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Thinking Beyond Writing Development in Peer Review

Mary G. Chaktsiris
McMaster University, chaktsim@mcmaster.ca
James Southworth
Wilfrid Laurier University, jsouthworth@wlu.ca

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Thinking Beyond Writing Development in Peer Review

Abstract
The benefits of a peer review process tend to be evaluated in terms of improvements to students' writing. But are there reasons why instructors might want to implement peer review into their courses over and above writing development? In this study, we collected data from 30 university students on their perceptions of a peer review process. Although we found little revision of student work from draft to final paper, we were surprised to learn that students found the process useful. We found that the peer review process helped students develop non-cognitive skills. In particular, it helped them to develop (a) self-discipline, which helped with their time management, and (b) resilience in overcoming anxiety, which helped them to integrate in a social network.

Les avantages du processus d'évaluation par les pairs a tendance à être évalué en termes d'amélioration des capacités de rédaction des étudiants. Mais y a-t-il des raisons pour lesquelles les instructeurs aimeraient se livrer à l'évaluation par les pairs dans leurs cours pour en dériver des avantages qui vont au-delà du développement des compétences en rédaction? Dans cette étude, nous avons recueilli des données de 30 étudiants d'universités sur leurs perceptions d'un processus d'évaluation par les pairs. Bien que nous ayons trouvé peu de révisions dans les travaux des étudiants entre le premier jet et la version finale, nous avons été surpris d'apprendre que les étudiants avaient trouvé le processus utile. Nous avons découvert que le processus d'évaluation par les pairs avait aidé les étudiants à développer des compétences non cognitives. En particulier, cela les a aidés a) à développer une auto-discipline, qui les a aidés à gérer leur temps et b) à acquérir de la résilience pour surmonter l'anxiété, ce qui les a aidés à s'intégrer dans un réseau social.

Keywords
writing, peer review, transferable skills, growth mindset, collaboration, higher education, self-discipline, resilience

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Peer review is complex. Not only does it involve considerable pre-planning, but it also requires supporting students beyond what may be seen as traditional teaching support. Peer review can include providing logistical, technological, and emotional support to students throughout the process. Since peer review is a time-consuming process, both in and out of class, it can become the central feature of a course. With such a high investment, course instructors will want to ensure that students achieve the learning outcomes associated with peer review. By noting the quantity and quality of student revisions from draft to final papers, instructors have a useful metric to determine the effectiveness of the process. As writing scholar John Bean (2011) says, the central measure of a successful peer review process is if student papers undergo "genuine substantial revision" (p. 295). But is this focus too narrow? While the benefits of peer review are generally framed in terms of students' writing development, has this focus obscured other benefits?

In this study, which involves a collaboration between an instructor and a writing specialist, we implemented a peer review exercise into two undergraduate history courses at a mid-size Canadian university. Our instruction modeled to students the collaborative process of peer review. After planning and implementing the various stages of the process, from developing peer review worksheets to providing instruction to students on giving and receiving feedback, we discovered that students made few revisions from their draft to final paper. This result was not as we expected. Despite our efforts, we could not objectively demonstrate the development of students' writing and critical thinking skills. Using Bean's measure, our peer review exercise was a failure. Or so it seemed. Although we found a lack of substantial written revisions, we were surprised that the overwhelming majority of students shared that the peer review process was helpful, particularly for developing some of their non-cognitive skills.[1]

In particular, our study shows that students found the peer review process helpful in overcoming anxiety and developing time management skills, which helped build a sense of community with peers. Since these factors can be important to student success, we suggest that peer review is a useful pedagogical exercise to develop skills beyond writing. These "soft skills," such as organization skills and the ability to collaborate effectively with peers, are central not only to students' success at university, but also in the workplace (Business Council of Canada, 2016; Heckman & Kautz, 2012; Tinto, 2013). In part one of this paper, we provide an overview of the peer review literature in postsecondary settings. In part two, we present our study and methodology. In part three, we present our findings and consider their implications for student success at university.

Literature Review

Research on peer review in postsecondary settings tends to focus on the effectiveness of peer feedback and/or improvements in student writing. These two research topics are closely connected, since feedback from peers has been shown to improve student writing (Cho, Schunn, & Charney, 2006; Nelson & Schunn, 2009). Meanwhile, from a methodological standpoint, research into peer review generally takes

[1] Non-cognitive skills are associated with learners' attitudes and temperament, including motivation, perseverance, and trustworthiness (Heckmen & Rubinstein, 2001).

one of two approaches: either textual analysis to measure improvement in student writing or qualitative research that measures student perceptions of the value of peer review.

