades or marks is unlikely to be effective, whereas peer assessment leading to more elaborate feedback will be effective only if the feedback is non-directive. Other variables which worth further examinations include the exact nature of the peer assessment, the quality of the intervention, the measures employed, and the background context from which the peer assessors are drawn (Topping, 2010). The findings

from this string of researchers discussed have resulted in peer assessment being successfully designed and implemented in k12 classrooms and higher-education contexts (Topping, 2010).

Several other studies covering a wide range of subject areas have confirmed the benefits of peer assessment for student learning. These studies document benefits that peer assessment could offer to a learner (Topping, 2003). For example, Pope (2001), as a result of his research, considered peer rating as a tool to facilitate learning. In his study, forty master's students at an Australian university showed improved writing and reporting skills following peer rating, particularly in the area of 'spelling and grammar, referencing and logic'(p.242).

Greater exposure to peers' work enables students to view and critique a range of writing styles, techniques, ideas, and abilities thus encouraging them to learn from both the mistakes and exemplary performance of their peers. Also, Liu et al., (2001) documented that when writing feedback and assessment, students have more opportunities to engage in critical cognitive activities, such as critical thinking, planning, monitoring, and regulation. Even long before these research findings, Topping reviewed 109 papers focusing on peer assessment (Topping, 1998). He summarized his findings that peer assessment yields cognitive benefits for both the assessors and the assessees in multiple ways. He referred to these ways as follow: constructive reflection and identification of knowledge gaps increased time on task, attention on crucial elements of quality work and a greater sense of accountability and responsibility as well as improvements in writing through peer editing and enhancement in collaboration, including help-seeking and help asking attitudes.

There are other specific benefits associated with the enactment of the role of peer assessor. Hanrahan and Isaacs (2001) and Lin et al. (2001) indicated the development of assessment skills, the acquisition of a better understanding of what assessment is all about and

what is required to achieve a specific expectation. Other benefits include more opportunity to engage in critical cognitive activities, the chance to view others' work, thereby expanding their informational resources and the provision of examples against which they measure their own work. In the case of peer assessee role, Harlen (2007), Topping (2003) and Tsivitanidou et al., (2011) documented specific potential benefits. They cited the receipt of peer assessment that may be useful for students improving their work, an assessment from a peer who shares a similar language level, which then leads to better comprehension and the opportunity to see that their peers might be able to help them learn. Another associated benefit includes having the opportunity to engage in cognitive activities such as the critical thinking required to filter feedback comments by deciding what constitutes a good or poor assessment.

The cognitive conflict, social constructivism, and social learning theories can help explain why the various cognitive processes brought about by peer assessment (including self-evaluation, self-correction, self-adjustment, and self-reflection through giving, receiving and responding to comments) promote students' performance and cognitive growth. A growing body of empirical evidence since the 1990s has shown that peer assessment promotes students' critical thinking, cognitive development, and performance (Van Gennip et al., 2010).

In peer assessment, assessors apply criteria for assigning grades or ratings to the work of their peers. Many research findings have shown this to be a reliable and valid approach (Falchikov & Goldfinch, 2000). These finding support the fact that teachers often support peer assessment by giving students assessment rubrics to ensure consistent and reliable peer evaluations. By applying the use of rubrics to the work of peers, it was predicted that doing so enhances the assessors' awareness and understanding of the assessment criteria and, as a result, students are likely to make use of these in their own work more reflectively and attentively.

Rubric-supported peer grading enhances student learning. Students become more reflective, and their learning outcomes improve when they are involved in defining marking rubrics. Andrade (2015) defined rubric as an evaluation tool composed of a set of well-defined criteria in a structured format that covers the learning skills or competencies that all participants need to achieve. Panadero and Jonsson (2013); Panadero, Tomero, and Stijbos, 2013) suggest that rubrics: 1) add validity to peer assessment, provide transparency to the assessment process, and 3) help to reduce anxiety in the students (as they become more self-confident knowing beforehand how their assessment will be implemented). Other studies have shown that when both peer assessment and rubrics are implemented together, they improve the writing abilities of students (Cho et al., 2006; Xiao & Lucking, 2008; Panadero et al., 2013).

Peer assessment and writing. In the context of writing, peer assessment is an effective instructional way of promoting formal writing competencies in an active learning scenario in different settings, such as high school and university (Topping, 1998, 2003, 2005, 2009). Peer assessment is used extensively to improve students' writing (Liu, Carless, 2006) as well as other specific subject areas such as business and technical writing, psychology, composition, social sciences, engineering, geography, and computing (Topping et al., 2000). There is a particular value in peer assessment when students engage in dialogue, written comments, and evaluate writing products or performance about writing expectations standards (or expectations) of equal-status peers (Topping et al., 2000). Through this process, students learn not only from peer assessment but also through meta-processes such as reflecting on justifying what they have done (Liu & Carless, 2006). An earlier study by Flower, Hayes, and Carey (1986) determined that when learning to write well, peer assessment in particularly beneficial during the revision phase during which students practice social and cognitive aspects of response and revision. These

authors found that adequate peer assessment on writing includes analysis and evaluation followed by explanation, thus facilitating revision. The revision-phase benefits extend to the peer assessor as well, but first, the assessor must become familiar with the four dimensions generally accepted as essential for assessing writing: 1) organization, 2) writing conventions, 3) focus, and 4) support (Kolin, 2010).

In addition to the citations in support of peer assessment and improved writing discussed above, this thesis report also includes a review of two studies in support of peer assessment and writing improvement. These studies share similar designs and measures as those already cited.

Ramon-Casas, Nuno, Pons, and Cunillera (2018) explored a large group of undergraduate psychology students with different writing skills. In their study, 356 participants produced two different essays which were evaluated by their peers and instructor using a rubric as a grading instrument. The validity of the peer assessment was ensured by an inter-grader agreement and consistency between the ratings of the peers and instructor. To assess whether the tasks improved the students' formal writing abilities and whether their initial writing ability was an essential fact in any improvement, grades given by the instructor for the first and second essays were compared. The findings showed that although all participants did not improve their writing skills between the first and second essays, the peer assessment enhanced the writing abilities of low- and average-achieving participants but not high-achieving participants. To identify the differences in writing improvement in relation to the initial writing ability, participants were placed into three groups (low-achievers, average-achievers, and high-achievers) based on percentile ranks. The overall results revealed that the students did not improve their score, but the results showed a significant effect of writing ability level.

As an addition to the scant empirical investigation of peer assessment of writing among heterogeneously grouped native and nonnative speakers of English, Crossman, and Kite (2012) carried out a mixed-methods study including a quasi-experimental design examining the use of controlled peer assessment to improve writing among graduate students. The study was conducted with students from more than 60 countries; 138 nonnative speakers of English and 70 native speakers of English between the fall of 2008 and winter of 2010 using a modified version of the Optimal Model of peer critique of university work. Van Den Berg, Admiraal, and Pilot (2006) described the features of an optimal peer assessment design in higher education, as related to the acquisition of improved writing skills, as the 10 of 17 variables found in Topping's (1988) Topology of Peer Assessment in Higher Education. The study made use of a rubric to guide the directed peer assessment for formative assessment and summative assessment (final draft) for both analytical (evaluating the parts or traits of the product or performance) and holistic (evaluating or rating the whole product or performance) purposes. As the result of study's research questions (Will peer assessment improve the quality of a piece of coursework?; Which area will be the greatest gains?), the study found statistically significant gains between the initial draft of a business proposal compared to its final submission for each of the items measured: support, audience focus, writing conventions, and organization and that most significant gains occurred in support.

To sum up the benefits of peer assessment, peer assessor learns from critically analyzing and evaluating other students' work. The student that is assessed learns from their peer's assessment. It helps develop evaluative thinking skills and helps focus on criteria that improve the learning outcomes. Peer assessment motivates students' own sense of assessment as a result of negotiating and agreeing on criteria, understanding the system and having a share in the

marking. It provides an opportunity for the student assessors to judge their own work and hence improve their own performance because of a raised self-awareness of how assessment is undertaken, and what is assessed.

Noted criticisms of peer assessment. Although some researchers have provided positive evidence to support the use of peer assessment, others have emphasized the fact that the enactment of peer assessment is a somewhat complicated task. A particular note is made for primary and secondary school students who need to have an individual understanding of the goals of assessment and the ability to apply such using assessment criteria (Tsai & Liang, 2009; Cho & MacArthur, 2010; Topping, 2003, Tsivitanidou et al., 2011). These same researchers document the need to investigate the skills required for enacting peer assessment and to determine the point at which students in elementary school and secondary school grades have acquired these skills. These arguments lead to the assertion that little is known about what primary and secondary students can do in a peer assessment context regarding the quality of the feedback and assessment they can produce and how it can be useful for them and their peers.

Other issues raised in the literature include ‘friendship marking’, a tendency for students to over mark their peers due to social pressure and friendship (Topping et al., 20003; Slujismans et al., 2001) and the ‘ability of the peer assessor’ regarding their knowledge of the content in the domain assessment is made (Tsai et al., 2009). Some studies cite the fact that assessors may have insufficient prior domain knowledge with which to judge the work of their peers or an inability to provide neutral comments. Therefore, assessees may have difficulties accepting and adapting to assessment from peers. Gender effect is yet another issue which refers to the possibility of gender bias (Falchikov & Goldfinch, 2000). There is also an issue of anonymity. Waddhwa et al.,

(2006) argue that anonymous peer assessors do provide more "ruthless" assessment and suggest that anonymity is a "double-edged sword in collaborative learning."

Findings are mixed concerning the perspective of the assessees. In some of these studies, while students acknowledged the value of peer assessment, some students complained about the poor quality of peer assessment and feedback comments that they received. In their study involving 38 graduate students, Li et al. (2007) observed and documented that after experiencing an anonymous technology-mediated peer assessment, the students responded to a post-assessment survey and marked peer assessment as a worthwhile activity. However, when asked to report their least-liked features, the students called for more constructive and more detailed feedback; peer assessment context, especially in the context of the quality of the feedback they can produce and whether it could be useful for them and their peers. Despite the advantages suggested by some studies, peer assessment has been criticized for a number of potential weaknesses. For instance, when students are not given a structure for giving commentary, peer assessment has been shown to have a little practical effect on writing (Hansen & Liu, 2005; Rollinson, 2005).

Relatively few studies have been conducted focusing on how to guide student-writer who study English as a foreign language (EFL) to achieve peer assessment in a more structured way. Also, although available literature has identified benefits of peer assessment, there are relatively fewer research investigations into the possible benefits of the peer feedback-givers, the peer assessors, who review writing drafts and provide feedback to their peers (Topping, 2010). There is an apparent need, therefore, for more studies, most importantly, a middle school classroom-based with multiple sources such as writing drafts, revisions, and interviews to examine the benefits of peer feedback for peer feedback-providers, the assessors, as well as the assessees.

Despite the increased popularity of peer assessment within the educational settings, researchers point out that more peer assessment studies are needed to shed light on best practices to design peer feedback and assessment in educational contexts (Kollar & Fischer, 2010). While earlier literature stressed the effective potential of peer assessment to enhance student learning, Cartney (2010) writes: "It is increasingly acknowledged that the provision of peer assessment alone is insufficient to effect higher standard of work by students." This points out the key concern whether or not students can act on peer assessment received and are able to see connections with how they could improve their work. A study by Price (2005) drew attention to the fact that although explicit assessment marking criteria were in place, these were only part of the assessment process whereas the primary factor was the markers' unarticulated tacit knowledge of the assessment. Consequently, there is still a need to explore, through research, the effects of peer feedback and assessment on middle school students' writing process for accuracy, fluency, organization, content, etc.

Technology and Writing

Learning how to write is fundamental to becoming literate, and proficiency with writing is crucial to academic achievement, employment, and promotion in the workplace (Graham & Perin, 2007). Approaches to improve writing proficiency have been widely discussed and examined in the past, for example, by Graham and Perin (2007) and Kellogg and Raulerson (2007). The most effective support measures for novice writers seem to be strategy instruction, extended practice, and individualized feedback and assessment (Allen, Jacovina & McNamara, 2016). However, these measures required a substantial amount of added time and cost often not available in instructional settings (Allen et al. 2016). In light of the rapid development and accessibility of information and communication technologies (ICTs), the definition of writing

and the nature of writing instruction needs to be reconsidered (Williams & Beam, 2019). Over the last decade, digital tools have been presented as a method of engaging students in their literacy practices (Dressman, McCarthy, & Prior, 2009). Writing instructors have seen a significant increase in the incorporation of technology in the writing classroom due to societal and pedagogical demands (Nobles & Paganucci, 2015). Education has gradually been moving more online, and consequently, students ranging from k12 to graduate school are increasingly exposed to and required to use a variety of digital tools in a hybrid learning environment, more so, to augment writing instruction.

Some research shows that only using digital tools and online writing environment does not equate to increased student learning (Agee & Altarriba, 2009). Tools, as used in the present study, refers to writing technologies, disregarding their breadth and scope. Peraya (1999) defined tool as any device that uses digital technology to mediate some function of teaching and learning, ranging from a digital learning platform, environment or software and its services, features and components, to the specific functionalities it might provide. Other studies suggest that student perception of writing impacts writing quality (Woo, Chur, Ho, & Li, 2011), making it essential to understand how using these tools impacts students' writing quality. Teacher educators and educational researchers are in a position to influence pedagogy, practice, and research; consequently, it is crucial to be well-informed about how digital technology has been used in the writing program and to be knowledgeable about whether and how its use supports the development of students' writing skills. To that end, this section of the literature review explores research studies during the past two decades that examined the use of computers and ICTs in writing instruction. This review is timely, given the changing nature of literacy in our technology-embedded society and the need to develop students' 21st-century writing skills.

Noted effectiveness and benefits of technology and writing. Goldberg, Russell, and Cook (2003) carried out a meta-analysis of twenty-six (26) studies conducted between 1992 and 2002 with a focus on the comparison between k12 students writing with a computer versus paper-and-pencil to determine whether word processing impact the quality and quantity of k12 student writing. "Meta-analysis," a method first coined by Glass (1976) refers to the statistical analysis of an extensive collection of results from individual studies to integrate the findings. The inclusion criteria consisted of the following: 1) the study must be a direct comparison between computerized writing and paper-and-pencil published between 1992 and 2003, 2) the study must have 'quality of student writing' and /or 'quantity of student writing' and/or 'revisions of student writing as its outcome measure(s), and must focus on k12 students. Two research questions guided the study: "Does word processing impact k12 student writing? If so, in what ways (i.e., quality and or quantity of student writing impact)? and Does the impact of word processing on student writing vary according to facts, such as student-level characteristics?" In terms of outcome, three variables were measured: "quality," "quantity," and "revision" of writing. As findings, the authors determined an increase in the quantity of writing with the use of computer compared to paper-and-pencil while the quality of student writing incrementally improved with the gradual increase in grade level. Also, the authors found that students performed more revisions and motivation during the writing process using computers. Using available data, the authors determined that the factors that influenced the increase in the quality, quantity, revisions, and motivation of student writing using word processor throughout the writing process were increased peer and teacher feedback and assessment, and more student collaboration.

Similarly, Williams and Beam (2019) reviewed twenty-nine (29) empirical studies conducted and published in peer-review journals between 2002 and 2017 to investigate the use of computer and information and communication technologies (ICTs) during writing instruction and related writing activities. For example, the authors examined primary, elementary and middle school students' use of ICTs to compose narratives (Sessions et al., 2016) and informational and expository texts (Hitchcock, Rao, Chang, & Yuen, 2016) and high school students' use of ICTs to compose argumentative essays (Howell, Butler & Reinking, 2017). The authors also employed qualitative content analysis to investigate how technology was used in the writing program, the effects of technology-mediated instruction on students' writing skills, and the barriers teachers face in integrating technology into the writing curriculum. The criteria for inclusion consisted of the following: 1) study must be published in a peer-review journal between 2002 and 2017, 2) study examined the use of computers to teach writing and/or investigated k12 students' use of computer to compose texts, and 3) study was data-driven empirical studies (i.e., specified data sources). The time was chosen to reflect a comprehensive yet relatively recent review of the literature, the same reason for referencing this review in the present study. Three questions guided the study; "How is technology used to mediate writing instruction and related writing assignments among k12 learners? How do technology-mediated writing instructions and related writing assignments support the development of students' writing skills?; and What barriers do teachers face in moving toward technology-mediated writing instruction?" As findings, the authors determined that computer and a range of digital technologies, applications, and web-based learning environments have been used to teach writing in k12 educational settings. The findings also indicate that technology-mediated writing instructions yielded improvements in students' composing processes and writing skills such as

problem-solving and thinking skills (Kervin & Mantei, 2016), sequencing skills (Sessions et al., 2017), analysis and synthesis skills (Lawrence, McNeal, & Yildiz, 2009), among others. Using ICTs mediated planning, drafting, revising, and editing led to greater fluency in the recursive phases of the writing process (Turner & Katic, 2009; Yamac & Ulusoy, 2016). Also, the authors determined that use of technology motivated student engagement and participation in writing assignments and increased social interaction and peer collaboration.

