Toward Accuracy, Depth and Insight: How Reflective Writing Assignments Can Be Used to Address Multiple Learning Objectives in Small and Large Courses

2015 CELT Vol. VIII
celt.uwindsor.ca
www.stlhe.ca

Dr. Kristie R. Dukewich
University of Toronto

Dr. Deborah P. Vossen
St. Francis Xavier University

Writing-to-learn involves the use of low-stakes informal writing activities intended to help students reflect on concepts or ideas presented in a course. Writing-to-learn can be a flexible and effective tool to help students understand and engage with course concepts, and past research has shown that writing-to-learn activities can substantially improve performance on summative assessments. Not only is coherent writing helpful for learning, it is also a skill that students are expected to acquire during their degree. However, it can be a challenge to provide writing opportunities that are both interesting to students and easy for instructors to implement and grade, particularly in courses with a large number of students. Reflective journaling is one method that can address these learning objectives. The versatility of reflective writing means that it can be adapted to suit a number of different disciplines. In this essay, we will explore reflective writing as a subgenre of writing-to-learn activities, summarizing some of the benefits associated with these assignments that have been described in the pedagogical literature. We will then describe how to tailor the assignments to different kinds of disciplines, including STEM courses, professional programs, and the social sciences and humanities. We will provide some guidance on how to resolve tension around marking and feedback for such an assignment. Finally, we will describe our individual experiences with using this kind of assignment in two courses. As there were a number of contextual differences between the two courses, including size and discipline, our commentary is advanced within the specific context supplied by each.

Reflective writing: Situating the subgenre and its benefits

Writing across the curriculum is a pedagogical movement in higher education rooted in the strategy of engaging students in writing outside of composition-based courses (Bazerman et al., 2005). Numerous studies have shown that engaging students in writing can have a positive impact on their overall course performance (Cisero, 2006; Drabick, Weisberg, Paul, & Bubier, 2007; Soysa, Dunn, Dottolo, Burns-Glover, & Gurung, 2013),

suggesting that writing can help students integrate new content into existing knowledge structures (Emig, 1977). Not only is informal writing helpful for learning, but it is also a skill that students are expected to acquire during their degree. However, it can be a challenge to provide writing opportunities that are both interesting for students and practical for instructors to implement and grade, particularly in large courses.

While writing across the curriculum has often been framed as a way to train students in discipline-specific writing conventions (Bazerman et al., 2005), engaging students in formal writing activities that reflect the discipline's literature, writing across the curriculum also includes writing-to-learn activities – low stakes, informal writing activities designed to help students clarify and engage with course concepts through their own writing (McLeod, 1992). There are a wide variety of activities that fall under the writing-to-learn rubric including specific prompts, annotations, reading summaries, 1-minute papers, and reflective writing assignments (Kiefer, n.d.) with the last of these establishing the foundation of this essay. Broadly defined, reflective writing is a form of low-stakes writing that involves adding personal reflection on the meaning of a concept, event, or situation. While reflective writing shares some important benefits with other writing-to-learn activities, it also has some benefits that are unique to this subgenre.

Because reflective writing is typically low-stakes, it permits instructors to provide students with more opportunities to practice their writing skills over the course of a single semester compared to using a higher-stakes single formal discipline-based writing assignment (Soysa et al., 2013). This kind of assignment structure has multiple benefits. First, it affords students the opportunity to fail and to thereby learn from their mistakes without the threat of failing the course. Second, repetition over a long period of time with feedback that provides knowledge of results is important for skill acquisition (Kellogg & Raulerson, 2007). Tracking students as they moved through their programs, Johnstone, Ashbaugh and Warfield (2002) found that those who took two writing intensive courses in their first and second years showed dramatic improvements in their writing abilities, while students without the opportunity to regularly engage in writing showed a decline in their writing abilities. Insofar as writing is a skill to be honed, multiple reflective writing assignments over the duration of a course can be an effective way for instructors to provide the kind of practice required to experience and demonstrate improvement.