Since a successful peer review exercise hinges upon students' abilities to provide effective feedback to each other, it is not surprising that a considerable amount of research has been focused in this area. This includes research that has inquired into differences between online and face-to-face feedback (Grabill & Hicks, 2005; Hewett, 2000); anonymous and non-anonymous feedback (Cho & Schunn, 2007); and praising and constructive feedback (Cho et al., 2006; Nelson & Schunn 2009). Studies have generally shown a positive correlation between receiving peer feedback and improvements in student writing (Cho et al., 2006; Nelson & Schunn, 2009).

Researchers have noted that receiving feedback from a peer, particularly in a face-to-face environment, can be threatening for students (Warschauer, 2002). One way some instructors limit this concern is by conducting the peer review process in an online environment (Wärnsby, Kauppinen, Aull, Leijen, & Moxley, 2018). A study by Wärnsby et al. (2018) analyzed the emotionally-laden language that students provide in an online setting when giving feedback to their peers and found that students tend to provide more positive than negative responses to their peers. The authors suggest that explicit training to students could help to improve the effectiveness of peer feedback. However, as this study suggests, while peer review can be viewed as threatening by students, moving it online is not the only option for scaffolding student interaction. Like these authors, we suggest that explicit training to students on giving and receiving feedback might reduce their fears in a face-to-face setting.

More recently, researchers have turned their attention to comparing the benefits between receiving feedback and providing feedback to peers. The results have been surprising. This research suggests that providing feedback to a peer is more likely to result in improvements to student writing than receiving feedback (Cho & MacArthur, 2011; Lundstrom & Baker, 2009). In Lundstrom and Baker's (2009) study of 91 English language learners, students were divided into two groups—those who only gave feedback to other students and those who only received feedback from other students. Students were given thirty minutes to write an essay at the beginning of the course and then after either giving or receiving feedback, they wrote another essay at the end of the course. Based on textual analysis of seven writing categories (including organization, cohesion, vocabulary, and grammar), it was found that those students who provided feedback to others developed their writing skills more than those students who received feedback (Lundstrom & Baker, 2009).

The research on the benefits of giving feedback highlights the important role of metacognition—namely, "thinking about thinking" (Flavell, 1979, p. 906)—to writing development. Writing scholars have long noted that these skills are foundational to a writer's development (Elbow, 1973). In order to become a better writer, students ought to take a step back and think about their own writing from a reader's perspective. As Ramage, Bean, and Johnson (2006) note:

> One of the best ways to become a better reviser is to see your draft from a reader's rather than a writer's perspective. As a writer, you know what you mean; you are already inside your own head. But you need to see what your draft looks

> like to someone outside your head. The best way to learn this skill is to practice reading your classmates' drafts and have them read yours. (p. 519)

What may seem clear within the writer's mind is often not clearly represented on the page for the reader. A pivotal step in students' writing development is when they begin to consider their own work from a reader's perspective. The providing of feedback within a peer review process can help students make this transition.

It is not clear, however, if it is the providing of feedback that results in improved student writing. The benefits could be a result of simply reading the peers' papers. However, Cho and MacArthur's (2011) study provides support that it is indeed the giving of feedback rather than the reading that results in writing improvement. The researchers divided 61 undergraduate students in a physics course into reviewers and readers. The reviewers provided feedback on student texts from a prior course, whereas the readers read student texts from a prior course but did not provide feedback. The students then wrote an introductory section of a lab report. Based on a textual analysis of the student lab reports, the researchers found that reviewers significantly outperformed readers from a writing perspective (Cho & MacArthur, 2011).

Nevertheless, these textual analysis studies on the importance of providing feedback to peers are limited in a significant way (Cho & MacArthur, 2011; Lundstrum & Baker, 2009). In both studies, the students did not revise a draft paper before they wrote a final paper based on peer feedback. In the Lundstrum and Baker (2009) study, the participants wrote two separate essays; in the Cho and MacArthur (2011) study, the participants only wrote a single paper. As a result, students were not revising their earlier work, and thus did not evaluate and implement the feedback they received. While the methodological approaches of these studies target peer review, they do not mimic a typical peer review process that includes revision.

In addition to textual analysis, there has been considerable research conducted on student perceptions of peer review. In terms of positive perceptions, studies have shown that students have felt that their written work improved after participation in peer review (Mostert & Snowball, 2013; Mulder, Baik, Naylor & Pearce, 2014; Vickerman, 2009). Other research has shown that students saw benefit in both providing and receiving feedback to their peers (Simpson & Clifton, 2016). In addition, studies have shown that students have confidence in the abilities of their peers to provide feedback before going into a peer review exercise (Mulder et al., 2014).