Noted criticisms of technology and writing. In his study, Hult (2008) raised caution about the type of revision done when writing with digital tools. The author argues that based on the determination that a limited viewing pane on the screen and the tendency to substitute and delete in word processors as opposed to rearranging leads to poor revision. Hult (2008) determined that revision strategies are facilitated by word processing software. However, the simple introduction of digital tools is not sufficient to actuate improvement, but word processing in combination with revision instruction significantly improves the quantity and quality of revisions, drafts, and final products (Hult, 2008).

In their study focused on 189 sixth and seventh grade students and their use of computer technologies as part of the everyday literacy, Agee and Altarriba (2009) found that students were not necessarily inherently engaged by technology. The authors argue that appropriate instruction has to accompany the use of word processing to achieve the full effect. Similarly, Wheeler, Yeomans, and Wheeler (2008) observed similar results in a study of four groups of undergraduate education students in which students used a wiki throughout a research writing unit to create, store, edit, and discuss work. At the end of the course, students provided feedback on wiki use directly in the program as well as in a questionnaire. The authors noted that the presence of an unseen audience, as well as the lack of a spell check function, caused students to

construct texts with more exceptional care and precision, thus improving the quality of the composition. Also, the collaborative aspect of the wiki allowed for increased discussion and peer feedback, allowing students to gain skills in critical analysis and in turn, improve their own writing by observing others. However, the authors warned that proper instruction discussing the nature of editing, contributions, and text ownership inherent in wikis must be conducted to maximize beneficial learning.

In sum, the use of technology has both positive and negative effects on student writing. Incorporating digital tools with the appropriate classroom instruction do improve students' writing quality by fostering writing skills including ideation (i.e., generation and organization of ideas) (Graham, Harris, & Chorzempa, 2002) and transcription skills which allow generated ideas to be produced in written text and facilitates idea generation and development (Graham, Harris, Fink, 2000; Kim, Al Otaiba, Wanzek & Gatlin, 2015). Tools that provide students with an authentic, more comprehensive, and varied audience and foster greater student collaboration do enhance peer feedback and assessment thereby leading to critical thinking (Purcell, Buchanan, & Friedrich, 2013). The tools also enhance students' creativity and personal expression, engagement, and flexibility throughout the writing process and increased practice through motivation (Dymoke & Hughes, 2009). The understanding of students' writing skills, the relationship between students, and the availability of digital tools will enable writing instructors to teach students and improve the quality of their writing effectively.

***The facilitating platform*.** The peerScholar platform is an automated online tool used by teachers to manage required reading, writing pieces, assignments, and results for students' assignment – all through one Web-based interface (Pare & Joordens, 2008). The peerScholar platform is both a publisher application for teachers and creator application for students and is primarily used for peer assessment for any digital assignment given to students.

In the publisher stage, teachers use available tools to enter writing assignments, peer feedback and assessment and select how to set up the peer feedback and assessment, for example, how many feedback or reviews each student completes as well as deadlines for the entire writing process. After a project is completed, teachers can also look specifically at the participation and revisions of individual students – gathering data at both student- and class-levels over time. Also, the available tool allows teachers to include questions at the end of each step of the process, allowing them to conduct research either formally, or informally (i.e., reflective practice).

In the creator stage, this powerful online pedagogical tool helps develop students' critical- and creative-thinking skills related to writing using three phases: writing, evaluating, and reflecting. In the first phase, students are presented with an assignment created by their teacher. With a given time, students gain access to this writing phase. At this stage, students are provided with a rubric to evaluate their peers during the next stage. The second phase starts with an evaluation during which students develop their critical-thinking and increase their ability to perform quality-based "discrimination." When logged in for the first time during this phase, they see the first drafts of their peers (anonymously displayed) for which they are required to offer structured peer assessment. The third phase is the last phase during which students gain access to their first drafts with written peer feedback (quality comments) and assessment (numerical marks

or rating, the focus of the study. This creates the opportunity for reflection based on the peer feedback provided them. Students can then revise their first draft and submit a final copy of their written text along with a brief consideration of the peer feedback provided them – assessing the peer feedback (Pare & Joordens, 2008; Collmore, Pare, & Joordens, 2015). Appendix A shows a screenshot of the home page of the learning activity used in the present study.

PeerScholar was introduced to the researcher by the author's thesis supervisor. The final decision on the use of peerScholar in the present study was based on two reasons: 1) the author's interest in using peer feedback and assessment strategies to enhance student writing quality and 2) to identify evidence-based effects of an internet-based tool on the writing process of middle school students. In an era of a paradigm shift from a costly and time-consuming traditional assessment approach to a more efficient and logistical feasible one, the need for a reliable and affordable digital tool is apparent. The author's preliminary views and trial of the peerScholar platform in the integration of open-ended writing assignment in a manner pedagogically superior to traditional approaches whereby students providing and receiving peer feedback and assessment made it the right choice for this research. Also, peerScholar's presumed accountability feature, explicit emphasis on peer evaluation, regarding expert-peer reliability and validity in students' writing process made it a subject of study. The present study evaluated how the use of the peerScholar platform to provide and receive peer feedback and assessment impacts middle school students' narrative writing in relationship with their writing achievement.

Rubrics

A rubric is a document that articulates the expectations for an assignment or a set of tasks by listing the assessment criteria and by describing levels of quality concerning each criterion (Panadero & Jonsson, 2013). By definition, a rubric is scoring guides that can be used to validly

assess multi-dimensional performance (Andrade & Valtcheva, 2009). Historically, research on rubrics has followed either a summative or formative approach (Panadore & Jonsson, 2013). The summative approach aims to increase the inter-rater reliability and intra-rater reliability of assessors (Jonsson, 2014). The formative approach applies rubrics to enhance students' learning by promoting reflections on their own work (Panadero, Alonso-Tapia, & Reche, 2013) or the work by a peer (Sadler & Good, 2006). Irrespective of the summative or formative approach, indicators for reliability and validity are examined for the use of rubrics in general, as well as for their use with peer feedback and assessment in particular.

The use of rubric as a classroom assessment instrument has also increased in higher education, and they are widely used at the school level (Reddy, 2007). Advocates for the use of rubrics in formative assessment assume that rubrics can promote student learning, as well as lead to positive changes in structure. In a study about mathematical problem-solving in upper-secondary school by Balan (2012), the performance of students who had been working with peer assessment and rubrics was significantly higher as compared to the performance for students in a control group. While some studies report on improvements for all students or for all criteria, others present changes only for some students. The use of rubrics in the present is aimed at investigating how their use in peer feedback and assessment impacts the quality of middle school students' narrative writing.

Hypotheses

Despite the number of studies on peer feedback and assessment, it is difficult to pinpoint to the following: What contributes to the effects of peer feedback and assessment on student writing improvement (Van Zundert et al. 2010); who benefits most from it, assessors or assessees; and what role does online peer feedback and assessment play on student writing

improvement? Derived from the 'literature review,' the present study was designed in the framework of operationalized hypotheses to explore these issues. The hypotheses used in the present study include the following:

Hypothesis 1 Quality of narrative writing. Students' narrative writing will be of high quality after each phase of submission. When students revise with feedback, "they may not only improve the current piece but also develop general writing skills" (MacAuthor, 2007) as well as "greater quality improvement" (Cho & Schunn, 2007). "Improved quality" is operationalized as progressively higher levels according to the Ontario Writing Assessment rubric for Grade 8 after each phase of submission. "A phase of submission" is defined as subsequent draft narrative writing uploaded into peerScholar, the facilitating writing platform.

Hypothesis 2 Peer comment quality. Peer comments will be progressively better at each stage of the study. 'Progressively better' is operationalized as an increase in the percentage of in-depth cognitive comments relative to their total number of peer comments at each phase of the study "based on well-understood criteria" (Hovardas, Tsivitanidou, & Zacharia, 2014). Each peer comment is categorized as either social or quality comment. Social comments are general statements unrelated to any specific content area but reference a context and content. Quality comments (aka cognitive comments) are statements made by peer assessors indicating strengths and weakness along with reasoned responses and suggestions for improvement. Cognitive comments are identified as either "surface level" or "in-depth level" (Wadhwa et al., 2006). Surface level cognitive comments are statements indicating the strengths and weaknesses in a student's work without any recommendation, justification, and elaboration. In-depth level cognitive comments are statements indicating the strengths and weaknesses in a student's work that contains supporting arguments, suggestions for improvement, and reasoned responses.

Hypothesis 3 Peer accountability. "Peer-accountability" in peer assessment will improve the quality of peer comments. "Peer accountability" is operationalized as written comments provided by a peer on other students' writing. Quality of peer comments is operationalized as "critical comments" further described as weaknesses or negative statements indicated by the peer assessor in their assessment of other students' writing (Wadhwa et al., 2006). Positive comments are the statements identifying strengths indicated by the peer assessors on other students' writing. Incorporating "peer accountability" in online peer assessment is believed to reduce social loafing by assessors (Mann 2005, p.141). However, in a study of "Disagreement by Peer Excellence" in an online course, Rogers and Fellers (2016) reported that exposure to exemplary peer performances could undermine motivation and success. The authors argue that this caused participants to perceive that they cannot attain their peers' high levels of performance. This kind of discouragement can also cause de-identification with the relevant domain (i.e., narrative writing).

Hypothesis 4. Expert-peer consistency. A high level of consistency will be maintained between experts and peers. "Expert-peer consistency" (aka inter-rater reliability) is operationalized as the strength of agreement between the 'number grades' assigned by an expert (the teacher) and the average of 'number grades' of the peers, a domain which points towards measuring the validity and reliability indices (Falchikov, Goldfinch, 2000). An optimal validity is obtained by a perfect match with expert scores while optimal reliability is obtained by minimaxing heterogeneity among peers. A common concern with peer assigned marks is that peer assessors have a tendency to over-mark (i.e., assign a higher mark than the teacher). "Peer over-marking" is operationalized as the peer assessors assigning a higher mark relative to the teacher.

Summary

This section was the review of peer feedback and assessment in the literature on relevant innovations and issues related to the present study. The next section will report on the methodology of the research conducted to determine the effects of peer feedback and assessment on successive drafts of middle school students' narrative writing.

CHAPTER THREE

METHODOLOGY

This section is a description of the methodology of this thesis study. It describes in details the overview, context of the present study, participants, research materials and design, instrumentation, procedure, sampling method, and data collection, analysis, and measures.

Participants

Student participants were interested and enthusiastic Grades seven and eight male and female students (n=21), ages 13 – 14 at a local school of the TCDSB in Toronto, Canada. To further ensure that the expected extraneous variables (or external factors) did not interfere with or influence the results, the protocol was that student participants work in the classroom instead of working at home. Student participants had access to personal electronic devices (laptops, iPads, etc.) and knowledgeable in their uses. All student participants were English proficient. The participating students were guaranteed anonymity and that the study would not contribute to their final grade at the end of the academic semester during which the study was conducted (Please see Appendix D for Informed Consent Form). All student participants had to participate in reciprocal peer feedback and assessment and therefore trained to use an assessment criteria while acting as assessors; each criterion was explicitly defined and discussed before the study began. Also, student participants received specific training about the 3-point Liker scale (i.e., unsatisfactory, moderately satisfactory, and fully satisfactory); the criteria used to assess peer feedback and assessment in Time 1 and Time 2 received from peers.

The present study also recruited two elementary school teachers as expert raters of narrative writing. The expert raters were teachers of other classes who had the knowledge and were currently offering blended learning in their respective classrooms using any web 2.0 tool.

The criteria for selecting teachers also included years of teaching experience of not less than two years but not more than five years with the Toronto Catholic District School Board. The expert raters, along with the school's librarian technician, helped in the identification and recruitment process of student participants, thereby alleviating any potential problem of data collection. The classroom of the principal researcher was used for face-to-face sessions, computer lab, and the BYOD during the regular class time. Each expert raters (teacher participants) took primary responsibility for analyzing student participants' second submissions of narrative writings and their reflective narratives. To guide against bias, ratings of student participants were utterly blinded.

The Context for the present study

This study took place in one local elementary school. The narrative writing unit is part of the writing class included in the middle school regular written Language curriculum and targeted in provincial and school district writing assessments. The duration of this unit was four instructional weeks. During the period of the study, all participants were enrolled in a local elementary school and taking a Writing class taught by the author. The subject area consists typically of direct instructions and guided activities. The students learned the basic concepts of narrative writing. Following the instructional lessons on narrative writing, participants were asked to write a sequel, a learning activity grounded in collaborative writing (Vygotsky, 1978), which entailed student interactions and collaboration throughout its several steps. In the first step, the participants watched the movie 'Frozen,' and the elements of the story were discussed in detail. Student participants were taught to gain sufficient experience in recognizing the basic story elements (e.i., setting, character, plot, conflict, and theme) because understanding how story is organized helps students to access the highest level of comprehension of story and in

their own story writing. The participants were taught how to organize their thoughts and to weave together the various treads of their own stories competently. The characters of the story 'Frozen' were also discussed in detail. Then the participants were asked to brainstorm what happened next in the story and use their imagination to write their own sequel to 'Frozen.' They were required to take the characters to an unknown planet or simply to a different setting. Participants were reminded that a sequel picks up where the original ends. They were encouraged to think of what adventures might the characters have next and how they (characters) would continue to grow and change. In addition, the participants were taught how to provide useful constructive feedback and assessment to peers and how to use peer feedback and assessment in revisions. In the peer feedback and assessment training sessions, students were asked to work with different partners each time they received feedback and assessment on their writing drafts and incorporate useful peer feedback and assessment into their revision. In this way, the focus of the feedback and assessment was determined by the student writers themselves.

During this study, the narrative writing unit was offered through a blended learning format using peerScholar, a writing platform that provides student writers the opportunity to engage in meaningful processes of peer interaction and collaborating through giving and receiving feedback from one another. Online peer feedback and assessment was introduced for the first time in this writing unit. The participants had no prior experience of the online peer assessment process introduced in the experiment. The online peer feedback and assessment process was integrated into the narrative writing unit curriculum by the author.

Expert and peer feedback and assessment were compared to evaluate the quality of the quantitative (rating) and qualitative (feedback) and also to investigate whether expert or peer

feedback influenced peer assessee at the stage of feedback review and revision of the learner product (A Sequel to 'Frozen). The corrections made by assessees were examined to determine the high quality of the peer assessor's feedback.

The study. In the present study, the process-driven (or writing as a process) approach was followed. The activity sequence of the 'Narrative Writing Task' entailed participants' collaboration throughout the implementation process using the process writing approach. An opportunity was created for participants to generate ideas by brainstorming and discussing the writing task given while the author remained in the background, only providing support where required with the intention of not to inhibit students in the production of their ideas. With the given task, participants first extended their ideas into notes and judged the qualities and usefulness of the ideas. Then participants structured their ideas into organizers and began to write their drafts in class individually based on a structured rubric. The writing drafts were exchanged, classmates provided feedback and assessment, and then the drafts were returned for improvements based upon peer feedback and assessment provided. (Please see Appendices F – G for verbal and written instructions to participants).