Another benefit to reflective writing is that students feel more engaged with the course and with the overall learning process. Ruland and Ahern (2007) reported on a class of nursing students who completed a series of reflections during their first course in the program. Through a reflective writing package, including journaling to reflect critically on their practice, students engaged with material on a personal level, leading to increased confidence in their abilities and more effective integration of new content with their past professional experience. In particular, students reported gaining self-awareness and feeling more engaged with the learning process through reflection. In addition, course evaluations suggested that the reflections also contributed to high quality class discussion, with results overall indicating a positive effect on both in-class and out-of-class learning. These findings are consistent with research from the cognitive psychology literature demonstrating that memory is enhanced for information related back to the self (Rogers, Kuiper & Kirker, 1977). With research showing that the skills enhanced via reflective writing assignments function to improve performance on more substantive summative assessments (Drabick et al., 2007), it seems that the learning benefits associated with reflective writing are more than just a matter of perception.

Tailoring reflective writing for different disciplines: STEM, professional programs, and the social sciences and humanities

One of the strengths of reflective writing assignments is the flexibility of the prompts, which can be tailored to suit various disciplines. In science, technology, engineering, and mathematics (STEM) courses, for example, reflective writing can be used for students to explain difficult concepts to themselves. Often when students encounter difficulty understanding particular concepts, the biggest hurdle is recognizing the question rather than recognizing the answer. Thus, asking students to explain difficult concepts to themselves via reflection can help them identify the source of their confusion, which contributes to the development of metacognitive and critical thinking skills (Kalman, 2008; McLeod, 1987).

Kalman (2011) describes an intrinsic case study in which Physics students were required to engage in a free-writing form of reflective writing as a method of understanding concepts presented in course readings. Students were instructed to "Write about what [the passage] means. Try to find out exactly what you don't know, and try to understand through your writing the material you don't know" (p. 161). In response, students used the reflective writing process to engage in a cycle of extracting meaning from the text, examining and questioning assumptions, and integrating new concepts into existing knowledge structures. Because of the cyclic nature of the reading and reflecting processes, students demonstrated an expansion and reconstruction of their knowledge structures to accommodate new concepts and assumptions. This integrative process left students with not only a deeper understanding of the material, but also a metacognitive appreciation of reflective writing as an effective method to develop understanding, with one student stating, "In order to do reflective writing you really have to […] know what you do not understand about a particular question" (Kalman, 2011, p. 167).

Reflective writing is closely associated with professional programs, and with medical professional programs in particular. Educators in these areas have found reflective writing can be an effective tool for getting students to think more carefully about their practical experiences or simulations (McGuire, Lay, & Peters, 2009). Reflection had the distal goals of integrating the experience with academic concepts, evaluating the learning process to determine if it was successful, and exploring the possible ways in which the experience might have been improved (McGuire et al., 2009). As an example, Lonka et al. (2001) studied the practical reflections of medical students during their training in obstetrics and gynecology. Students were asked to keep a journal describing their practical training experiences with journal entries including a specific self-evaluation of their own skills to help them monitor skill development as well as an evaluation of the performance of the teacher overseeing each experience. Lonka et al. found that the amount of text written in the journals strongly correlated with final exam performance, with a substantial and statistically significant improvement for students who wrote a lot compared to students who wrote very little.

In the social sciences and humanities, reflective writing assignments usually take on an especially introspective quality where students are asked to consider how they might interpret different concepts presented in a course, and how they see elements of those concepts represented in their own lives. Nevid, Pastva, and McClelland (2013) introduced reflective writing into a psychology course, using the prompt, "An example of the concept of _____ in my life is …" (p. 273). The authors then coded exam questions as either matching the topics students wrote about or mismatching the topics they wrote about, and compared performance on those conditions, finding that students performed significantly better on the exam questions related to the topics they wrote about as compared to those they did not. These findings suggest that reflective writing was instrumental in getting students to think about the material more deeply with the depth of thinking resulting in enhanced overall learning.