Despite evidence of positive student perceptions about peer review, other studies have shown that students have negative associations. Students have noted a lack of expertise in their fellow students to provide effective feedback (Mulder et al., 2014), and students have also regarded themselves to be underqualified in providing effective feedback (Davies, 2000; Liu & Carless, 2006). In addition, research has highlighted students' feelings of anxiety in providing harsh feedback to their peers (Falchikov, 2001; Liu & Carless, 2006; Mulder et al., 2014; Smith, Cooper, & Lancaster, 2002). In addition, some students have developed negative associations to peer review if they felt they put in a lot of effort reviewing a peer's work but that their work was not reciprocated (Mulder et al., 2014). In short, student perceptions of peer review are mixed. This is not surprising given the variation in contexts of these studies (e.g., year level, skill level, training provided).

While a considerable amount of research has been conducted on giving and receiving feedback, both in terms of textual analysis and student perceptions of peer review, there is a lack of research on student perceptions regarding other skill sets, including non-cognitive skills, that are developed throughout a peer review process. This process is often part of an overarching scaffolded writing structure. The goal of a scaffolded design is to develop students' skills from the ground up through a series of writing assignments, which can include peer review, that build on each other (Bean, 2011). It is this overarching context of successive writing assignments, which build toward a final paper, that emphasizes the process of peer review. The peer review literature's focus on outcome rather than process has recently been noted by Baker (2016). She argues that there has been a lack of research into process-oriented matters such as when it is best to schedule the different components of peer review, best practices for assisting students in providing effective feedback, and how students revise their work after giving and receiving feedback. While these are certainly important areas to investigate, Baker's approach still construes the peer review process entirely in terms of writing development. But are there additional skills over and above writing development that students acquire in a peer review process? While instructors tend to regard the benefits of peer review in terms of student writing development, what do learners find most beneficial?

Method

The goal of our instruction was to develop student writing while also supporting student success. We approached the latter through an emphasis on developing a growth mindset, which views frustration, anxiety, and time challenges not as impediments but as opportunities to develop (Duckworth, 2016; Dweck, 2016; Schroder et al., 2017). This study was implemented in two 12-week third-year undergraduate history courses in one academic year. It was approved by the university's Research Ethics Board (REB). In total, 30 students completed the peer review exercise and were part of this study. In course 1, 10 out of 13 students (77%) consented to participate in this study. In course 2, 20 out of 23 students (87%) consented to participate. As this study involved third-year history students (with the majority of students being history majors), most students had prior experience with writing research papers. In both courses, a scaffolded writing approach to peer review, using assessment strategies including in-class workshops and online feedback, supported students in completing a comprehensive first draft of a research paper as well as giving and receiving peer feedback. Students completed research papers, utilizing both primary and secondary source material, in both courses where this peer review process was completed. Table 1 details the data that was collected in both courses.

Table 1
Data Collected for Each Course

Study	Data Sources	Method
Course 1 (*n*=10)	• Eight (8) participants responded to post-peer review anonymous surveys • Two (2) participants took part in one-on-one interviews about peer review	• peer-review exercise completed at mid-term • participants received feedback from one peer on draft paper • peer review was completed completely in-class
Course 2 (*n*=20)	• Sixteen (16) participants responded to pre-peer review discussion questions • Eighteen (18) participants responded to post-peer review discussion questions • Twenty (20) participants responded to post-peer review anonymous surveys	• peer-review exercise completed at mid-term • participants received feedback from two peers and the instructor on a draft paper • peer-review was completed in-class with online components (feedback submitted electronically using course website)

The peer review method was similar in both courses. It consisted of four main parts: (1) annotated bibliography due in week four; (2) draft paper submitted in week seven and workshop delivered on peer review, (3) final paper due week 12, and (4) surveys and interviews completed after peer review.

First, in week four, an annotated bibliography was due. Students were required to summarize 10 sources that they would use to support their research paper. In addition to annotating 10 sources, students were asked to outline their topic, research question, and rationale for choosing it as the subject of their research paper. Students received feedback on the annotated bibliography from the course instructor.

Second, in week seven, students submitted their draft papers. Before engaging in the peer review process, students took part in a workshop on giving and receiving both verbal and written feedback. This workshop, co-facilitated by the course instructor and a consultant from the Writing Centre, provided an overview of guidelines and best practices for both receiving and providing commentary on written work. The instructors taught that in order for feedback to be useful, it should be actionable, specific, and objective. A key component of this workshop was identifying and exploring examples of substantive versus underdeveloped feedback. The goal of providing these examples was to model for students the way they would be assessed on the quality of the feedback they shared. The workshop also encouraged students to use a glow-grow model when

providing feedback. This model involves providing a piece of positive feedback before providing a piece of constructive feedback.