The student participants wrote and provided reciprocal online peer feedback and assessment using the peerScholar platform. The reciprocal online peer feedback and assessment consisted of two distinct phases (the peer assessor phase and the peer assessee phase), during which participants switched roles subsequently as individual assessors and assessees. Peer assessment in this study involved the use of a pre-specified assessment rubric to rate peers' first written draft (quantitative peer feedback). Participants were also asked to provide written comments to justify their ratings and to suggest possible changes for revision (qualitative peer feedback). Regarding the use of rubric to rate peers, student participants were given and

explicitly taught how to use a criterion-based rubric (please see Appendix G). Before the study began, student participants already completed comprehensive lessons on 'Narrative Writing' and how to use peerScholar. The expert raters attended preparatory meetings to familiarize themselves with the study's content, materials, procedures, methods, and peerScholar, the facilitating platform.

During a two-hour workshop, the student participants were taught how to write quality peer comments through the use of an exemplar (examples of social and quality comments in Appendix J - peer comment quality classification with sample indicators partly adapted from Wadhwa et al. (2006)). During each phase of the study, peer comments were classified as either "Social," "Surface cognitive," or "In-depth cognitive." Student participants were also taught about 'Peer Accountability' by classifying peer comments as either positive or critical (please see Appendix K). They were told that the quality of their feedback and assessment would be considered, as a course requirement, in forming their participation mark. Also, both the expert raters and student participants were made to understand "Expert – peer consistency" (also known as inter-rater reliability) to address before-hand the common concern of peer assessors' over-marking (assigning a higher mark than the teacher).

Student participants completed a writing habit questionnaire at the beginning of the present research and then a writing attitude questionnaire (see Appendix L) before and at the end of the study for 'Self-Assessment' to determine student participants' opinions of their writing.

Materials

The research materials included the peerScholar automated marking platform, plus all utilities, workbooks, writing materials, verbal and written instructions to student participants and the expert raters. The present research study made use of the school's computer lab, and an

operational Bring Your Own Device (BYOD) system that included laptops, iPad, iPhone, etc. all of which formed part of the selection criteria for student participants and classroom or research sites. The Ontario Elementary Curriculum and related documents of the Ontario Ministry of Education were used as assessment rubrics. Student participants created their narrative writing drafts from written instructions in Appendix F and a structured-rubric based on four categories: (1) knowledge and understanding, (2) thinking, (3) communication, and (4) application. Appendix I shows the details of the rubric from which student participants created their writing drafts. For assessment purpose, the rubric was further simplified into eleven criteria. Appendix G shows the details of the criteria. The expert raters and student participants used the same criterion-based rubric to assess the student participants in order to determine inter-rater reliability and validity. Also, the expert raters and student participants used the same writing platform, peerScholar, and materials during the research study primarily for consistency in the areas of grading efficiency as well as feedback communication. Student participants' narrative writing drafts were uploaded and stored in the peerScholar platform. The "comment" and "share" features of peerScholar were used by student participants to assess and provide peer feedback.

All writing sections of the 'writing process' were held under strict guidelines and expectations stated in the Ontario Elementary Curriculum (expectations for narrative writing and length of class time). A blended learning classroom environment was used wherein class sections also included face-to-face sessions during which time new concepts were presented and discussed (direct instruction), new activities of assigned task introduced, and presentations conducted.

Design

The design of the study employed a single group repeated measures time series quasi-experimental design with naturally-occurring measurement of the dependent variable over four weeks period consistent with Wiersma and Jurs (2008, p.137). All student participants received the same writing assignment, which was assessed using the same procedure. During the four weeks, each participant's narrative writing was assessed twice by three peers and once by two experts. The expert and peer assessors were assigned automatically by peerScholar during each time of assessment ("Time 1" and "Time 2").

Instrumentation

Narrative writing task. One instrument used to collect data was a narrative writing task, 'A Sequel to Frozen,' completed by student participants as part of their regular classroom assignment. Student participants used a rubric adapted from the Ontario Writing Assessment, in Appendix I. The rubric was further modified to include eleven criteria which student participants, in their role as assessors, and the two expert raters used to assess the completed narrative writing task, 'A Sequel to Frozen.' Student participants in their role as assessors were made "accountable." They were told in advance that timely submission of peer assessment and the quality of their feedback comments would contribute to their participation mark for the assignment as regular course requirement. Student participants' accountability in the narrative writing task peer assessment can improve the quality of peer's comments (Wadhwa et al., 2006)

Questionnaire. Surveys and interviews were conducted with pre-test and post-test. The pre- and post-tests questionnaire explored student participants' experiences and perceptions in writing and the use of technology in writing before and at the end of the study as well as student participants' attitudes towards writing.

Procedure

As part of a ‘Fictional Narrative Writing Unit, student participants used computers and other personal electronic devices (PEDs) and the web-based platform, peerScholar, to access the curriculum material, a ‘Sequel to Frozen.’. Frozen is a famous Walt Disney story premiered in Hollywood in 2013. The student participants followed the activity sequence and completed the assignment. Each task of the assignment corresponded to the process writing approach. All student participants were given the same time to submit their writing assignments. Student participants received instruction and training in reciprocal peer feedback and assessment, and the use of peerScholar, the facilitating platform. An online reciprocal and anonymous peer feedback and assessment approach was chosen and employed. Each student participant carried out the role of peer assessor on an individual basis. Along with ratings, assessors were instructed to provide written feedback for each criterion of a structured rubric in which they were to explain the reasoning behind their scores, provide judgments and suggestions for revisions. Each student participant assessed three peers. For the schedule of activities, please see Appendix O. There were six main steps followed in the present study, which lasted for four (4) instructional weeks:

(1) Student participant uploads first draft of narrative writing to peerScholar
(2) Time 1 Assessment: Narrative writing is peer-assessed by three peer assessors; providing and receiving peer feedback and assessment.
(3) Student participant revises and uploads revised narrative writing to peerScholar
(4) Time 2 Assessment: Revised narrative writing is peer-assessed by three student peer assessors; providing and receiving peer feedback and assessment.
(5) Two expert raters assess narrative writings after time 2

Student participant uploads the final submission of narrative writing to peerScholar

Step 1: The first draft uploaded. After receiving the grade-level-appropriate prompt, each student participant wrote a one-two page coherent piece of narrative (fiction) story, a sequel to the story 'Frozen.' Student participants had access to a guide on 'How to Write a Sequel' placed in peerScholar. The guide, specifically designed for this study, provided basic writing guidelines and writing samples of sequels indicating what would be considered adequate and inadequate information and also described how a structured-rubric would be used in the peer feedback and assessment process. Using a structured-rubric based on the 'Writing Process,' student participants completed their assignments (the first drafts) comprising of four components of narrative writing rubric: knowledge and understanding, thinking, communication, and application. Once finished, student participants uploaded their first drafts onto peerScholar. They had one instructional week to submit their first drafts.

Step 2: Time 1 Assessment (Reviewing peers' first drafts; providing and receiving peer feedback and assessment). When the deadline for the submission of the first drafts was over, student participants were automatically and randomly assigned by peerScholar to review three (3) papers (or writing drafts) of their peers based on the text quality of the narrative task they were assigned. Using the criterion-based rubric consisting of 'measures' placed in peerScholar (please see Appendix G), student participants provided peer feedback and assessment on the three papers (or writing drafts) assigned to them. The student participants were double-blinded to each other to avoid student reviewers from being less critical in providing peer feedback and assessment when the authors' identities are known (Crampton, 2001). Anonymity was maintained to avoid student participants from considering review comments personally and rejecting feedback comments given by perceived low competent peers even though their comments are meaningful as comments provided by highly competent peers (Strijbos et al.,

2010). Anonymity was defined as the condition where the student participants' writing drafts could not be identified in terms of either their identities or their relevance in a social context. Student participants' writing drafts had identifiable information such as names and numbers stripped from them to ensure no biases during the feedback and assessment process. After the deadline for reviewing passed, student participants in their role as assessees were given access to their first drafts with peer feedback and assessment included. At this time, participants were required to assess the peer feedback assessment received. They were given one instructional week to complete this step.

As indicated in the instrumentation section, student participants used an assessment rubric to evaluate the learning products of their peers. Assessors scored each of the criteria on a 4-point scale from level 1 to level 4 (level 1= poor performance; level 4 = best performance) and also rated each writing draft assessees' performance from 1 - 7 (1= 'sequel needs improvement;' 7 = 'effective sequel'). Along with ratings and scores, assessors provided written feedback comments to assessees in which assessors explained the reasoning behind their ratings and scores. The assessors also provided judgments, elaborations, and suggestions for revision. In their role as assessees, student participants, on the other hand, assessed the peer feedback received using a 3-point Liker scale (i.e., (1) unsatisfactory; (2) moderately satisfactory; (3) fully satisfactory) as already referenced in the 'Student participants Section.'

Step 3: Revision. Once the reviewing and assessing time was over, student participants then used the peer feedback and assessment received to revise their drafts and uploaded them onto peerScholar. They were given one (1) instructional week to complete the revision and submit second drafts.

Step 4: Time 2 Assessment (Reviewing peers' second drafts; providing and receiving peer feedback and assessment). The procedure in step 2 was repeated. Again, student participants, in their role as peer assessors, were automatically and randomly assigned to assess their peers.

S*tep 5: Expert Raters Assessment.* In this step, student participants' narrative writings were then assessed by two expert raters using the same rubric used by the student participants to ensure reliability and validity.

Step 6: ***Revision and Final Submission.*** Upon the completion of Time 2 assessment in step 4 and expert raters' assessment in step 5, student participants then uploaded the final submission of their narrative writing.

Before the first step began, student participants completed the first survey. The last survey was completed after step four. A support structure was in place for both the student participants and the expert raters. During the study, the classroom teacher, the principal researcher, was available both through face-to-face sessions and online (using the peerScholar platform) to answer student participants' questions and gave feedback when and where necessary. The principal researcher determined the final grades for the assigned task. As a means of monitoring, regular contacts with expert raters were maintained to answer questions and encourage them to follow feedback and assessment guidelines.

Sampling Method

The present study used criterion sampling to determine expert raters. "Criterion sampling involves selecting cases that meet some predetermined criterion of importance" (Patton, 2001, p.238). In the study, no previous experience in peer assessment was the criterion of importance for student participants, but expertise in narrative writing and teaching narrative writing was the

criterion for the expert raters. “Criterion sampling can add an important qualitative component to a management information system or an ongoing program monitoring system. All cases in the data system that exhibit certain predetermined criterion characteristics are routinely identified for in-depth, qualitative analysis. Criterion sampling also can be applied to identify cases from quantitative questionnaires or tests for in-depth follow-up” (Patton, 1990, p.177).

Data Collection, Analysis, and Measures

Improved Quality of Narrative Writing

The quality scores used in the present study are the averages of three peer-assigned marks of the first draft and revised drafts narrative writing of each student participant. Improved quality of Narrative Writing is defined as the achieved of progressively higher levels according to the Ontario Writing Assessment Rubric of Grade 8 (Please see Appendix I) after each phase of submission. Based on the dimensions of the rubric (knowledge and understanding, thinking, communication, and application), peers provided comments and ratings from 1 (sequel needs improvement) to 7 (effective sequel). Note that the dimensions were further classified into criteria such as beginning, middle and ending; text form and style; plotline; ideas; perspective and imagination; word choice and voice; audience and purpose; content; convention; among others (please see Appendix G). The same rubric and standards were applied to both the first draft and revised final drafts. Student participants were blinded to the identity of peers. The principal researcher compared the peer-assigned marks of the first draft and revised narrative writings collected at Time 1 and Time 2.

Peer Comment Quality

All student participants in the present study acted in the roles as both peer assessor as well as peer assessee. All comments provided during reciprocal peer feedback process were

classified either as ‘social comments’ or ‘quality comments.’ ”Social comments” refer to non-specific content but instead reference a context and content whereas ‘quality comments’ in this study refer to comments citing the strengths and weaknesses of the assessee (Wadhwa et al., 2006). In the case of the latter, otherwise known as cognitive comments, the comments include reasoned responses and suggestions for improvement. Furthermore, the principal researcher grouped the quality or cognitive comments into either as “surface level,” the ones with elaboration, justification or recommendation, or “in-depth,” the ones containing suggestions for improvement, reasoned responses or comprises supporting arguments (please see Appendix J). This process of classifying peer comments as social or quality (cognitive) is the same used by Hara, Bonk, and Angeli (2000). The quality of comments was calculated as the sum of surface level and in-depth level cognitive explanation of a given peer assessor whereas peer comment quality was calculated in each group using a correlation, T-Test (please see table 3).

Peer Accountability

Peer accountability was defined as the quality of peer feedback comment (“critical/negative” and “positive”) provided by the peer assessor. The quality of peer comments classified as “critical/negative comments” is further described as weaknesses or negative statements indicated by the peer assessor in their assessment of other students’ writings whereas “Positive comments” are statements identifying strengths indicated by the peer assessors on other students’ writings (Wadhwa et al., 2006). Examples of these categories of comments from the present study are detailed in Appendix K. Including peer accountability in this present study was informed by the suggestion of Topping et al. (2003) that incorporating peer-accountability in peer assessment improves the quality of peer comments. During the present study, peer comments were classified as either positive or critical, based on the coding system agreed upon

by my research team. Peer accountability of each participant was then calculated as a percentage of critical divided by the total peer assessments.

Expert - Peer Consistency

It was predicted that expert - peer consistency would be maintained between the expert raters and student participants. The term ‘expert’ refers to those who possess full domain-specific knowledge that is highly organized whereas the term ‘peer’ refers to novices in their discipline and do not have extensive, elaborated subject-matter knowledge and skills (Cho & MacArthur, 2010). Expert - peer consistency” (also known as inter-rater reliability) was defined as the strength of agreement between the ‘number grades’ assigned by an expert and the average of ‘number grades’ of the peers assigned by peer assessors. A common concern with peer-assigned marks is that peer assessors tend to over-mark than the instructor (Sluijsmans et al., 2002), thus affecting the reliability and validity of the peer assessment process. In the present study, peer over-marking was defined as the peer assessors assigning a higher mark relative to the experts. To determine expert-peer consistency, all peer numerical assessments were downloaded from peerScholar. For each student participant, the average of three (3) peer assessments and the average of two expert raters’ assessment were then calculated, and subsequently, the expert-peer consistency was calculated using a correlation between the average of three (3) peer assessments and that of the experts (see Figure 1 for formula used to calculate for expert-peer consistency).

It should be noted that one reliability check was carried out only on the revised narrative writings (at Time 2). The purpose of the reliability check was to determine whether the expert rater’s ratings would agree with those of peer assessor in rating student narrative writing. Although the same rubric was used by both the expert raters and the student assessors, a perfect agreement was not expected because the expert raters used content knowledge to some extent in

rating the student writings. The level of interrater reliability determined between the expert raters and the student assessors was judged acceptable considering that student assessors are novices in this discipline, although the received training in assessing their peers.

Instruments

Questionnaire

In the present study, survey and interview data was generated from students using 'Google Form' and peer feedback comments and assessments were generated by student participants entering comments, grades, and ratings using features of the peerScholar platform. The editing platform was also used to create learning products. All student participants in the study were told that the experts (including the homeroom teacher) would assess the quality of their feedback comments as well as the assessment of their peers' writing drafts during the task assigned.

The survey data from the pre-test was designed to provide students' preferences of type of feedback, motivations regarding what they like to read and write about, and their use of computers to write was collected and analyzed through descriptive statistics to calculate the mean scores and standard deviation together with the total frequency and percentage of each part of the survey. Another portion of the questionnaire checked for student participants' views about the importance of being a good writer, shared-writing, and the use of paper-and-pencil or electronic devices to write. The last section of the questionnaire, post-test, was completed after student participants completed the revision and submitted their final copies of their sequels, the writing learning products. The questionnaire focused on students' perceptions of reciprocal peer feedback and assessment and the use of the facilitated writing environment, peerScholar.