Alignment of learning outcomes, student time-investment, assignment weight, and instructor feedback

The low-stakes nature of reflective writing activities means that they are often shorter in nature than formal writing activities. The brevity of these assignments make them ideal for providing students with multiple opportunities to engage in the writing process. However, there is a tension between the number of assignments and the time-investment for marking. While low-stakes assignments imply that feedback will be minimal, students cannot be expected to engage in meaningful reflection when the assignments will not be evaluated at all. Moreover, knowledge of results is important for improvement (Kellogg & Raulerson, 2007).

There are several ways to address the time-consuming problem of providing feedback to students on their writing, but the approach depends on the learning outcomes targeted by the particular assignment. Table 1 outlines some suggestions for aligning different aspects of a reflective writing assignment with the broader pedagogical objectives, while at the same time acknowledging the practical considerations of the instructor in respect to time required for grading.

When the goal of the instructor is simply to have students engage in reflective writing, no feedback is required. For example, Kalman (2011) used reflective writing exclusively to facilitate students' skills in identifying meaning in scientific text. Kalman did not assign marks to these reflections because he was not interested in improved writing, but he did require students to submit them along with their quantitative homework for a grade. This was sufficient for Kalman to meet his learning objective of engaging students in critical reflection during text interpretation.

If the goal of the reflective writing assignment involves holding students accountable for the performance in a broad sense, using a check-plus, check, check-minus approach can be effective. This grading scale allows instructors to increase the weight of the assignment while remaining low-stakes, but provides students with some motivation to put more effort into the writing process. The scale also provides very general feedback to students, which might correspond to "mastery," "proficient," and "needs work."

Kellogg and Raulerson (2007) suggest that feedback that informs learners about the specific results of their effort is critical for skill acquisition. This means that if a learning outcome targeted by the assignments involves improved writing, feedback is critical. But evaluating the quality of the reflection can involve a much larger investment of time, thus rubrics can be invaluable for making the marking manageable. In particular, analytic marking rubrics can provide feedback to students in a time-efficient

Table 1

Suggested guidelines for the alignment of different aspects of reflective writing assignments

Learning outcome	Student time-investment	Assignment weight	Grading scale	Instructor feedback
Engagement, preparation	< 30 minutes	0-1%	Credit/No-credit	Global, not individual
Introductory skill development	~1 hour	2-3%	Check+/Check/Check–	Individual rubric
Advanced skill development	Several hours	3-5%	5-10 point scale, Letter grade	Individual rubric + Comments

manner for the marker, while simultaneously improving inter-rater reliability (Jonsson & Svingby, 2009).

Collaboration between two university teachers

Pedagogy is both the art and the science of teaching and learning (Grimmett & Mackinnon, 1992). In the preceding section we have made an effort to summarize the science of reflective writing by reviewing published data on its benefits, as well as providing some practical guidelines for implementing such an assignment. However, research can sometimes be a blunt tool that allows only for the direct comparison of a few conditions while attempting to control for all other variables. The art of pedagogy involves the varied context for each and every assignment a student completes, and reflection by the instructor on how that context impacts a pedagogical tool (Grimmett & Mackinnon, 1992). Pedagogy in practice, by definition, cannot control for variables such as the size of the classroom, the gender of the instructor, the time of day of the lecture, or any number of other conditions that might interact to have subtle effects on the success or failure of a pedagogical tool. From that perspective, we felt it was important to include our personal reflections on these assignments to help readers identify and consider the wide variety of variables that make up the context of introducing a similar assignment in their courses. The following sections represent our autobiographical, reflective narratives, outlining our individual experiences with the assignment.