During the workshop, the instructor and writing consultant directly addressed the concerns of students about sharing their work with peers. They discussed that sharing work—especially a work in progress— is an essential part of the writing process. The co-facilitators also discussed how peer review functions and its usefulness as a "second lens" to ensure scholarly integrity. It was emphasized that the importance of peer review was to improve the work and to "build up" student capacity in writing rather than "tear it down" (see Appendix A). After this instruction, students took part in the peer review exercise. In the first course, students were in groups of two (and therefore only provided feedback to one peer); in the second course, they were in groups of three or four (and provided feedback to two peers). The giving and receiving of feedback took place within the classroom, with students taking turns listening to feedback about their own paper and also delivering feedback to their peers. In addition to this verbal feedback, students also filled out a peer review worksheet with detailed questions about argument, content, and research methodology (see Appendix B).

Third, in week 12, the final paper was due. Finally, after completing the peer review exercise, students were asked to complete a survey to assess their experience with the process (see Appendix C). Of the 30 students who completed the peer review process, 28 completed the survey (8 students in the first class and 20 students in the second class). We invited students who participated in the first class to complete follow-up, in-person interviews.[2] In total, two interviews were conducted. In the second class, students answered two additional questions about the peer review process. One before and one after the exercise (16 students responded to the first question that asked them to reflect on their goals and expectations on peer review; 18 students responded to the second question that asked them to reflect on the process).[3]

This mixed methods approach of surveys (Likert scale and open-ended questions), reflection responses, and interviews allowed us to collect responses from most students who had participated in the peer-review process. Open-ended survey questions, discussion questions, and interviews were analyzed using a thematic content analysis to identify recurring sentiments or perceptions about the peer review process.

There are three main limitations and assumptions to our study: our results are based on a relatively small sample size; our study was conducted within two history courses, which may need to be adapted to apply to other disciplines; and our study was conducted in third-year classes, which may apply differently to other year levels.

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[2] The survey was administered by the course instructor on the last day of class. The interviews were conducted by the course instructor and the writing consultant.

[3] Students were asked to discuss the following two questions by completing the sentences:
Question #1: Provide a short reflection on each of the three questions: 1) My goal as I participate in peer review is …; 2) I think this exercise will be useful because …; and 3) I think this exercise will be challenging because …;
Question #2: In one paragraph (5-7 sentences), please briefly summarize the feedback you received this week during the peer review exercise.
Completion rates were: Question #1 = 16 students and Question #2: 18 students.

Results and Discussion

Despite participating in a peer review exercise, students completed relatively few written revisions between their draft and final papers. This result is in contrast to other peer review studies (Cho et al., 2006; Nelson & Schunn, 2009). Nevertheless, the majority of students who participated shared that peer review was a positive and useful exercise. Generally, we found that the success of a peer review exercise is not reducible to the written results that students produce.

Two main themes emerged regarding other benefits of peer review that are central to student success. In particular: (a) self-discipline in managing time, and (b) resilience in overcoming anxiety, which can help build a sense of community. The following looks at these two themes in detail.

Time Management and Self-Discipline

Although the benefits of a scaffolded writing structure are well known for developing students' writing skills (Bean, 2011; Bliss & Askew, 1996; Bodrova & Leong, 1998), the results of our study suggest they can also help students overcome the pitfalls of procrastination by building self-discipline. In so doing, students can develop their time management skills.

Recently, there has been a great deal of research focused on the importance of non-cognitive skills to student success, including self-discipline (Duckworth, 2016; Duckworth & Seligman, 2006). This trait involves the ability to follow through with what one intends to do when more enticing options exist (Tangney, Baumeister, & Boone, 2004). The opposite of self-discipline is impulsivity, and impulsivity correlates closely with procrastination (Steel, 2007). According to Duckworth and Seligman (2005), self-discipline has more of an impact on student success than IQ. While we now have a better appreciation for the important contribution that self-discipline has on student success, less research has focused on specific pedagogical practices that can build this skill and thereby positively influence student learning. A scaffolded writing model that includes peer review is a promising pedagogical practice to build self-discipline and time management.

Finding #1: Students found that having a draft paper completed early was the most beneficial aspect of the peer review process. We found that students developed time management skills throughout the writing process. Our survey asked students to rank the following four aspects of the process from most to least beneficial: writing an annotated bibliography, having a draft paper early on in the process, receiving feedback from my peer, and providing feedback to my peer. The majority of students who completed the survey (79%) found that having a draft paper completed early in the process to be the most beneficial for developing their final paper. All students (100%) found that having a draft paper completed early in the process was either the most beneficial or the second most beneficial aspect toward developing their final paper. Meanwhile, students found that providing feedback to their peers was least beneficial for developing their final paper. Over half of students who completed the survey (57%) found that providing feedback to their peer(s) to be the least beneficial among the four options. Almost all students (96%) found that providing feedback to their peer(s) to be

either the least beneficial or second least beneficial toward developing their final paper. In short, students valued the ability to complete their draft paper early over providing feedback to their peers. While much of the peer review literature focuses on feedback, our results indicate that more attention could be given to the benefits of peer review for the development of time management.