To verify our hypotheses, the data collected was analyzed quantitatively and qualitatively. Quantitative data collected on the preferred method of feedback and student

participants' perception of advantages and disadvantages of peerScholar based on software attribute(s) was analyzed to identify confidence received, if any, after reviewing each type of feedback and the entire writing process. Other responses from student participants were coded comparatively and analyzed qualitatively to discuss emerging themes. The quality of students' writing samples in the first and final drafts (post-feedback) were analyzed to look for improvement in knowledge and understanding, thinking, communication, and application. Furthermore, the samples analyzed to see if there were specific types of feedback the students found to be most helpful to them. Coding categories were decided and agreed upon by the research team. The data were coded based on the themes coinciding with the major questions and analyzed using descriptive statistics to compute for frequencies and percentages.

Summary

This section of the present study was a report on the overview, participants, context for the study, research materials, research design, instrumentation, procedure, sampling method, and data collection, analysis, and measures to determine the effects of peer feedback and assessment on successive drafts of middle school students' narrative writing. The next section will provide detailed results on data collected and analyzed using the methodology described in this section.

CHAPTER FOUR

RESULTS

This section is a description and analysis of the data collected on expert and peer assessments as they test the four hypotheses of the present study. This section aims to provide the context out which our data emerged and then connects the thesis' hypotheses to the context as mentioned above for interpretive purposes.

Quality of Narrative Writing

"Quality of narrative writing' was operationalized as the measure of peer-assigned marks of draft narrative writing at Time 1 and peer-assigned marks at Time 2. Table 1 shows the descriptive data of draft narrative writing at Time1 and revised narrative writing at Time 2. Table 2 shows the mean and standard deviation of the averages of peer-assigned marks at Time 1 and Time 2.

Table 1

Quality of Narrative Writing: Peer-Assigned Marks at Time 1 and Time 2, n = 21

Student ID	Time 1 Peer-Assigned Marks (P1 +P2 + P3 /3)	Time 2 Peer-Assigned Marks (P1 +P2 + P3 /3)
1	53	62
2	60	71
3	80	91
4	56	62
5	70	**77**

6	60	66
7	58	66
8	70	86
9	40	57
10	66	76
11	55	60
12	62	71
13	70	**77**
14	40	57
15	58	64
16	40	52
17	65	70
18	57	67
19	43	52
20	72	81
21	30	57

Note. Descriptive data of peer-assigned marks (averages) on draft narrative writing at Time1 and peer-assigned marks (averages) on revised narrative writing at Time 2

Table 2

Peer-Assessment Mean and Standard Deviation Over Two Occasions – Time 1 and Time 2

Time of Peer Assessment	Mean	SD
Time 1 Assessment (peer-assigned marks of draft writing)	57	13.8
Time 2 Assessment (peer-assigned marks of revised narrative writing)	68	12.1

Note. Descriptive data of mean and standard division on peer-assigned marks during Time 1 and Time 2.

A Spearman's correlation coefficient was calculated to compare the Quality of Narrative Writing at Time 1 and Time 2. Each number in table 1 represents an average of the three peers that assessed the writing. The results, $R = 0.9671$ and p-value $< .01$ indicate a statistically significant level of difference as determined through the holistic scores as well as across the four components of the Ontario Writing Assessment rubric for narrative writing: knowledge and understanding, thinking, communication, and application. The mean and standard deviation between Time 1 and Time 2 in table 2 also show a significant statistical difference: $M = 11$, $SD = 1.7$. The comparisons were made to determine if the intervention, the reciprocal online peer feedback and assessment, was advancing the pedagogical goal, improved quality of students' narrative writings evidenced by the achievement of progressively higher levels. It was hypothesized that the quality of students' narrative writing would be of high quality – increasingly improved – after each phase of submission. For the null hypothesis, there was no increase, but the alternative indicated an increased level of improved writing. The results suggest

that after applying reciprocal online peer feedback and assessment, the narrative writing products consistently pointed towards increased improvement in the quality of student participants' narrative writing.

Peer Comment Quality

"Peer comment quality" was operationalized as the percentage of "in-depth cognitive comments" (Wadhwa et al., 2006) relative to their "total number of comments at Time1 and Time 2. Table 3 shows a descriptive data of the types of feedback comments provided by student assessors, while table 4 shows the mean and standard deviation as well as the percentages of cognitive feedback comments made.

Table 3

Descriptive Data of Types of Feedback Comments Provided At Time 1 and Time 2 Combined

Student ID	Critical comments	Positive comments	Surface level comments	In-depth comments
1	20	2	12	20
2	2	1	10	17
3	15	3	10	20
4	15	2	12	17
5	23	1	5	12
6	27	1	5	12
7	29	1	10	27
8	15	3	9	15
9	30	2	11	32

10	20	1	14	22
11	27	1	10	25
12	17	2	15	19
13	10	6	4	12
14	11	1	8	13
15	15	1	13	17
16	8	2	9	12
17	4	2	5	13
18	7	3	4	13
19	3	2	14	17
20	15	3	11	17
21	6	1	10	8

*Note. D*escriptive data of all comment types provided by student participants during the present study

Table 4

Peer Comment Quality: Mean and SD of Surface level and In-depth Level of Peer Comments

Type of quality comment	Mean	Standard Deviation	Number of comments	Percentage
Surface level	10.80	3.28	227	39%
In-depth level	17.14	4.14	360	61%
Total number of quality comments (Surface + In-depth)	27.95	5.29	587	100%

Note: Surface level comments refer to refer to student peer assessors' comments that do not specify any elaboration, justification, or recommendation whereas in-depth student assessors' comments that contain suggestions for improvement, reasoned responses or comprise supporting arguments

Each number in Table 3 represents the number of each type of feedback comment made by student participants (student peer assessors). The quality of comments was calculated as the sum of the surface level and in-depth level cognitive explanation of all student participants (student peer assessors), *n=587* whereas comment quality was calculated in each group using a Paired T-Test. A Paired T-Test analysis of data gathered indicated that the relationship between the 'surface level' comments, *n=227*, and 'in-depth level' comments, *n=360* provided was significant. To further determine the comment quality of student participants (student peer assessors), the focus was directed on whether there were elaborations or judgment provided. As analyzed, 39% of the peer feedback comments provided was surface-level' comments, while

61% was ‘in-depth level’ comment. The difference between surface-level comments and in-depth comments were statistically significant: *M = 6.34, SD = 0.86,* Number of comments = 133, and percentage = 22%. It should be noted that the number of the in-depth comments in Time 2 increased compared to a decreased in the number of surface level-comments versus an increased number of surface-level comments in Time 1 compared to a decreased number of in-depth comments.

As hypothesized, peer comments became progressively better during the present study. It was expected that student participants (student peer assessors) would provide more ‘in-depth level’ comments than ‘surface-level’ comments. The analysis of the student participants’ (student peer assessors’) comments indicated convincing evidence of quality comments.

Peer Accountability

“Peer accountability” was operationalized as written comments provided by a peer on other students’ writings. “Quality of peer comments” operationalized as “critical comments” is further described as weaknesses or negative statements indicated by the peer assessor in their assessment of other students’ writings. “Positive comments” are statements identifying strengths indicated by the peer assessors on other students’ writings (Wadhwa et al., 2006). Table 3 shows the descriptive data of all comment types provided by student participants during the present study while table 5 shows the descriptive data of critical comments provided at Time 1 and Time 2 as well as the total number of critical comments submitted at Time 1 and Time 2 combined. Table 6 shows the means and standard deviation of critical comments provided at Time 1 and Time 2.

Table 5

Descriptive Data of Critical Comments Provided At Time 1 and Time 2 Combined

Student ID	Total critical comments	Critical comments Time 1	Critical comments Time 2
1	20	18	2
2	2	2	0
3	15	13	2
4	15	14	1
5	23	22	1
6	27	25	2
7	29	26	2
8	15	13	2
9	30	28	2
10	20	19	1
11	27	26	1
12	17	15	2
13	10	10	0
14	11	10	1
15	15	14	1
16	8	6	2
17	4	4	0
18	7	7	0
19	3	3	0

20	15	12	3
21	6	6	0

*Note. D*escriptive data of all critical comment types provided by student participants during the present study

Table 6

Peer Accountability – Mean and Standard Deviation of Critical Comments at Times 1 & 2

Type of comment	Mean	Standard Deviation
Critical Comments at Time 1	17.00	7.34
Critical Comments at Time 2	1.3	0.72

Note: A critical comment is the one made by a student peer assessor indicating an area of weakness and suggests improvements.

The present study holds, as a hypothesis, that peer accountability in peer assessment will improve the quality of peer comments. Including peer accountability in the present study was informed by the suggestions in the studies of Topping et al. (2000) that incorporating peer-accountability in peer assessment may improve the quality of peer comments. A Paired T-Test analysis of the relationship between peer accountability of the number of critical comments made by student peer assessors at Time 1 and Time 2 was considered statically significant. The difference between the critical comments extremely statistically significant: $M = 15.7$, $SD = 6.62$, and the $p\text{-value} < 0.0001$. To further determine the comment quality of student peer assessors, careful attention was directed to the analysis looking to see if there were comments

indicating strength, an area of weakness, and suggestions for improvement. Proposed improvements were signaled by student peer assessors' explicit suggestions or recommendations for revision. As revealed through the analysis, 11% of the peer feedback comments provided was positive - at least each participant provided one positive comment for each sub-component of the narrative writing rubric, while 89% of the peer feedback comments provided was critical.

The result of the analysis revealed that the number of suggestions or recommendations for improvement decreased with the critical comments indicating in Time 2 indicating that the student peer assessors were aware of their role as assessor - attempting to provide helpful comments that will assist their peer assessees in the revision process.

Expert-Peer Consistency

"Expert-peer consistency" (aka inter-rater reliability) was operationalized as the average of expert and peer assessment of the submission at Time 2, a calculation as described by Mann (2006) as an online formula for calculating expert-peer consistency shown below:

$$\text{Consistency} = \frac{(\text{Peer 1} + \text{Peer 2} + \text{Peer 3}) / 3}{(\text{Expert 1} + \text{Expert 2}) / 2}$$

Figure 1. Expert-Peer Online Formula for calculating Expert- peer consistency after student participants' final submission

Table 7 shows the descriptive data of expert-assigned marks at Time 2 and peer-assigned marks on students' first and second drafts at Time 1 and Time 2 while Table 8 shows the mean and standard deviation of averages of expert – and peer-assigned marks at Time 2. Table 9 shows detailed data of students who over-marked, under-marked, and assigned identical marks.

Table 7

Expert-Peer Consistency: Descriptive Data of Expert- and Peer-Assigned Marks

Student ID	Peer Assigned Marks Time 1 - Average (Peer1 + Peer2 + Peer3/3	Peer Assigned Mark Time 2 - Average (Peer1 + Peer2 + Peer3/3	Expert Assigned Marks Time 2 - Average Expert1 + Expert2
1	53	62	41
2	60	71	50
3	80	91	72
4	56	62	60
5	70	**77**	64
6	60	66	42
7	58	66	63
8	70	86	67
9	40	57	63
10	66	76	76
11	55	60	60
12	62	71	68
13	70	**77**	72
14	40	57	50
15	58	64	70
16	40	52	42
17	65	70	50

18	57	67	50
19	43	52	60
20	72	81	80
21	30	57	50

Note: Details of Expert- And Peer-Assigned Marks on Students' First (Time 1) and Second (Time 2) Submission of Narrative Writings (Sequel to 'Frozen'). Each number in column 2 represents the average of three peer assessors' number grade and in column 3 the average of two experts' average number grade.

Table 8

Expert- Peer Consistency: Spearman's Rho - Mean and Standard Deviation of Peer Assessors' and Experts' Average 'Number Grades' Per Peer assessee

Grading	Mean	Standard Deviation
Student assessors' average of 'number grade' per peer assessee	10.5	5.9
Experts' average of 'number grade' per peer assessee	9.5	5.08

Note: Spearman's Rho is a non-parametric test used to measure the strength of association between two variables, where the value r = 1 means a perfect positive correlation and the value r = -1 means a perfect negative correlation).

Table 9

Expert – Peer Consistency: Frequency of Student Participants' Over-Marking, Under-Marking, and Identical Marking

Student ID	Over-marked	Under-marked	Identical-marked
1	X	X	☑
2	☑	X	X
3	☑	X	X
4	☑	X	X
5	☑	X	X
6	X	X	☑
7	☑	X	X
8	X	X	☑
9	X	X	☑
10	X	X	☑
11	X	X	☑
12	☑	X	X
13	☑	X	X
14	X	X	☑
15	☑	X	X
16	☑	X	X
17	X	X	☑
18	☑	X	X

19	X	☑	X
20	☑	X	X
21	☑	X	X

Note: Details of the frequency of student participants' over-marking, under-marking, and identical marking relative to the expert raters' assessments. A '☑' mark for each participant indicates 'true' for each column title while an 'X' mark indicates 'not true' for each column title.

A Spearman's correlation was used to determine expert-peer consistency. Each number in the column of Table 7 represents an average of the three peers as well as the average of the two experts that assessed the same piece of writing using the same rubric.

It was hypothesized that a high level of consistency would be maintained between experts (the teachers) and student peer assessors. In the present study, "Expert peer consistency" (also known as inter-rater reliability) refers to the strength of agreement between the 'number grades' assigned by the experts and the average of 'number grades' of the peers.

To determine expect-peer consistency, all peer numerical assessments were downloaded from peerScholar. For each student, the average of three (3) peer assessments ('number grades') assigned to each student assessee randomly were then calculated, and subsequently, the expert-peer consistency was calculated using Spearman's correlation between the average of three (3) peer assessments and that of the experts.

Reliability and Validity. Inter-rater reliability between the expert raters and student assessor was calculated using Spearman's correlation coefficient. The value for R in the Spearman's calculation was 0.14156 and p-value < 0.003. This result points to the fact that the association between the two variables is considered to be statistically significant. The result

shows that the reliability of the quantitative assessment of the student assessors was low. The validity of the quantitative assessment of 8 out of 21 peer assessor was found to be significantly correlated to the expert raters' quantitative assessment. This shows that the validity of the quantitative assessment was also low. The validity was further determined using the data in table 9 on the number of peer over-marking, peer under-marking, and peer identical-marking. Of the twenty-one students who participated in the present study, 57% of peer assessor over-marked based on the peer assessors' average 'number grades' assigned. This finding indicates that the validity of the quantitative assessment for the majority of student assessors was low.

Student participants' perception of using the peerScholar platform. Student participants' perception and usage of peerScholar were measured using the following survey items included in both the 'Writing Habit Survey' and the 'Writing Attitude Survey': (a) "Using peerScholar to provide and receive peer feedback and assessment was helpful in making changes to my writing drafts", (b) "It was easy to use and explore the features of peerScholar"; and (c) "I think that peerScholar can help me improve my writing." There were four (4) other sub-items from the 'Writing Habit Survey' on comparing writing using peerScholar to writing on paper: (1) "Word processing software helps me keep better organized than using paper." (2) "It is easier for me to revise/edit my work using peerScholar than on paper." (3) "I write higher quality drafts using word processing software than on paper." (4) "I receive more feedback on my writing when I write using word processing software than on paper." Student participants were asked to respond to all of these items on the scale from 1 - 5: 1 = Strongly disagree; 2 = Disagree; 3 = Neutral; 4 = Agree; and 5 = Strongly agree. The results of these self-reported usages and perception of peerScholar as shown in Appendices L, M, and N indicate peerScholar as a favourable writing environment for creating and revising student participants' draft copies of the

writing task. This result corroborates previous research findings that computer-based writing is typically more repetitious and creates an opportunity for more peer editing than writing with paper and pencil (Goldberg et al., 2003). A very high percentage of student participants reported an easy use of peerScholar features to comment and receive peer feedback comments on their writing drafts for which they agreed that they edited their writing drafts much more easily using peerScholar. This agreement was even stronger when the student participants referenced that peerScholar helped improve their writing. This shows that the student participants preferred writing using peerScholar, then word-processing software, and lastly paper and pencil.

Neither the student participants' demographic nor their skill levels in using a computer included in the 'Writing Habit Survey' had a significant effect on writing ability. Not even the number of hours (time) spent using electronic devices in school had any significant effect on writing achievement. These referenced survey items were included in determining whether they would impact middle school students' writing process. The results did not, in any way, suggest a significant effect on the student participants' writing process.