We met at the *Society for Teaching and Learning in Higher Education* (STLHE) annual conference in 2013 held in Cape Breton, Nova Scotia. Attending a session about reflective writing, we both expressed some trepidation about how to mark such assignments. We were both struggling with the time-demanding process of grading and feedback, and we both sought more effective evaluation strategies. After discussing various grading scales, we decided to use the check-plus, check, check-minus scale in conjunction with a detailed marking rubric that one of us (Kristie) had developed.[1] We agreed to keep in touch and share our experiences with the assignment and marking scheme. In what follows, we report our individual experiences with the reflective writing strategy by describing the context of the respective courses (see Table 2 for a summary), the specific characteristics of the reflective assignments, and our own personal reflections on the process.

Kristie's experience with PSY372 – Human Memory

With research-based background knowledge of reflective writing, I introduced a reflective writing component into a third-year psychology course at the University of Toronto with 65 students. PSY372 Human Memory involves an in-depth exploration of research on human memory, including theoretical debates about the different kinds of memory, different ways of using memory, and the memory problems that people experience. I thought a reflective writing component was appropriate in this course because students have an awareness of their own memory, but are not necessarily aware of how their memory works. There are some consistent but rather counterintuitive findings in the academic literature that students often struggle to understand, and I thought reflective writing might help them recognize evidence of these findings in their own lives. In addition, I was trying to find a way to respond to course evaluations in which students had indicated that they felt my current assignments were not an effective enough means of learning or demonstrating learning. Finally, I hoped that the reflective writing

[1] I (Kristie) would be remiss if I did not acknowledge Dr. Andrea Williams, a faculty member at the University of Toronto who teaches writing, for introducing me to this grading scale. I have found it to be a flexible and effective scale that I have incorporated into several writing-to-learn assignments, allowing me to include a greater number and variety of assignments for students in my large courses.

assignments would ease students into the writing process and so prepare them for the formal essay due at the end of the term.

Table 2 summarizes the context of the course and the reflective writing assignment. The reflective writing component included three entries submitted at different points in the semester. Each entry was based on any topic covered in the previous three weeks of lectures, with the specific topic chosen by the individual student. Students were asked to explain the concept by relating it to a novel idea, theory, paradigm, situation, or event. In this context, "novel" meant something not specifically discussed in the lecture in which the chosen content was presented, but may be something previously discussed in the course, something learned in another course, or some lived experience or imagined situation.

Table 2

Contextual information around the two courses and reflective writing assignments

Course and assignment characteristics	Psy372 – Human Memory University of Toronto	HK455– Games, Life and Leadership St. Francis Xavier University
Number of students enrolled	65	13
Number of reflected entries	3	5
Length of each entry	250-550 words	250-550 words
Learning outcomes	Introductory skill development: ● Practice writing ● Engage with content ● Recognizing connections	Theory mastery and application: ● Engage with content ● Advancing applications ● Recognizing existential connections ● Reflecting "out" on life ● Reflecting "in" on representations of the self
Weight of reflective entries	3% each	3% each
Grading scale	Analytic rubric + Check-plus, Check, Check-minus	Analytic rubric + Check-plus, Check, Check-minus
Feedback	Group, No individual comments	Group and Individual feedback offered
Other forms of assessment	● Formal argumentative essay ● 2 exams	● Short essay ● Oral presentation ● Poster presentation

The teaching assistant (TA) experienced a tension between the specificity of feedback and the time required when marking these assignments. Yet, I believed that for students to show improvement in their reflective writing, it was essential for them to know the components of the composition used in assessing their work as well as to have an idea of the level of proficiency for each of those components. To that end, students were provided with a detailed itemized (analytic) marking rubric (see Appendix for an example) that described the components of the entry, as well as the criteria for Level 1 ("needs work"), Level 2 ("proficient"), or Level 3 ("mastery"). However, to prevent the marking task from becoming onerous, the TA was trained to apply the rubric holistically:

- 1/3 if most components fell into Level 1
- 2/3 if most components fell into Level 2 or were distributed across levels
- 3/3 if most components fell into Level 3

In the benchmarking session for the first entry the TA and I both felt that the check-plus, check, check-minus approach to applying the rubric holistically was restrictive. Several of the entries that we read early on were very good in that they indicated elements of proficiency, but few were excellent enough to show mastery, so we decided to use half-points when appropriate. However, we continued with the original notion of not providing individual comments to students regarding their entry. Instead, the TA held office hours after the graded entries were returned so that students who were keen to receive more feedback could speak with the TA directly. In general, this was an effective use of TA resources. Indeed, Crisp (2007) indicates that students spend very little time reading feedback comments and Chanock (2000) notes that they might misunderstand the intention behind the comments when they do. Allowing students to decide if they wanted to speak with the TA meant that the TA did not waste time providing comments to students who would not read them, and allowed for individual comments to be clearly and effectively communicated through direct face-to-face conversation.

The teaching evaluations for the course indicated that students liked the assignments. They stated it was an avenue for creativity and that they liked that they could earn marks toward their grade in a way that was not onerous, more flexible, and inherently interesting since they could pick their own topics. One student remarked, "The reflective assignments were especially helpful in developing a deeper understanding of the material and provided opportunities to hone my writing skills"; another wrote "I think the journal entries were a creative way for us to think about certain topics (I did not even have to study for the topics I wrote about because I was able to remember those concepts so well)." I also found the entries to be effective for giving students multiple opportunities to write over the semester, and they were interesting to read precisely because they were so personal – they provided real insight into the personalities of the students in the course. Finally, the TA appreciated that the entries could be marked in about three minutes per entry.

However, by the end of the semester I realized that I had to change the next iteration of the assignment in order to make it more effective. Primarily, I need to increase the difficulty of the prompt, and I need to emphasize both accuracy and depth. By the third entry, students' were writing at a relatively proficient level, and it led to some concern that the 9% total allocated to reflective writing might end up inflating the grades. In the future, I intend to lower the weight of the assignments, or provide more specific prompts for students in order to increase the difficulty and variability in performance across students.

Grade inflation may have been less of an issue had I included a component in the rubric emphasizing accuracy. For the first entry, students focused on the informal aspect of the assignment with some entries including inaccurate descriptions of course concepts, reflecting the fact that some students did not consult their lecture notes or the textbook in summarizing content. Other entries attempted to connect course concepts to popular myths about cognition (e.g., "We only use 10% of our brain"). In response, I have since updated the rubric to help

emphasize that informal does not mean uninformed (see Appendix).

There was also an issue with the depth of the entries. Many students described an event from their lives, and then attempted to use every concept covered over the preceding three weeks to explain the event. Given the word limit, this prevented the students from exploring any one concept in a focused manner. In response, future iterations of the assignment will emphasize that students must limit their discussion of course content to one or two ideas.

Finally, future iterations will include an opportunity to share the best entries with other students in the course to serve as models or exemplars of how to complete the assignment. On the teaching evaluations, one student remarked "It would have been informative to receive comments on the reflective writing assignments" – a sentiment echoed by several students in the course. While I am still not prepared to invest more time in providing feedback to students on these assignments, providing a public platform for the best entries, like a course blog or website, can be an effective way of clarifying the rubric and our subjective (but not arbitrary) standards (Orsmond, Merry, & Reiling, 2002). Exemplars can also provide students with an anchor point for evaluating their own writing so as to improve metacognition around writing (Nicol & Macfarlane-Dick, 2006). Finally, exemplars are also something that students value more than detailed rubrics as a tool for improving their writing assignments (Lipnevich, McCallen, Miles, & Smith, 2014). Indeed, educators who specifically use reflective writing in their courses have suggested modeling as an effective way to improve the quality of student reflections (Spalding, Wilson, & Mewborn, 2002). Keeping in mind that undergraduate students often struggle with deep reflection (Dyment & O'Connell, 2011), providing exemplars to students on the next iteration of the course can clarify the goals and standards of these assignments, serving as a low-effort, high-impact method of formative feedback.