In survey comments and follow-up interviews, students noted a variety of reasons as to why completing the draft paper early was a particularly beneficial aspect of the peer review process. They said the peer review process:

- helped them develop time management skills,
- helped them manage the workload with other classes since major papers tend to be due at the end of term,
- helped them develop an overall stronger argument,
- provided them with additional time to edit the paper,
- provided them with additional time to gather and nurture ideas,
- enabled them to return to their paper at a later date with a more objective perspective, and
- helped them with the research of the paper. When some books or resources were not immediately available (i.e., checked out), there was still time to use them later in the term when they were available.

The students in our study valued the peer review process mostly because it enabled them to have a draft paper completed well before the final due date. This is a position that many students, particularly early year undergraduates, rarely find themselves in. According to one study, the large majority of university students procrastinate, and roughly one third are chronic procrastinators while only 1% do not procrastinate at all (Day, Mensink, & O'Sullivan, 2000). One common form of procrastination involves writing essays soon before the deadline date. In so doing, students fail to appreciate a fundamental feature not only of academic writing but of writing in general: writing is a process. A fully formed paper, even a short paper, rarely takes shape in one draft. Developing a strong paper often requires challenging one's own ideas and receiving and implementing feedback from others, all of which takes time. As it is difficult for students to learn the process of writing on their own, peer review can guide them.

Integrating a draft paper into a scaffolded writing model structure that includes peer review encourages students to avoid procrastination. The hope is that students will recognize the value in completing a draft paper early in the process, and they will implement a similar structure on their own for future projects. We saw this in our study. As one student said, "I'll definitely write my papers differently... From now on, I'm going to start changing how I look at things because I've been very bad in which I never edit my work. Never. Ever. Ever." A scaffolded writing model that includes peer review has the potential for developing self-discipline and time management skills, which are foundational to student success and the writing process.

Resilience

In addition to sharing feedback about time management, students also discussed the ways peer review helped them to overcome anxiety about the peer review process. This overcoming of anxiety, or resilience, is characterised by intrapersonal qualities that lead to adaptive responses to pressure and adversity (Chung Turnbull, & Chur-Hansen, 2017; Connor & Davidson, 2003). As a character trait, resilience allows learners to "bounce back" after experiencing anxiety and distress, which, in this study, included receiving feedback about how their writing can be improved. Resilience is considered a skill that can be developed and transfers across the learning process. This means that overcoming a stressful experience at university, for example, can transfer over to how an individual responds in stressful situations in other spaces (Fletcher & Sarkar, 2013; Turner, Scott-Young & Holdsworthy, 2017).

Some students are anxious about and resistant towards collaborative work. A common point of resistance stems from student anxiety surrounding the process of working with others. Often, this resistance or fear has its roots in past negative experiences. Students might have perceived that some team members were doing more work than others or that ineffective communication methods and lack of clarity around expectations led to dysfunctional group dynamics (Mulder et. al, 2014). Because of this common initial resistance, the benefits of collaborative learning, like peer review, are not necessarily automatic. Instead, to help students achieve the benefits of collaboration, it is important that instructors scaffold student interactions. This can help support not only learning but also social relationships between students. Teams do not just happen; they are built. Part of this building can be done by engaging students as partners in their own learning and changing traditional student-instructor relationships to become more collaborative (Roberson & Franchini, 2014; Sweet & Michaelsen, 2012). This study utilized a peer-to-peer feedback model, meaning that it was students' responsibilities to reach their own conclusions about each other's paper. It was not only the instructor's commentary that was valued.

Finding #2: Students were initially anxious about sharing their writing because of the possibility of receiving negative feedback. The majority of students in our study described themselves as anxious or intimidated by the process of peer review. This intimidation was commonly characterized as being based in an initial fear of sharing draft written work with peers. What was interesting was that students did not fear sharing work with their instructor; it was the prospect of sharing it with a peer that made them anxious and, in some cases, incentivized them to work more on developing their written work in order to make a good impression. Students shared fears about the nature of feedback as being negative rather than constructive, and their perception that criticism was meant to tear down one's work rather than improve it.

The theme of anxiety emerged from the surveys, interviews, and discussion questions that were conducted. Students shared that:

- "Receiving feedback from a peer was a little intimidating because as mentioned before, essays are usually between a professor and a student, and even then, the feedback given is rarely in person. Harsh feedback is easy to ignore when it's on paper, but it's not so easy when you expect it in person."

- "I think everyone's afraid of criticism, right? Getting the feedback, I was dreading it. I'm not going to lie, I was dreading it. I dread getting my marks back, even though they're not bad. I don't understand why but I get so fearful. You don't want to take it personally but this is all I do 40 hours a week."
- "I feel like I worked so hard on getting that initial draft that I didn't want my work to be for nothing and have been useless and basically have to start from scratch. That was my basic fear, that it would suck, and I'd have to basically restart my paper."