Writing Achievement. Writing achievement was also measured using the 'Writing Attitude Survey' items: (a) comfort level in sharing ideas, (b) writing at school, (c) the importance of being a good writer, (d) reciprocal peer feedback and assessment, and (e) self-assessment of their writing achievement. As shown in Appendices L, M, and N, student participants were asked to respond to all of these items on the scale from 1 - 5: 1 = Strongly disagree; 2 = Disagree; 3 = Neutral; 4 = Agree, and 5 = Strongly agree. Content analysis revealed the following key findings: (1) Student participants gained confidence in writing through the reciprocal peer feedback and assessment process; more confident in their future narrative writing process through the provision of a 'sense of control' over their writing. (2) Student participants

perceived reciprocal peer feedback and assessment as a helpful experience in making changes to their writing drafts, evidence corroborating the findings of Tsui and Ng (2000). The overall feel of the student participants gathered from the responses to the questionnaire indicate the manifestation of the feedback and assessment as a helpful experience in making changes to their writing drafts, evidence corroborating the findings of Tsui and Ng (2000). Also, the overall feel of the student participants gathered from the responses to the questionnaire indicate the manifestation of the fact that students see value in both parts of revision process - the reciprocal peer feedback and assessment by reading and responding to their peers. This is also a link and support to the previous study of Tsui and Ng (2000), which suggests that the peer feedback process is beneficial for both writers and readers.

Consistent with the present study's expectation that student participants would expect that their draft would be revised, the content analysis revealed that the student participants predominantly made a substantial and meaningful level of changes to their drafts to produce the final copies of their narrative writing task, 'Sequel to Frozen.'

Summary

This section addressed the thesis' hypotheses as well as emerging themes as follow:

Hypothesis 1. As hypothesized, the student participants' narrative writing became of high quality according to the Ontario Writing Assessment (i.e., the holistic scores of the revised narrative writing at Time 2 were higher than those of the draft narrative writing at Time 1, an indication of significant levels of improved quality of student participants' narrative writing).

Hypothesis 2. As hypothesized, the analysis of student peer assessors' comments indicated convincing evidence of quality comments (i.e., student peer assessors provided more 'in-depth level' comments than 'surface-level' comments).

Hypothesis 3. As expected, student peer assessors' comments consistently indicated strength, an area of weakness and explicit suggestions or recommendations for revision (i.e., 11% of the peer feedback comments provided was positive. At least each student provided one positive comment for each sub-component of the narrative rubric, while 89% of the peer feedback comments provided comments indicating strength, an area of weakness and suggestions for improvement for each sub-component of the narrative writing rubric).

Hypothesis 4. Contrary to what is predicted, expert-peer consistency was not achieved; reliability and validity were low; the number of over-marking (peer-assigned marks) was higher relative to the experts' assigned marks, an indication of low reliability and validity.

Survey and interview. An analysis of survey and interview questionnaire indicates peerScholar as a favourable writing platform for creating and revising student participants' draft copies of the writing task; support for the findings that computer-based writing is typically more repetitious and creates the opportunity for more peer editing than writing with paper and pencil.

Reciprocal peer feedback and assessment: Students' self-report revealed that students see value in both parts of the revision process, the reciprocal peer feedback and assessment by reading and responding to their peers.

Meaningful changes made. Students considered that their drafts would be revised (i.e., the content analysis revealed that student participants predominantly made a substantial and meaningful level of changes to their drafts to produce the final copies of their narrative writing task).

This section on 'Results' reported on the description and analysis of the data collected on expert and peer assessments. The next section explores the study's general discussion, conclusion drawn from the present study, the contributing factors, implications, and limitations.

CHAPTER FIVE

DISCUSSION

The section includes a discussions, a report on the conclusions, contributing factors, implications of this master's study and the limitations of the research.

Discussions

The present study investigated whether the involvement of middle school students in online peer feedback and assessment affect the quality of their narrative writing. This study focused on the effects of online peer feedback and assessment on both the assessor and the assessee. Peer online feedback and assessment was found to significantly affect the quality of middle school students' narrative writing. In this section, the author discusses the effects of the online peer feedback and assessment on the successive drafts on the middle school students' narrative writing process.

Improved Writing Quality. The analysis revealed the usefulness of feedback and assessment given as the result of the substantial and meaningful changes student participants made to their narrative writing drafts. Findings show that student participants improved their revision skills and qualitative writing. This finding corroborates that feedback and assessment are useful to the recipients only when they act on them (Topping, 2003) indicating the essential step that occurs between feedback and assessment and performance improvements (Nelson & Schunn, 2009) and thus confirms *hypothesis 1* of the present study – 'students' narrative writing will be of high quality (increasingly improved).'

It seems acceptable that identifying problems and making suggestions leads assessors to engage in activities with higher cognitive demands. The cognitive comments given by assessors

in this study varied from ‘surface-level’ indicating elaborations, justification, and recommendations to ‘in-depth’ (positive and critical/negative) comments containing suggestions for improvement. This shows that the assessors developed a clearer and deeper understanding of the narrative written task ‘Sequel to Frozen’ by judging, recommending and providing improvements in the quality of their peers’ (the assessees’) narrative writing task confirming *hypothesis 2* of this research – ‘Peer comments will be progressively better at each stage of the study.’ These findings replicate the analysis of Chen and Tsai (2009) on in-service teachers in that the more peer feedback and assessment given to peers, the more likely student participants were to make improvements to their narrative writing task (Sequel to Frozen).

It was observed that the comparison of peers' work against a curricular expectation results in the student participants’ reflection on their own work. Reflection in the present study refers to the student participants interacting with the subject content, processing it, thinking about it by comparing it to alternative content, considering other perspectives, and then creating new learning. Next, the student participants actively used the cognitive process, including evaluating, monitoring, and rehearsing their own understanding. On the other hand, the student participants being assessed, the student assessees, received peer feedback and assessment from the peer assessor in a timely and personalized fashion and made revisions to enhance the quality of their work further. These findings replicate the research of Lin et al. (2001) in which the authors proposed that when students are asked to provide online feedback and assessment to peers, they progress above and beyond the cognitive processes required for completing a given task, as they must now “read, compare, or question ideas, suggest modifications, or even reflect on how well their own work is compared with others” (p.248). The authors further suggest that a collaborative method of feedback and assessment moves students away from being dependent on instructors as

the only, or major, source of judgment about the quality of learning to a more autonomous and independent situation where each individual develops the experience, know-how, and skills to assess their own learning. The result and analysis from the present study highlight that offering students the opportunity not only to reflect on the work of their peers but also on their own work lead to increased improvement the quality of the narrative writing.

The findings of the present study showed that reciprocal peer feedback and assessment experienced by the student participants in the roles as assessors and assessees enhanced their learning in the narrative writing process. The results and analysis sections highlight the fact that between the first draft and final submissions, no instruction took place. The improvements identified in the student participants' revised and final submission arose due to the enactment of online peer feedback and assessment and in particular either due to the experience that student participants gained while enacting the role as peer assessors or due to the exploitation of peer feedback and assessment received during the peer-assessee role.

The statistically significant difference in Spearman's correlation coefficient between the assessment Time 1 and assessment Time 2 has a theoretical explanation. The cognitive, social constructivism, and social learning theories explain the various cognitive processes brought about by peer feedback and assessment including self-evaluation, self-correction, self-adjustment, and self-reflecting through the giving and receiving, and responding to comments (van Gennip et al., 2010). Also, the statistically significant difference found between Time 1 and Time 2 confirms earlier studies (Andrade, 2013, 2015; Cho et al., 2006; Panadero et al., 2013, Xiao & Lucking, 2008; Falchikov & Goldfinch). These string of researchers posit that when both peer feedback and assessment, as well as well-defined assessment criteria, are implemented together, they improve the writing abilities of student such as their critical thinking, cognitive

development, and performance. Improved writing is based on the understanding and the use of well-defined assessment criteria applied to the narrative drafts of their peers as well as their own narrative writing drafts (Panadero et al. 2013).

Peer Comment Quality. Student participants, as peer assessors, were found to have the beginning skills of providing effective feedback comments to their peers. Particular characteristics of peer feedback (justification, recommendations, and suggestion for improvement) offered by assessors were found to be aligned with the quality of assessees' draft writings. More so, the lower the quality of assessees' first drafts, the more 'in-depth' peer feedback and assessment offered. The indication is that the assessors could identify mistakes and shortcomings in assessees' writing drafts and thus offering elaborations, justifications, and providing suggestions for improvements, which were mostly grammatically accurate and consistent throughout, confirming *hypothesis 2* of the present study. These findings support earlier research citing suggestions and recommendations for possible ways for improvements (Strijbos & Sluijsmans, 2010), as well as justified comments (Geilen et al., 2010; Narciss, 2008, 2012) as essential characteristics of effective online peer feedback and assessment. Notably though, in the present study, the amount of surface lever and in-depth level (or the positive and negative comments) provided by peer assessors to peer assessees were not evenly distributed.

As demonstrated through the substantial changes in their first and second drafts of their narrative writing, it could be argued that as assessees, student participants acted on most or all suggestions provided by their peer assessors. In the present study, student participants were not reluctant to accept their peers' feedback as legitimate. This finding contradicts that of an earlier study by van Gennip et al. (2010). Student participants, as assessees, used some feedback and assessment from their assessors to revise their narrative writing, and those revisions improved

the quality of their narrative writing. The analysis of the present study revealed that in the case of receiving invalid peer feedback and assessment, assessees were able to filter such comments, as ready suggested in earlier studies (Hovardas et al., 2014; Tsivitanidou et al., 2011).

The theoretical explanation for the effects of the peer feedback and assessment on the quality of the narrative writing is that peer feedback comments are easier to understand and easier to use in revision than experts' comments. It was observed that successive drafts, meaning a couple of revisions, tend to be most effective in narrative writing improvement. The present study confirms a previous study of Cho & Schunn (2007), which supports the use of adoption of peer feedback and assessment. It appeared that middle school student writers are better in incorporating peer feedback comments into their revision than a subject-matter expert. This finding is consistent with and corroborates previous research showing that peer feedback and assessment supports the development of writing skills (Graham & Perin, 2007; Topping, 1998). The literature reviewed and specifically, the studies reviewed by Toppings (1998) found peer feedback and assessment to be reasonably valid and reliable.

In the present study, it was intended to compare the quality of the peer comments provided at Time 1 and Time 2 (first and second submissions of writing drafts) using the same rubric for the narrative writing task. It was observed that student participants, as assessors, provided written comments that were relevant in terms of elaborations, judgments, recommendations, and suggestions for improvements during Time 2 (second submission), confirming *hypothesis 2*. On the onset of the present study, student participants were trained to use assessment rubric in the context of narrative writing. The findings of the present study confirm previous studies of Sluijsmans et al., (2002), Hanrahan and Isaac (2001), and Hovardas et al. (2014) which promote specialized training, scaffolding and experience for peer validity and

reliability that peer assessors need in order to produce high quality feedback and assessment. Also, it is vital to indicate that although the peer feedback provided in the present study signaled good quality, this does not mean that the peer assessors included in their peer feedback and assessment all errors of the learning products of their peers. This result indicates that each participant, as an assessor, read each work of a peer (the assessee), thought about its content and provided relevant and quality peer feedback.

Peer accountability. Peer accountability was included as part of the research design – accountability in the sense that the assessors' peer feedback and assessment would be assessed. It seems that requiring the student participants to be accountable promoted responsibility for the learning of each participant and the learnings of their peers particularly the assessors' quantitative and qualitative responses – the criticality and quality of the feedback comment, thus confirming *hypothesis 3* – 'Peer accountability in peer assessment will improve the quality of peer comments.' Being accountable also indicates that the student participants, like experts, can discriminate between a good (high-scored) and a poor (low-scored) narrative writing. These findings align with the previous study of Davis (2006) which reported that peer assessors ensured more exceptional care in marking since they (peer assessors) knew that they were being assessed on their capability in marking other student's work. In the same vein, Tsai et al. (2001), in a study Networked Peer Assessment, examined and marked the quality of peer assessor's comments to encourage assessors to provide helpful comments, to be active student participants of learning and assessment process, and then to be more analytical by giving quantitative feedback, a number grade, to others and learning from others' mistakes. However, the findings contradict those of Rogers and Fellers (2016) in which the authors reported that exposure to

exemplary peer performances could undermine motivation and success arguing that this causes participants to perceive that they cannot attain their peers' high levels of performance.

Regarding qualitative feedback, both differences and similarities were found in the peer and experts' feedback. Both the peers and experts provided written comments and quantitative assessment relevant to the critical/negative and positive judgments. The fact that student participants provided relevant written feedback comments indicates that they were attentive in their roles as an assessor. The average scores of both the peers and expert were found to be correlated to the number of critical comments indicating that the ratings were consistent with the quality of peer feedback and that number of changes made in the revision correlated to the critical/negative comments. This confirms the earlier work of Davies (2006) and Tsivitanidou et al., 2011) which posit that critical comments are crucial to the revision process and eventually improved narrative writing. Although this does not in any way signify that the student assessor in the present study captured all errors in the narrative writing drafts of their peers, it does indicate that the peer feedback and assessment were of quality.

Expert-Peer Consistency. Predictability, in the case of 'expert-peer consistency,' *hypothesis 4, was that* 'a high level of peer consistency' will be maintained between experts and peers. However, the quality of the peer assessment (the number grade, the scores assigned by peer assessors) were different from those assigned by the experts, indicating inconsistency (low reliability and validity).

With reference to the literature, low-reliability indices are the result of inconsistency while validity tends to be low when students' understanding of the assessment criteria is different that of the expert raters' understanding. With this in mind, this possibility was addressed earlier on in the present study by giving student participants and expert raters a specific training on the

assessment criteria used. Although findings of prior research on reliability and validity posit that peer assessment can be encouraged by prior specialized training in the assessment criteria (Hanrahan & Isaacs, 2002; Sluijsmans, 2002; Van Steendam et al., 2010), findings of the present study show that training alone on assessment criteria does not guarantee reliable and valid quantitative assessment. With the specialized training on the assessment criteria provided to student participants in the context of narrative writing, reliability and validity were still low in the present study. The relevant question can be asked: 'Why were the reliability and validity low?' One explanation regarding the findings of the present study is that the reliability and validity of the quantitative assessment process are not only connected to the use of assessment criteria. The reliability and validity are also based on the understanding of the object of the assessment, in the case the present study, narrative writing. In the present study, low reliability and validity might have been the result of the difference in the level of understanding of the learning product, narrative writing. The difference in the scores signifies that peer assessors, as novices, did not completely capture the actual status of the learning product assessed (Topping, 2003). Also, the difference observed in the scores among peer assessors appears to be a sign of confusion which could be the results of mixed signals regarding the value and accuracy of learning products assessed since student participants in the present study received training in the assessment criteria. More so, no training sessions could ever capture all of the dimensions of the learning assessment context a peer assessor experiences (Sluijsmans et al., 2002). The indication is that there is a need for a common understanding to be reached between peers on one hand and peers and expert raters on the other regarding the content of the narrative writing in addition to assessment criteria intended to be used. No amount of training sessions can ever account for all dimensions of learning how to compose a narrative writing as included in the structured-rubric

none is there any depth of preparation for or experience in an assessment criteria that can fully capture the requirements that a peer assessor (a student-writer) will encounter when s/he acts in the role as a peer assessor (Sluijsmans et al., 2002).

However, the reliability and validity of the present study demonstrated some degree of interrater agreement and a degree of consistency between the peer assessors and the expert raters. This clearly shows that a scaffolding or training in the assessment criteria can assist students in providing an implicit evaluation of a learning product being assessed. The modest difference in the score confirm the study of Cho et al. (2006) which argue that peer feedback and assessment could be as reliable and valid as instructor rating since instructors may rush to evaluate a vast amount of writing papers compared to peer assessors charged with the responsibility of assessing a small stack of writing papers and thus devoting more attention during the assessment process. The findings of the present study confirm earlier study of Hu and Lam (2010) that reciprocal online peer feedback and assessment is a dynamic process where guidance and scaffolding might be critical as long as this process evolves.

A common concern with peer-assigned marks, as stated above, is that peer assessors tend to over-mark than the instructor (Falchikov, 1986; Sluijsmans et al., 2002) thus affecting the validity of the peer assessment process. The result of Spearman's correlation from the present study supports this claim. There is concern regarding peer over-marking. Peer over-marking refers to the peer assessors assigning higher marks relative to the teacher. Findings from the present confirmed that peer over-marking was higher as compared to expert-assigned scores. Although the correlation is not that high, the fact this is statistically reliable implies that expert raters and peer assessors do tend to agree on the quality of written pieces being marked. This

goes to show that expert raters are somewhat more robust assessors than peer assessors by that statistical difference in mark means observed in the results section.

Motivation to write. As part of the analysis of the present, the findings confirmed a correlation between the student participants' motivation to write and the quality of their narrative writing products. The student participants' preference for online feedback and assessment provided using peerScholar as contained in their responses to the survey questionnaire was a source of their enhanced motivation to write. This finding supports earlier work of Cartney (2010) in which the author argues that using feedback in an online learning environment offers some distinct advantages including increasing the timeliness of feedback, providing new learning opportunities for both the assessors and assessees of feedback, humanizing the environment, and building a learning community. Also, the findings of the present study align with that of Sessions et al. (2016) who suggest that social interaction and collaboration around text construction when using digital tool helps students to organize how they would work together and share responsibility for a specific task. The results from the survey showed that the use of peerScholar for writing was supportive of the student participants – the student writers – demonstrated by their full and enthusiastic participation. These findings confirm previous studies of Yamac and Ulusoy (2016), which revealed students no longer found the writing process boring because they were writing with "fun" digital tools. Furthermore, findings of the present also support earlier studies of Yang et al. (2005), who argue that technology inherently has a variety of assistive supports and scaffolds that help struggling writers to persist when the writing process proves challenging and MacArthur (2009), who upon the review of a series of studies and an extensive literature review, observed that students who used word processing improved the quality of their

writing because the motivation to carefully construct and revise written works is increased when the internet offers an authentic and more comprehensive audience.

Conclusions

The research reported in this thesis found convincing and exciting trends concerning the effects of online peer feedback and assessment on successive drafts of middle school students' narrative writing process. The present study focused on providing and receiving peer feedback and assessment in an online environment, particularly on online written peer feedback and assessment as applied to the D.E.C.L model of writing, the post and vote model of assessment, and accountability. Next, the conclusions of the present research study are presented.

First, arising from the analysis of the study is that the students significantly gained higher-level learning skills in narrative writing. Improved quality of student participants' narrative writing was observed, the achievement of progressively higher levels according to the Ontario Writing Assessment Rubric for Grade Eight. The combined expected effect of peer feedback and assessment both on the student assessor and assessee were confirmed in the present study. As revealed in the analysis, student participants receiving and providing higher quality peer feedback and assessment while enacting both roles and student assessor and assessee was found to be related to a higher quality of narrative writing products.

Second, student participants reflected more critically on their narrative writing drafts uploaded to peerScholar for which they were providing feedback and assessment, as well as on their own narrative writing drafts uploaded and how they could improve likewise. The assessors who provided higher quality online feedback and assessment to their peers tended to produce better quality narrative writing products. This finding corroborates the results of the study

conducted by Li et al. (2010) and further substantiates the learning benefits of providing peer feedback and assessment.

Third, online peer feedback and assessment is an effective learning strategy. Many student participants indicated in the survey that they compared their narrative writings (Sequel to Frozen) with those of their peers, thereby gaining critical insights from the works of their peers. This learning strategy creates an opportunity for students to read, compare, or even question the ideas of their peers as well as reflecting on how good their own work is as compared with others.

Fourth, when required to provide peer feedback and assessment, student participants get to understand the criteria for good narrative writing and then develop a sense of confidence by measuring their level of performance with those of their peers relative to the work assigned.

Fifth, one way of helping students during the enactment of providing peer feedback and assessment is through training. Students need to be trained and made aware of what is necessary when taking on the role of an assessor, the required skills, and the reasoning behind the implementation of peer feedback and assessment. Although, student participants received training and continued scaffolding during the present study,

Sixth, the analysis of peer feedback comments and assessment in conjunction with the survey results indicate that the ability for students to reflect and response and the number (frequency) of peer feedback comments and assessment using a collaborative model addressed most of the common criticisms of peer feedback and assessment.

Seventh, although some researchers argued that students tend to focus on surface errors when providing peer feedback**,** a finding of the present study revealed the opposite. A trend was observed in part one of the ‘assess phase’ of the present study, where student participants gave comments based on surface errors. However, surface comments were replaced with ‘positive’

and ‘critical’ comments in part two of the ‘assess phase’ indicating that student peer assessors were becoming more aware of their role regarding holistic revision instead of error identification. Tsui and NG (2000), in their study, suggested an inability for student peer assessor’s comments to affect content-based changes. In the present study, there is clear evidence of the growing ability of student peer assessors to consider more substantial level concern while at the same time focusing on the local concern while reviewing peer assessees’ narrative writing drafts. Instructor’s intervention through the use of a structured rubric during the present study for student participants to write and provide peer feedback and assessment likely affected the growth in content-based comments as well. A primary focus on addressing larger level concerns combined with a subsequent focus on local concerns for the editing process can help students to understand better their role as peer assessor in providing feedback comments that are content-based.

Eighth, the use of collaborative model curriculum facilitated by the peerScholar platform as well as the instructor intervention demonstrated by the use of structured rubric do address and eliminate some of the most common criticisms of the peer feedback and assessment in middle school students’ narrative writing process. Also, a focus on responding to peer feedback by creating a revision plan as was facilitated by the ‘reflect phase’ of the peerScholar platform encouraged student participants to value the peer feedback and assessment process.

Ninth, findings from the present study support the use of peer accountability, as demonstrated by the correlation of the average scores of peers to the numerical number of critical comments. This approach is consistent with multiple existing web-based peer feedback and assessment systems, including CrowdGrader, MobiusSLIP, SWoRD, among others. The peer

accountability approach improves the quality of peer feedback and also increased the reliability and validity of peer assessment (rating).

Tenth, learning to write and the development of competencies as a writer requires basic understandings of writing processes and the acquisition of a range of writing strategies and skills, including the use of technology. The process-based writing approach to narrative writing as is an appropriate framework within which to integrate ICTs and develop instructional activities designed to advance students' 21st-century writing skills.

In sum, it is believed and as proven in the present study that reciprocal peer feedback and assessment, when used as an instructional strategy, has the potential to not only improve students' learning in any given subject area but also can help students develop cognitive self-assessment skills in moving them towards becoming independent writers and thinkers. The understanding of reciprocal peer feedback and assessment, as an instructional strategy, leads to the achievement of high academic outcomes as well as producing the kinds of students (i.e., critical thinkers and writers) teachers hope to develop. The present study demonstrated that when taught and used effectively, online peer feedback and assessment improve narrative writing performances of young writers.

Contributing Factors

The conclusions of the study appear to be predicated on several factors.

First, having student participants to analyze and evaluate their peers' work, enabled them to evaluate better, monitor, and regulate their own work independently of the teacher.

Second, when students are challenged to provide peer feedback and assessment containing comments for judgments, elaborations, and suggestion for improvement, they are, in fact, asked to express and articulate to others what they know or understand about the given task

at hand. This is a manifestation of the fact that engaging students to provide explanations in their feedback and assessment helps them to perform significantly better in their own narrative writing.

Third, having student participants collaborate by providing online peer feedback and assessment on the same assignment topic, first, gave student participants the opportunity to complete the task at hand and then connect new concepts from their peers to what they already know about the topic. Providing online peer feedback and assessment involves meaning-making and knowledge construction in a way that connects new ideas to what students already know.

Implications

Several implications of the present study have been mentioned previously. Next, these implications are explored.

First, although students received explicit teaching on pre-specified peer feedback and assessment criteria, our finding during the present study indicates that implementing reciprocal online peer feedback and assessment is rather a complicated task for middle school students. However, it was quite encouraging to follow student participants' gradual growth in producing good quality feedback and assessment and subsequently improved narrative writing. The implication emerging from this finding is for writing instructors to focus on scaffolding the process for student peer assessors to provide student peer assesses with significant formative feedback and assessment.

Second, the determination of the reliability and validity is crucial for student peer assessees. Although, the peerScholar platform used in the present study has a 'reflect phase,' however, there was no opportunity for interactions for the student peer assesses to engage their student peer assessors in deciding the reliability and validity of feedback and assessment

received. Instead, the student peer assessees were left to reflect on their own to filter feedback comments provided by their peers. The emerging implication is that writing teachers need to understand the mechanism students use to filter peer comments and that opportunity, support, and guidance should be provided for both the assessee and assessor to engage in communication that will help the assessee to validate and filter the assessors' feedback comments during the revision process.

Third, findings from this study indicate that the quality of peer feedback students provided while assessing their peers' narrative writings correlated with the quality of their own work. Furthermore, the present study shows that students' ability to provide judgment and suggestion for revision on the quality of their peers' narrative writing may have an influence on revising their writing product than the peer feedback and assessment received. This finding is an indication of support for the theoretical explanation of the value of active engagement in reciprocal peer feedback and assessment.

Fourth, although other previous studies have suggested learning gains, it is not clear on how these two roles (assessor and assessee) impact the writing process of middle school students. Findings from the present study helped to answer this question by indicating that students' effectiveness in providing online peer feedback and assessment is derived primarily from the understanding of the content area, marking criteria, and the frequency of drafts; the three together impact the writing process of middle school students' narrative writing. This means that active involvement in the reciprocal online peer feedback and assessment is related to learning outcomes, the training, and the monitoring of students in the reciprocal online peer feedback and assessment process warrant the focus of narrative writing instructors.

Fifth, although the combined and individual benefits of the quality of online peer feedback and assessment provided and received were confirmed in the present study, there is a need to explore ways to enhance the quality of reciprocal peer feedback and assessment to achieve the best outcomes in the narrative writing process.

Sixth, writing instructors need to be sensitive to the reality that online peer feedback and assessment set in motion different learning on the part of the assessors and assessees, which can lead to different learning outcomes. Findings of the present study showed that peer assessment (peer grading) alone seems to be less effective than peer feedback for peer assessor because giving feedback to peers activates the crucial cognitive processes that contribute to learning gains of the peer assessor.

Seventh, there are teachers, particularly those of middle schools, who may be concerned about the possible cognitive overload, thereby resulting from students enacting the roles of student assessor and assessee simultaneously. Findings from the present indicate that students in middle schools can benefit from engaging in reciprocal peer feedback and assessment. With that been said, there is a need for teachers to create opportunities for all students, particularly middle school students, to take on the roles both as an assessor and assessee.

Eight, Graham and Perin (2007) and Graham and Sandmel, (2011) argue that a considerable research has documented the usefulness of the process approach for improving the quality of students' writing. Learning to write a quality narrative writing and developing competence as a writer requires an understanding of the writing process and the acquisition of a range of writing strategies and skills, including the use of technology. Findings from the present study demonstrate that a process approach to narrative writing, as defined in this thesis report, is an appropriate framework within which to integrate information and communications

technologies (ICTs), for example, peerScholar, for peer feedback and assessment provision and develop instructional activities designed to advance students' 21st-century narrative writing skills. Effective and meaningful integration of technology into the k12 narrative writing program also will require further research on the ways writing instructors can use digital tools to teach narrative writing in this digital age, engage all students in the writing process, including struggling and reluctant student writers to meet the narrative writing expectations in the curriculum.

Ninth, the present study is one of the follow up on multiple calls for quantitative and qualitative research for the effects of online peer feedback and assessment (e.g., Topping 1998, 2010; Gielen et al., 2010). The present study has fulfilled this by focusing on one specific object of online peer feedback and assessment, narrative writing, within one specific educational context, middle school. With a focus on the study that reports qualitative and quantitative measures of narrative writing of middle school students, the current study contributes to the literature by estimating the extent to which students' engagement in and the enactment of online peer feedback and assessment improves their performance in narrative writing of middle school students.

Limitations

The present study carried out in the context of regular grades seven and eight writing class was a small-scale research with limited claims to generalizability. It was an exploratory one with limitations related to the small sample size (n=21 students). Future studies will need to replicate the findings of the present study with larger sample size and in other contexts (i.e., having middle school students in two or more schools with different school boards enacting as peer assessors and assessees in narrative writing). Next, the limitations are discussed.

First, one limitation of the present study is time constraints. It was difficult to follow student participants' writing progress throughout the entire semester using collaborative models. According to the data analyzed during the present study, growth was noticeable, and it would be quite an exciting task to investigate if this trend will continue throughout the entire semester or school year.

Second, the present study was conducted with eighth grade students. That been said, the generalizability of the results of the present study to other primary school grade levels should be carried out with some caution.

Third, students' participation was completely voluntary. While all of 21 student participants started the study's activities, one student did not complete some of the required phases (create, assess, and reflect) on time specified. Thus, the data used were slightly skewed.

Fourth, there was 'problems of exposure.' Students are not trained in our social relations to give and take constructive criticism without it feeling like a personal attack on them as individuals. Most students, especially the age group recruited for the present study, dislike the exposure of publicly offering critical feedback and assessment as much as they fear to receive it. The main fears that they have heard voiced are as follow: 1) Peer pressure meaning that if you offend, there is the fear that you may be isolated from the group, and 2) Friendship marking meaning that marks may be skewed through friendships or hostilities. Although the present study was conducted under anonymity, the possibility for some identifiable features may have been apparent, especially for a small group of student participants in the same class.

Fifth, the present study was conducted using only grades seven and eight students in my class. In the future, it would be interesting to investigate further this phenomenon on a larger

scale, collecting data from multiple middle schools. That way, a comparison could be made between the current results from the present study and results to be gained from future research.

Summary

The present study attempted to investigate the effects of peer feedback and assessment on successive drafts of middle school students' narrative writing. The data of the study confirmed some predictions about peer feedback and assessment and hopefully has produced some insight aimed to add to the body of knowledge on peer feedback and assessment in online learning regarding the perspective of the student assessor and assessee. The findings and models (the D.E.C.L and post-and-vote), as well as accountability, are tied to the fact that peer feedback and assessment are written and are web-enhanced. Peer feedback and assessment require students to use cognitive processes, which lead to several benefits. When students are challenged to provide comments which are evaluative and contain suggestions for improvement, then they will be able to express and articulate what they already know. Peer feedback and assessment, which includes an explanation, signaled a constructive learning activity in which students articulate ideas that go beyond their peers' written text. Finally, the trends and findings of the present study indicate that middle school students are capable of enacting the task associated with being a peer feedback and assessment provider and receiver. It is hoped that the findings reported in this thesis provide some direction for researchers and teachers about the effects of peer feedback and assessment on successive drafts of middle school students' narrative writing.

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APPENDICES

Appendix A

Permission From the ICEHR to Conduct this Research

MEMORIAL UNIVERSITY

Interdisciplinary Committee on
Ethics in Human Research (ICEHR)

St. John's, NL Canada A1C 5S7
Tel: 709 864-2561 icehr@mun.ca
www.mun.ca/research/ethics/humans/icehr

ICEHR Number:	**20181130-ED**
Approval Period:	January 19, 2018 – January 31, 2019
Funding Source:	Not Funded
Responsible Faculty:	Dr. Bruce Mann Faculty of Education
Title of Project:	*The Impact of Peer Feedback on Middle School Students' Writing: The Case for Student Assessors and Assessees*

January 19, 2018

Mr. Sampson Yeaher
Faculty of Education
Memorial University of Newfoundland

Dear Mr. Yeaher:

Thank you for your correspondence of January 10 and 18, 2018 addressing the issues raised by the Interdisciplinary Committee on Ethics in Human Research (ICEHR) concerning the above-named research project.

ICEHR has re-examined the proposal with the justifications and revisions submitted, and is appreciative of the thoroughness and clarity with which you have responded to the concerns raised by the Committee. In accordance with the *Tri-Council Policy Statement on Ethical Conduct for Research Involving Humans (TCPS2)*, the project has been granted *full ethics clearance* to January 31, 2019. ICEHR approval applies to the ethical acceptability of the research, as per Article 6.3 of the *TCPS2*. Researchers are responsible for adherence to any other relevant University policies and/or funded or non-funded agreements that may be associated with the project.