In a discussion question before the peer review exercise, students were asked to share their greatest concern about participating in the process. Out of a total of 16 students who answered this question, 9 out of 16 agreed that they felt nervous or anxious about sharing their work with a peer. They indicated that:

- "While criticism is not supposed to be negative, it is interesting but also uneasy to have someone face-to-face with you potentially picking your paper apart and vice versa. I would like to think that I would handle that kind of assessment well, but I honestly have no idea. I will just have to find out."
- "The most challenging aspect about peer review is the fear of other peers reading my work, which is normal as discussed in class."
- "I think constructive criticism can be a challenge, due to the nature of it. I mean to say that ripping apart someone's work is much easier to do than provide them with aid in how to make it better."
- "It will be challenging not to view every suggestion of improvement as a harsh criticism. It will be important to remember the suggestions posed are there to help, not discourage."

Students in our study were anxious about peer review because they feared receiving negative criticism. Therefore, it is important when designing and facilitating a peer review process to acknowledge this resistance to encourage students to become more resilient. To accomplish this, introducing students to the concept of a growth-mindset, or the belief that a person's skills or qualities are not innate but rather develop over time can be an important part of peer review (Dweck, 2016). In the field of positive psychology, a growth mindset has been linked to the development of grit and more comprehensive coping strategies around anxiety and distress (Duckworth, 2016; Schroder et al., 2017).

Finding #3: Students expressed that the peer-review process helped them to overcome their initial anxiety. Although students shared that peer review process was intimidating and made them anxious, through this process, they were able to move past this initial resistance or fear and feel more confident giving and receiving feedback. For example, 5 out of 8 students in course 1 post-peer review surveys acknowledged that the peer review process helped them learn to accept rather than fear criticism. As one student said,

> Rather than feeling judged or criticized, the process of giving and receiving feedback allowed for an open discussion to emerge based on the content written in the assignment and allowed for specific critiques to be given without the

> deduction of marks...Allowing criticism to be given without taking it as a personal attack is essential to this process and will be vital for students to learn as they go out into the workforce.

This relationship between the peer review process and the ability to work through anxiety towards collaborative work was also reinforced in post-peer review interviews. One student shared:

> The process of reading a peer's work was a little nerve-wracking but worth it in the end. Knowing that the peer was in the same situation as I was, the openness of reading and reflecting on their work also allowed for reflection on my own and allowed for a stronger paper in the end.

Another student indicated that:

> Through receiving feedback, I learned that even though I was confident in my ability to write an essay, having the opinion of one of my peers is still valuable. This is because they can point out the parts which may seem disjointed or which require more elaboration.

Students expressed anxiety about embarking on a peer review process. It put them out of their comfort zones, in which they were accustomed to submitting their work only to their instructors. However, their reflections after the peer review indicated they felt more comfortable not only with the process but in their ability to complete it. By encouraging reflection on the process of peer review, including ideas about the process before and after its completion, students were invited to articulate their own sense of meaning about its value. As discussed above, one of the key concepts of resilience is that it can be learned and transferred between the different spaces of students' lives. This means that reflecting on their ability to move through the process of peer review, one initially uncomfortable but manageable in the end, has the possibility of impacting students' approaches to learning more generally in other courses or in their lives outside of the classroom.

Finding #4: Students expressed that peer review can help build trust with their peers. Peer review, which can incorporate team-based learning, is collaborative and therefore can trigger resistance or unease. The dynamics of team-based learning are interdependent; just like assignments can be scaffolded to support student learning, so, too, can team dynamics be supported and built through in-class facilitation. Although students generally are interested in getting to know their peers, instructors routinely encounter resistance to collaborative work (Anton & Kremling, 2016). Even instructors are sometimes doubtful about group work, partly because of the negative experiences dealing with student resistance to it. Part of this is based in the reality that teamwork in the classroom is often expected to "just happen" without much support or guidance, which can lead to negative experiences. There is a contradiction here: in one sense post-secondary students seek out and want collaborative learning opportunities, and in another sense, they also resist this learning based on prior experiences. Peer review provides

students with the opportunity to develop collaborative learning skills, which they need and want (Anton & Kremling, 2016).

In course 2, 11 out of 16 students (69%) indicated that one result of peer review included getting to know their peers. Students indicated that it was only after a sense of trust had been built between peers that collaborative and constructive criticism could take place:

> "Knowing that the critiques made to the paper were not directed at me but rather just the writing provided to the peer allowed for continued conversation throughout the entire process and allowed for growth in both papers."
>
> "We're coming at it from the same level. We're both students. We both have the same image of what we're trying to achieve. You're going in as partners. Whereas if I'm getting feedback from a professor, it's not necessarily that they're better than me but they're the ones creating the requirements, whereas we're both fulfilling the requirements."
>
> "...when I was able to share with them their feedback I feel they were able to open up and tell me more about what I did wrong. Originally when they started they didn't really say much. They just said you had good points in this and this and this and when I went into detail they went back and went into more detail. Don't be afraid, I can handle criticism...They didn't want to hurt my feelings."

Students appreciated the value of peer review as an opportunity to get to know their peers and provide useful advice to them. While a majority of these same students shared anxiety about working with others, they also expressed interest in getting to know their peers, providing them with useful advice, and using the experiences to reflect on themselves and their work.

Students are much more likely to persist through their studies when they have built a network of relationships with faculty, staff, and other students (Roberts & Styron, 2010; Strayhorn, 2012). As Tinto (2013) has noted, the research on these networks has focused on what happens outside of the classroom. However, as he argues, what happens inside the classroom is more important to student persistence and success. Therefore, building networks within the classroom through in-class and in-person activities can provide students with a support system that can help them persist through their studies. Our findings suggest that peer review is an activity that instructors can adopt to build cohesion among students within the classroom and thereby help students succeed.

Conclusion

Our findings indicate that the benefits of implementing a scaffolded writing model that includes a peer review exercise go well beyond developing students' writing and critical thinking skills. This model also helps students develop non-cognitive skills that play an important role in their persistence and success through university. In particular, our research indicates that peer review helps students develop self-discipline and resilience. The latter can, in turn, help build relationships with peers and engender a greater sense of community. Future studies could inquire into how these non-cognitive

aspects of peer review might be implemented into first year courses to help students transition to university. Additionally, scholars could identify what relationship scaffolding peer review interactions might have on revisions to final written work.

In order to design a peer review process that emphasizes these skills, instructors can consider implementing a number of strategies. First, to develop students' time management skills, instructors can scaffold the various writing assignments across the entire course. This will also help students recognize that writing is a process, one that requires ongoing revision. Throughout this scaffolding structure, it is important for instructors to recognize where in the process their feedback is most useful to students. Providing instructor feedback on a draft paper is more beneficial to students than on a final paper as students have an opportunity to implement the feedback. Second, to help students overcome anxiety, instructors should provide clear guidelines on how to effectively give and receive feedback. This instruction should include modelling effective examples of verbal and written feedback. Third, to help students build trust with their peers, instructors should ensure that students discuss their feedback face-to-face (rather than over email or some other electronic means). This will help to encourage collaboration and a sense of community. Fourth, instructors can collaborate with other staff/faculty members (such as a writing specialist) in the teaching of the peer review exercise. This can help model to students the benefits of collaborative learning. By implementing these strategies, instructors can better ensure that their peer review exercises will benefit a variety of student skills, including skills beyond writing.

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Appendix A

Process for Conducting Peer Review Exercise

Module	Learning Outcomes	Facilitator Notes
Workshop #1 "Giving and Receiving Feedback" Co-facilitated in class by instructor and writing specialist	- Prepare for completion of the peer review worksheet - Explore the peer review process as defined in the course - Establish expectations for how to give and receive written and verbal feedback - Reinforce expectations and guidelines for completion of draft essay	- Discuss the purpose and value of peer review in your discipline - Share experiences with peer review: what are the students' fears and expectations about it? Do facilitators have any personal experiences to share? - Remind students about the purpose of feedback in relation to a growth mindset. The goal of peer review is not to "tear down" a peer's work but to help "build it up" - Define principles of effective feedback in your discipline. In this study, effective feedback was defined as objective, actionable, and specific. - Share specific examples of comprehensive vs. less comprehensive feedback, preferably using examples from former student work. This helps set clear expectations about how student worksheets will be evaluated, and also helps to set a social code for what kind of feedback should happen in the class.

After Workshop #1: Students submit *draft* essays electronically and complete the peer review worksheet outside of class (i.e., written feedback). All worksheets were uploaded electronically into team folders and shared within that team using an online course platform. The instructor also provided feedback on *draft* essays so that there was time for them to be implemented before the *final* essays were due. Students were asked to have access to a hard-copy or electronic version of their completed worksheet during Workshop #2 in class.

Workshop #2 "Peer Review Exercise" Co-facilitated in class by instructor and writing specialist	- Outline the peer review process and its components - Practice giving and receiving verbal feedback with a peer	- Develop a particular process for how peer review will work in your class. In this study, peers took turns sharing their feedback. For the first five minutes, the person receiving the feedback could only listen and not speak. Then, peers could discuss the feedback. This encouraged students to listen to feedback before becoming defensive or offering explanations. - Remind students about the expectations of peer review and its value in the discipline as discussed in Workshop #1 - Facilitate the peer review process collaboratively and openly. Ensure the method designed is being followed, and provide encouragement or clarification where needed.