If you need to make changes during the project, which may raise ethical concerns, please submit an amendment request with a description of these changes for the Committee's consideration. In addition, the *TCPS2* requires that you submit an annual update to ICEHR before January 31, 2019. If you plan to continue the project, you need to request renewal of your ethics clearance, and include a brief summary on the progress of your research. When the project no longer involves contact with human participants, is completed and/or terminated, you are required to provide the annual update with a final brief summary, and your file will be closed.

Annual updates and amendment requests can be submitted from your Researcher Portal account by clicking the *Applications: Post-Review* link on your Portal homepage.

We wish you success with your research.

Yours sincerely,

Kelly Blidook, Ph.D.
Vice-Chair, Interdisciplinary Committee on
Ethics in Human Research

KB/lw

cc: Supervisor – Dr. Bruce Mann, Faculty of Education
Associate Dean, Research, Graduate Programs, Faculty of Education

Appendix B

Permission From the TCDSB to Conduct this Research

2/1/2018

Dear Sampson,

Thank you for your application to conduct the research entitled *"The Impact of Peer Feedback on Middle School Students' Writing: The Case for Student Assessors and Assessees".* The Research Review Committee has considered your application and deems that the proposal does not meet requirements for system-level research. It may be considered as a 'school-based teacher inquiry' with approval of the school principal.

Based on your proposal, it is our understanding that:

1 – Grade 8 students will write a narrative passage. They will receive feedback from their peers on their own narrative writing to improve their writing, and they will also review and give feedback on their peer's narrative writing. The goal is to investigate the impact of peer feedback on middle school student's writing using a peerScholar web program during the writing process.

2 - You will instruct your Grade 8 students over a period of 6 weeks; the special education teacher and ESL teacher will be part of the inquiry as expert inter-raters.

3 - The proposal has received ethics approval from Memorial University and the inquiry would be conducted in partial fulfillment of your Master's degree.

4 - The teacher inquiry would be conducted as part of your ongoing classroom practice and will inform your practice as a teacher at St. Isaac Jogues.

5 - Data collection will take place in early 2018 and a report will be submitted to the School Principal by June 2018.

6 - All participation is voluntary and the anonymity of individuals, school, and school board will be maintained.

Please share this communication with your school principal as you will require approval from your principal to proceed.

Sincerely,

Marina

Dr. Marina Vanayan

Senior Coordinator, Educational Research

Toronto Catholic District School Board

80 Sheppard Avenue East

Toronto, Ontario M2N 6E8

416-222-8282 Ext. 2561

Appendix C

Permission From School's Principal to Conduct this Research

Toronto Catholic District School Board

St. Isaac Jogues Catholic School

July 9th, 2018

Re: Sampson Yeaher
Research Project – Memorial University
"The Impact of Peer Feedback on Middle School Students' Writing:
The Case for Student Assessors and Assesses"
2017-2018 School Year

Dear Mr. Yeaher,

As per our conversation early in the 2017/2018 school year, this letter acknowledges that you have my full permission and support to complete the research component of your Masters in Education degree exploring peer feedback as St. Isaac Jogues Catholic School.

Should you require any further documentation to support this research project, please do not hesitate to ask.

Sincerely,

C. A. LeMoine

Carol Ann LeMoine
Principal

1330 York Mills Road · Toronto, Ontario · (416) 393-5315 · fax: (416) 393-5223

Appendix D

Consent for Students and Students and Parents

For the purpose of this study, students and their parents were given an informed consent form. The process of informed consent gave student participants and their parents the basic idea of what the research was about and what their participation would involve so that they could decide whether or not they wish to participate.

Consent:

Your signature on this form means that:

- You have read the information about the research.
- You have been able to ask questions about this study.
- You are satisfied with the answers to all your questions.
- You understand what the study is about and what you will be doing.
- You understand that you are free to withdraw consent/permission for the use of your data in the study without having to give a reason(s) and that doing so will not affect you now or in the future.

Regarding withdrawal <u>during</u> data collection:

- You understand that if you choose to end participation during data collection, any data collected from you up to that point will be destroyed.

Regarding withdrawal <u>after</u> data collection:

You understand that your data is being collected anonymously and therefore cannot be removed once data is analyzed and anonymized.

I agree to the use of direct quotations ☐ Yes ☐ No

I allow my name to be identified in any publications resulting from this study ☐ Yes ☐ No

I allow data collected from me to be archived ☐ Yes ☐ No

By signing this form, you do not give up your legal rights and do not release the researchers from their professional responsibilities.

Your Signature Confirms:

☐ I have read what this study is about and understood the risks and benefits. I have had adequate time to think about this and had the opportunity to ask questions and my questions have been answered.

I agree to participate in the research project understanding the risks and contributions of my participation, that my participation is voluntary, and that I may end my participation.

A copy of this Informed Consent Form has been given to me for my records.

Name of Parent	Signature of Parent	Date

Student Consent

My parents/guardians and I have reviewed the information in this consent form together and I consent to participate in Mr. Yeaher's Research Project.

Name of Student	Signature of Student	Date

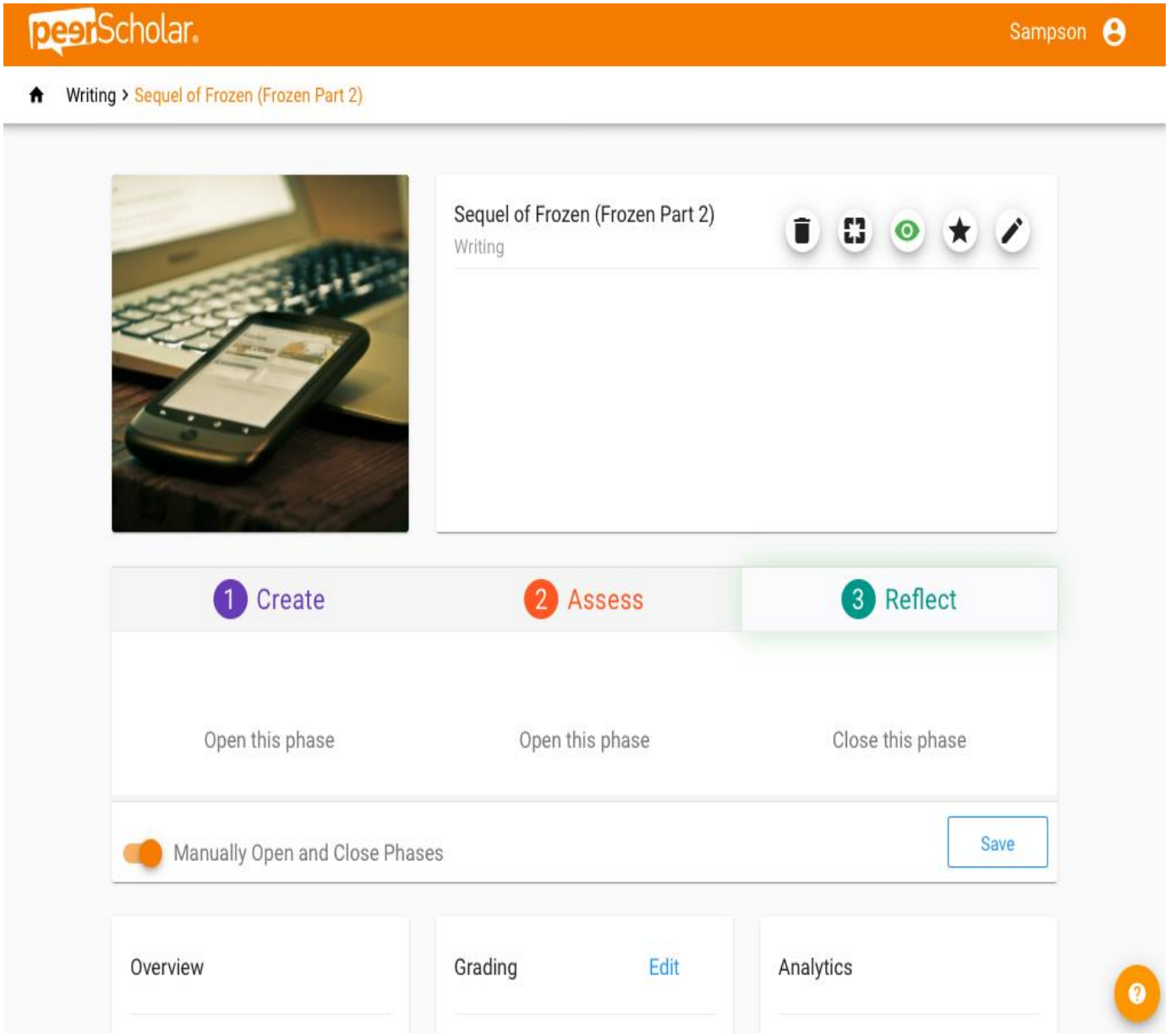
Researcher's Signature:

I have explained this research to the best of my ability. I invited questions and gave answers. I believe that the participant fully understands what is involved in being in the study, any potential risks of the study and that he or she has freely chosen to be in the study.

_____	_____	_____
Name of Principal Investigator	Signature of Principal Investigator	Date

Appendix E

A View of the Home Page in peerScholar For the Narrative Writing Task – Sequel to Frozen. This screenshot shows the three phases of the peerScholar platform: create, assess, and reflect.



Appendix F

'Create Phase' - Written and Verbal instructions to Students

After watching the movie 'Frozen,' the elements of the story were discussed in detail. Please be reminded that being familiar with the various elements that combine together in good storytelling does help you in your own story writing. It also helps you to organize your thoughts and to competently weave together the various threads of your own stories. The main characters in 'Frozen' were fully discussed as well. Now, you will brainstorm what happened next and use your imagination to write your own sequel. You are required to take the characters to an unknown planet or simply to a different setting. Remember a sequel picks up where the original story ends. Think of what adventures might the characters have next. How do they continue to grow and change? Your writing MUST be not less than 1 and half pages long (at least four paragraphs of not less than five sentences).

Appendix G

'Assess Phase': Written and Verbal Instructions to Students

Part 1:

Rate your peer's work: 1 - Sequel needs improvement; 2 - Effective sequel

Part 2:

Check the box (es) that represent(s) your feedback.

Criterion 1. Knowledge and Understanding (Beginning, Middle and Ending): I feel that our story has a strong beginning, middle and an end written sequentially.

Criterion 2. Knowledge and Understanding (Text Form and Style): I feel that your story has a clear evidence of a problem arising in the story and the closure showed a clear resolution of the problem.

Criterion 3. Knowledge and Understanding (Plot line): I feel that your plot line (the events) and details in your story do relate to the main idea of the story and showed orderly flow.

Criterion 4. Thinking (Ideas): I get the sense that you developed your story in a way that ideas are connected and supported with details and reasons.

Criterion 5. Thinking (Perspective and Imagination: I thought that characters and their actions showed that you did write from a perspective and imagination.

Criterion 6. Communication (Word choice and Voice): I heard a strong voice coming through your writing – smooth and calm. I also found evidence of the effective use of dialogue between characters, quotations, descriptive language and action verbs.

Criterion 7. Communication (Ideas): Your ideas are clearly and logically organized into paragraphs.

Criterion 8. Communication (Audience and Purpose): I feel that and your story was evidently intended to entertain young children/adults.

Criterion 9. Communication (Content - characterization, sequel, and consistency): I got the sense that your story had clear evidence of new aspects of the characters introduced in the original story; the story written could easily be a sequel to the origin

Criterion 10. Communication (Convention): You demonstrated command of the conventions of standard English – sentence fluency, capitalization, punctuation and spelling.

Criterion 11. Application (Ideas, content transfer, and connection): I feel that your story shows connections among topic, personal experiences, and life situations.

Part 3:

Please provide comments (for each sub-component) to help your peer revise his/her first draft. Please use the examples given to you in the 'Rubric (shown in Appendix K) and Instruments for Assessing a Sequel' document (format shown in Appendix L) given to you. Please organize your comments using a table with column titles 'Component', 'Sub-component' and 'Comment'. Please remember to use your own words instead of just copying and pasting the examples given in the document referenced above. You could create a word document for your comments and attach it. Note: Please be specific in your comments by referencing the content of your peer's first and second drafts.

Appendix H

'Reflect Phase': Written and Verbal Instructions to Students

This phase is intended to help you learn how to effectively improve your draft sequel based on peer feedback and assessment you gave received. In this case the feedback and assessment from your peers which make things especially interesting given that some of your peers will give useful feedback and assessment while some may not useful. It's up to you to read and think about the feedback and assessment carefully so you can decide for yourself how you think you should modify your sequel going forward. Below you will see your submission as well as the associated feedback and assessment from each peer assessor. You can toggle through the peer list to see each peer's reaction to your work.

You will see indicators within your sequel peers have attached inline comments. Click on them to see these comments.

To help you think about the feedback and assessment, you are required to rate the usefulness of the feedback and assessment provided by your peers. When doing this try to ignore the tone of the feedback comments and instead focus on the substance. Did this peer give you information that will be useful in improving your future work?

Once you have accessed the feedback in detail then it's time to use it to improve! Toggle to the Revision screen, there you will see a copy of your original composition. Using what you've learned from the feedback you received, change it to make it better!

Please respond regarding the feedback received: How useful is this peer's assessment with respect to helping you to improve your future work? Please check the box that represents your response: ☐ Not useful ☐ Somewhat useful ☐ Very useful

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Appendix I

Rubric for Narrative Writing (Taken from Ontario Writing Assessment, pp. 24-25)

Categories and Criteria	Levels			
Knowledge and Understanding	LEVEL 1	LEVEL 2	LEVEL 3	LEVEL 4
Demonstrates knowledge and understanding of the text form, genre, format A narrative includes • beginning, middle and end, and is written sequentially • characters, setting, problem, and resolution • details that relate to main idea or even	• Demonstrates limited knowledge and understanding of the text form, genre, and format (e.g., development of the problem and events that lead to the resolution is unclear and lacks focus)	• Demonstrates some knowledge and understanding of the text form, genre, and format (e.g., development of the problem and events that lead to the resolution is somewhat clear with some focus)	• Demonstrates considerable knowledge and understanding of the text form, genre, and format (e.g., development of the problem and events that lead to the resolution is clear and focused)	• Demonstrates thorough knowledge and understanding of the text form, genre, and format (e.g., development of the problem and events that lead to the resolution has a high degree of clarity and focus)

Thinking	LEVEL 1	LEVEL 2	LEVEL 3	LEVEL 4
Generates ideas that are connected and is able to support ideas with detail and reasons (e.g., support main ideas) Demonstrates critical and creative thinking processes (e.g., understands/ writes from a perspective, writes with imagination)	• Generates and supports ideas with limited effectiveness • Demonstrates critical and creative thinking processes with limited effectiveness (e.g., develops story that shows perspective of specific characters with limited effectiveness	• Generates and supports ideas with limited effectiveness • Demonstrates critical and creative thinking processes with limited effectiveness (e.g., develops story that shows perspective of specific characters with some effectiveness	• Generates and supports ideas with considerable effectiveness • Demonstrates critical and creative thinking processes with considerable effectiveness (e.g., develops story that shows perspective of specific characters with considerable effectiveness	• Generates and supports ideas with a high degree of effectiveness • Demonstrates critical and creative thinking processes with a high degree of effectiveness (e.g., develops story that shows perspective of specific characters with a high degree of effectiveness)

Communication	LEVEL 1	LEVEL 2	LEVEL 3	LEVEL 4
Expresses and organizes ideas in narrative form (e.g., logical organization) Communicates for audience (readers of story) and purpose (to entertain) (e.g., style, voice, tone) Uses conventions (e.g., grammar, spelling, punctuation) and appropriate vocabulary (e.g., descriptive language, dialogue between characters, linking	• Expresses and organizes ideas in narrative form with limited effectiveness • Communicates for audience and purpose with limited effectiveness • Uses conventions and vocabulary with limited effectiveness	• Expresses and organizes ideas in narrative form with some effectiveness • Communicates for audience and purpose with some effectiveness • Uses conventions and vocabulary with some effectiveness	• Expresses and organizes ideas in narrative form with considerable effectiveness • ommunicates for audience and purpose with considerable effectiveness • Uses conventions and vocabulary with considerable effectiveness	• Expresses and organizes ideas in narrative form with a high degree of effectiveness Communicates for audience and purpose with a high degree of effectiveness • Uses conventions and vocabulary with a high degree of effectiveness

words, action verbs)				
Application	LEVEL 1	LEVEL 2	LEVEL 3	LEVEL 4
Transfers knowledge and skills (e.g., concept of adventure with no rules) to the writing task Demonstrates an ability to make connections among topic, personal experiences, and life situations (e.g., connecting experience of an adventure to	• Transfers knowledge and skills with limited effectiveness • Makes connections among topic, personal experiences, and life situations with limited effectiveness	• Transfers knowledge and skills with some effectiveness • Makes connections among topic, personal experiences, and life situations with some effectiveness	• Transfers knowledge and skills with considerable effectiveness • Makes connections among topic, personal experiences, and life situations with considerable effectiveness	• Transfers knowledge and skills with a high degree of effectiveness • Makes connections among topic, personal experiences, and life situations with a high

personal knowledge and/or world experiences)	degree of effectiveness

Appendix J

Peer Comment Quality Classification (partly adapted from Wadhwa, Schulz & Mann, 2006 Memorial University, Canada).