After Workshop #2: The *final* essay, due a few weeks after the completion of the exercise, could include a component where students are asked to share what feedback they implemented and why, and what feedback they chose not to implement and why. Instructor feedback on *final* essays can be less comprehensive than those provided on the *draft* essay. This is because students have already received comprehensive feedback from the instructor and there is no opportunity to implement changes to this final piece of writing.

In addition to the final reflection on peer review, facilitators could consider developing discussion questions to assign to students in the weeks between completion of peer review and the deadline for their *final* essay. These questions can encourage students to continue to reflect on their peer review experience including feedback received. Some examples of possible questions or discussion prompts include:

- Summarize the main "take-aways" from the feedback you received during peer review.
- Articulate your plan for how you will revise your paper in the time between now and when the *final* essay is due.
- What was your experience with peer review? How did it match up, or differ from, your expectations of the exercise before we started it?
- If you were advising someone on what to expect from a peer review exercise, what would you say to them?

Appendix B

Peer Review Worksheet Template

Your Name: _____
Whose paper did you review? _____

1. Summary
   Please summarize the paper in one paragraph (6-8 sentences):

2. Introduction
   How does the introduction frame the topic of the paper (e.g., does it highlight a debate or question)? Does the introduction signal the themes that the paper addresses?

3. Research Question
   a) Find the author's research question and write it here:
   b) Is the wording of the question specific? If not, what requires further elaboration?

4) Does the author provide good reasons for why we should explore their research question? If so, what are these reasons? If not, what is missing?

5) What kind of evidence does the author use to discuss their research question?

6) How does the evidence presented relate to the research question? Be specific by referring to three parts of the paper:
i)
ii)
iii)

7) What are the main arguments presented within the paper?

8) Does the author describe different or opposing views about the research question? Please provide specific examples.

9) Does the author provide an account of which perspective is the most convincing? If so, what is the author's account?

10) Take a look at the secondary sources that are cited. Are they all reliable academic sources? If so, provide one specific example. If not, provide your reasoning for why they are less reliable sources and suggest any sources that might be more appropriate.

11) Does the author cite the required six (6) academic secondary sources, including two (2) monographs (or full-length books/anthologies)? If so, how can you tell? If not, how can you tell?

12) Does the author analyze a primary source? If not, provide at least one suggestion of a particular source they could consider or database that might be useful in locating a relevant source.

i) If so, how does the author present a critical analysis of the primary source (i.e. explaining the context of the source, who created it, for what audience, and a discussion of the limitations and possibilities of the source as historical evidence)?

ii) How could the author further develop their critical analysis of their primary source? Provide 1 - 2 specific recommendations.

iii) How is the analysis of the primary source used to support the author's discussion points? Provide one specific example from the text. If the source is not directly connected to a discussion point, provide at least one suggestion about how the analysis could be further integrated into the author's narrative.

13) Were there parts in the paper where you got lost or confused? Be specific by providing three examples:
i)
ii)
iii)

14) Moving forward, what do you think the author should focus on the most to develop their paper?

15) What are the notable strengths of this paper? Provide two examples:

Appendix C

Peer Review Survey

1. On the following scale, how do you rank the following statements?

a) I found the peer review process to be useful.
strongly disagree
disagree
neither agree nor disagree
agree
strongly agree

b) I found that the peer review process improved my final paper.
strongly disagree
disagree
neither agree nor disagree
agree
strongly agree

c) I found that the peer review process improved my writing.
strongly disagree
disagree
neither agree nor disagree
agree
strongly agree

d) I found that the feedback I received about my draft paper from my peer reviewer helped me to improve my final paper.
strongly disagree
disagree
neither agree nor disagree
agree
strongly agree

e) I found that providing feedback on my peer's paper ultimately helped me to develop my own ideas.
strongly disagree
disagree
neither agree nor disagree
agree
strongly agree

f) I found that providing feedback on my peer's paper helped me to better understand the writing process.
strongly disagree
disagree
neither agree nor disagree
agree
strongly agree

g) I found that writing an annotated bibliography was useful when writing the final research paper.
strongly disagree
disagree
neither agree nor disagree
agree
strongly agree

h) I found that breaking up the research paper process into steps (i.e., annotated bibliography, draft paper, and peer review) was helpful.
strongly disagree
disagree
neither agree nor disagree
agree
strongly agree

2. What did you find most beneficial when developing your final paper (rank from 1 for the most beneficial to 4 for the least beneficial)?

____ writing an annotated bibliography

____ having a draft paper completed early on in the process

____ receiving feedback from my peer

____ providing feedback to my peer

3. What did you find most useful about the peer review process?

4. What did you find least useful about the peer review process?

5. What particular skills do you believe you developed through the various stages of the writing process?

6. Are there any other comments you wish to share?