The indicators included in this appendix are actual student participants' comments taken from the current study.

Classification of Comments	Sub-Classification	Definition	Indicator
Social		• Comment referring to non-specific content but instead referencing a context and content	• "I have made comments on your story. However, I am not sure if I saved them properly for you to be able to see." • You have demonstrated an understanding in writing a sequel. Job well-done"
Quality (or cognitive)		• Comment citing strengths and weakness of the assessee	

	Surface level	• Comment includes elaboration, justification or recommendation	• Some of your ideas were not supported with enough details and reasons. • In your story, you have a lot of spelling errors. For example, you wrote “tht” instead of ‘that,’ “furnicter” instead of ‘furniture,’ “funerul” instead of ‘funeral,’ etc.
	In-depth	• Comment containing suggestions for improvement, reasoned responses, or comprising supportive arguments.	• After reading your story, I noticed that your sequel has no conflict. I also realized that it doesn’t have a resolution. When you are revising your sequel, remember to indicate clear evidence of a problem arising in the story and a resolution of the problem stated in the closure.

	• As I was reading through your story, I noticed you had a good beginning and middle, but the end was a little weak. The end of a story is supposed to have a resolution to the conflict, but yours didn't have. For example, you said, "Before they could do anything the lady had run out with the egg and never to be seen." What happened after she left? Did they go after her? These are some questions a reader will ask.

Appendix K

Coding Scheme for Classifying Positive and Critical Comments

This is a coding scheme used in the study and functions to classify comments by types ("positive" and "critical") on Narrative Writing. (Table partly adapted from Ontario Writing Assessment, pp. 24-25, 2009; Wadhwa, Schulz & Mann, 2006 Memorial University, Canada). These examples are actual student participants' comments from the present study.

Component	Sub-Component	Positive Comment	Critical Comment
Knowledge and Understanding	• Beginning, middle and Ending	• I feel that your story has a strong beginning, middle and an end written sequentially.	• Your story should have clearly established a strong beginning, middle and an end written sequentially.
	• Text Form and style	• I feel that your story has a clear evidence of a problem arising in the story and the closure showed a clear resolution of the problem.	• Your story needs to indicate a clear evidence of a problem arising in the story and a resolution of the problem clearly stated in the closure.

	• Plot line	• I feel that your plot line (the events) and details in your story do relate to the main idea of the story and showed orderly flow.	• Your plot line (the events) and details in your story do need to relate to the main idea of the story and to show orderly flow
Thinking	• Ideas	• I get the sense that you developed your story in a way that ideas are connected and supported with details and reasons.	• Your story was not developed in a way to show that ideas were connected and it also lacks details and reason to support the ideas.
	• Perspective and imagination	• I thought that characters and their actions showed that you did write from a perspective and imagination.	• Your story needs to show an evidence that you write from a perspective and imagination.

Communication	• Word choice and Voice	• I heard a strong voice coming through your writing – smooth and calm. I also found evidence of the effective use of dialogue between characters, quotations, descriptive language and action verbs.	• Your story needs good word choice and voice – supported by the use of dialogue, quotations, descriptive language and action verbs.
	• Ideas	• Your ideas are clearly and logically organized into paragraphs	• Your story needs to be organized logically and into paragraphs
	• Audience & Purpose	• I feel that and your story was evidently intended to entertain young children.	• Your story needs to clearly identify the target audience and purpose.
	• Content (characterization, sequel, and consistency)	• I got the sense that your story had clear evidence of new aspects of the characters introduced in the original story; the story written could easily be a	• Your story needs to show an evidence of new aspects of the characters introduced in the original story; that the story written could easily be a sequel to the

		sequel to the original story; and the story consistently remain true to the time period for which the setting occurs.	original story; and that the story consistently remains true to the time period for which the setting occurs.
	• Convention	• You demonstrated command of the conventions of standard English – sentence fluency, capitalization, punctuation and spelling.	• Your story needs to show good command of the conventions of standard English – complete sentences, capitalization and spelling.
Application	• Ideas, content transfer and connection	• I feel that your story shows connections among topic, personal experiences, and life situations	• Your story needs to show connections among topic, personal experiences, and life situations

Appendix L

Student participants' responses to the survey questionnaire (adapted from the Ontario Writing Assessment).

The responses were based on the scale from 1 – 5: 1 = strongly disagree; 2 = Disagree; 3 = Neutral; 4 = Agree; and 5 = Strongly agree.

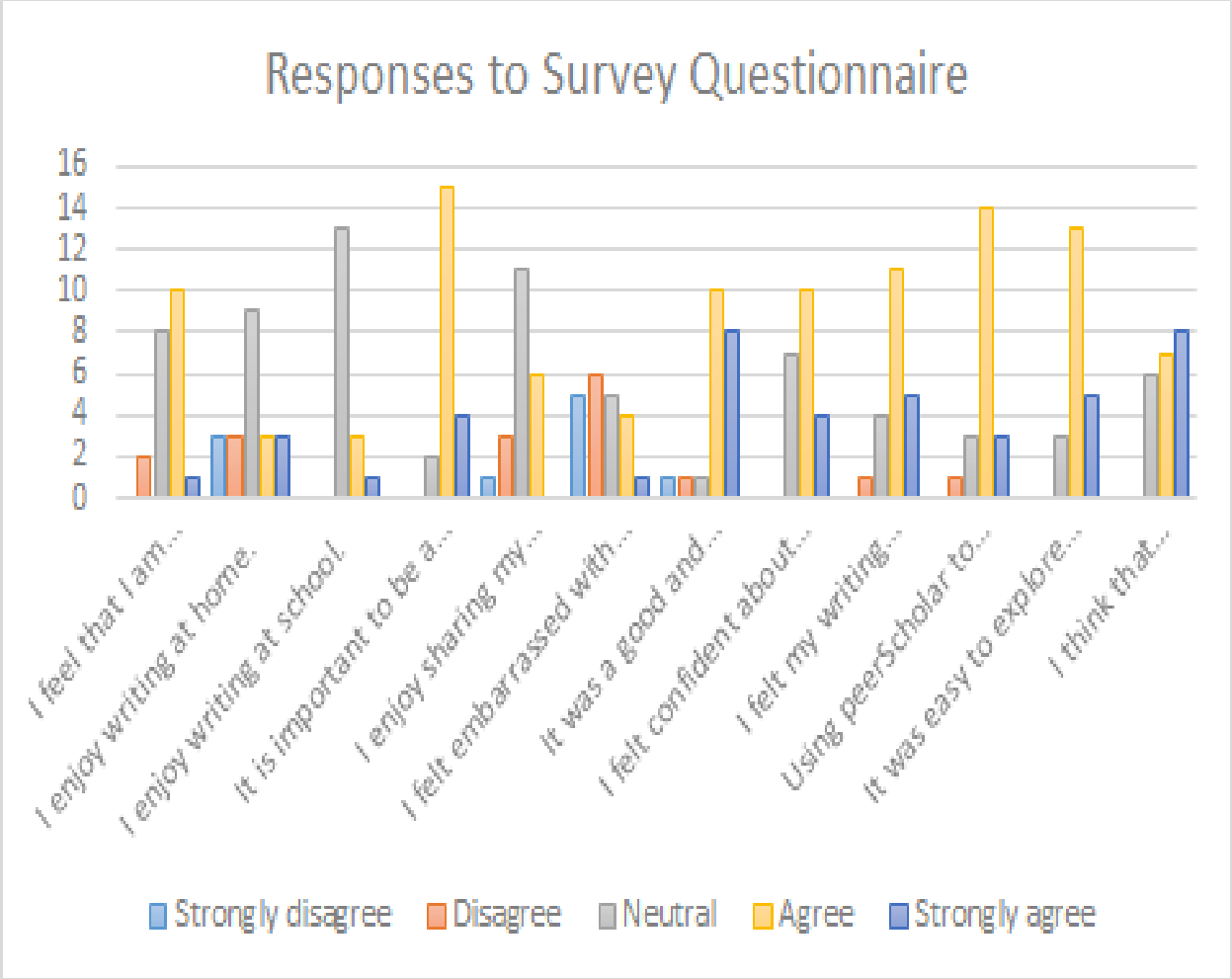
Statements	Strongly disagree	Disagree	Neutral	Agree	Strongly agree
I feel that I am effective writer.	0 (0%)	2 (9.5%)	8 (38.1%)	10 (47.6%)	1 (5%)
I enjoy writing at home.	3 (14.3%)	3 (14.3%)	9 42.8%)	3 14.3%)	3 14.3%)
I enjoy writing at school.	0 (0%)	0 (0%)	13 (80%)	3 (14.3%)	1 (5%)
It is important to be a good writer.	0 (0%)	0 (0%)	2 (9.5%)	15 71.3%)	4 (19%)
I enjoy sharing my writing with others.	1 (5%)	3 (14.3%)	11 (52%)	6 (29%)	0 (0%)

I felt embarrassed with peer reading and commenting by providing feedback and assessing on my writing draft.	5 (24%)	6 (28%)	5 (24%)	4 (19%)	1 (5%)
It was a good and helpful experience to provide and receive feedback and peer- assessment in making changes on my writing drafts	1 (5%)	1 (5%)	1 (5%)	10 (46.9%)	8 38.1%)
I felt confident about reading and commenting on my peers' writing drafts by providing feed-back and assessment.	0 (0%)	0 (0%)	7 (34.1%)	10 (46.9%)	4 (19%)
I felt my writing improved at the end of the unit.	0 (0%)	1 (5%)	4 (19%)	11 (52%)	5 (24%)
Using peerScholar to provide and receive peer feedback and assessment was helpful in making changes on my writing drafts.	0 (0%)	1 (5%)	3 (14.3%)	13 (52%)	5 (24%)

It was easy to use and explore the features of peerScholar.	0 (0%)	0 (0%)	3 (14.3%)	13 (61.7%)	5 (24%)
I think that peerScholar can help me improve my writing.	0 (0%)	0 (0%)	6 (28%)	7 (34.1%)	8 (37.9%)

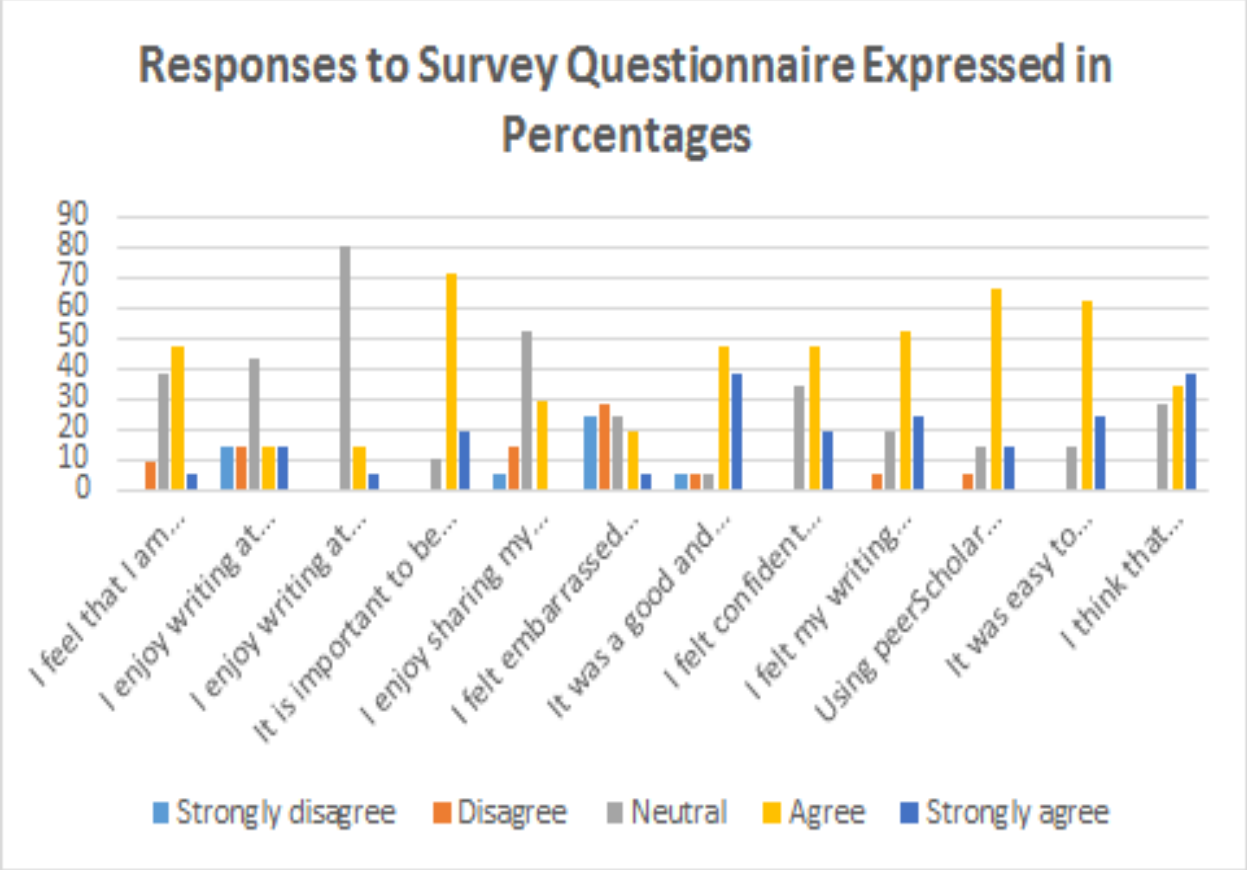
Appendix M

Graph of Student Participants' Responses to the Survey Questionnaire Expressed in Whole Numbers



Appendix N

Graph of Student Participants' Responses to the Survey Questionnaire Expressed in Percentages



Appendix O

The schedule of Activities Followed During the Present Study

Week	Activity
1	· Development of journal writing rubric and teaching students how to write journal entries · Administer writing habits questionnaire to students · Explicit teaching on how to write peer comments, identify peer comments as either "social", "surface cognitive" or "in-depth cognitive" and classify peer comments as positive or critical · Explicit teaching on how to provide peer assessment · Watch the movie 'Frozen' · Identify and explore the key components of fictional story · Completion and submission of first draft of narrative writing -'Sequel to Frozen,' the learning product
2	· Reviewing of peers' first drafts; providing and receiving peer feedback and assessment · Revision of students' own narrative writing based on peer feedback and assessment · Completion and submission of second (revised) drafts of narrative writing – 'Sequel to Frozen,' the learning product.

3	· Reviewing of peers' second drafts; providing and receiving peer feedback and assessment · Revision of students' own narrative writing based on peer feedback and assessment · Experts assess second (revised) drafts · Completion and submission of final copy of narrative writing – 'Sequel to Frozen', the learning product
4	· Completion of questionnaire · Completion and submission of 'Reflective Narratives'