Deborah's experience with HK455 – Games, Life, and Leadership

Exploring the concept of servant leadership from an existential perspective, HK455 Games, Life, and Leadership is an advanced Sport Philosophy course offered by the Department of Human Kinetics at St. Francis Xavier University. Aligned with the course content as fundamentally about self in service to others and the primary objective for students to advance a self-affirming philosophy of personal and professional practice, reflective writing has always been incorporated into the course in some form. However, despite my conviction that reflective practice is pedagogically essential to student success as well as my ongoing effort to formalize the reflective elements of the major course assignments — including a short essay, an oral presentation, and a poster project — I was routinely daunted by the often complex nature of my evaluation and the length of time required by it. Furthermore, I was concerned that students' reflections frequently portrayed a lack of form or structure, while their comments also lacked the depth I sought to nurture.

In preparation for the course's three major evaluative measures, students are asked to conceptualize the course subject matter visually in five arts-based submissions. In the past, I also encouraged students to submit a reflective writing excerpt to accompany each of the arts-based assignments with each written excerpt enabling the students to reflect further on the meaning portrayed in their visual artwork. However, insofar as each of these submissions was only ever intended as preparation for the major assignments, I never assigned a grade with the feedback I gave. Unfortunately, without an adequate evaluative structure for these preparatory reflective excerpts, I spent an excessive amount of time trying to provide feedback that could effectively guide students toward an existential outlook capable of enriching their major projects. This problem was further exacerbated by not assigning any grades, which meant the students were not motivated to submit their best work.

Following discussions with Kristie at the STLHE conference in 2013, I implemented her reflective writing assignment guidelines (with slight modifications) as well as her holistic check-plus, check, check-minus scoring rubric in my HK455 course in the 2013/2014 academic year. Specifically, maintaining the overall evaluative structure of five preparatory arts-based submissions and reflective writing excerpts, a short essay, an oral presentation, and a poster project, I was able to enhance the pedagogical efficacy of the preparatory reflective writing submissions by adjusting the course grade distribution to include a 3% score for each one.

To assist with the writing process, students were provided with reflective writing guidelines, which included a vocabulary aid as well as an overview of the scoring parameters and grading rubric. Within these guidelines, the five low-stakes reflective writing assignments were further clarified as opportunities for students to think more introspectively about the nature, meaning, significance, and interpretation of a concept, theory, or methodology as relevant to his/her development as a life-long learner in service to others. Specifically, to allow for deeper processing, students were encouraged to reflect both *out*, in the form of an interpretive consideration of a question, issue, story, experience, situation, or event acknowledged as influential in his/her own learning journey, and *in*, in the form of a personal commentary speaking to what he/she learned about his/her values, beliefs, and other representations of self.

Having introduced the scoring rubric, I was able to grade the reflective writing excerpts in a manageable amount of time. Also, since my class size was small (13), I was able to accommodate the students' request for both individual and group feedback, with the latter outlining the topics raised, praising what was done well, sharing unique reflective writing strategies undertaken, and correcting common errors in the application of theory. As the instructor of the course, the reflective writing assignments helped me to gauge more fully whether or not the students understood and were able to successfully integrate the theory central to the course into their own existential outlook and/or practice. As a consequence, in addition to providing corrective feedback, I was able to modify course content in order to address common interpretive errors as well as challenge students to delve more deeply into the subject matter through their writing.

Scores on the five preparatory reflective writing assignments were proportionately lower than those on the major assignments. However, the grades for the essays, oral presentations, and poster projects increased in 2013/2014 over the previous years' by almost 10% on average. This increase reflects what I deemed to be more in-depth and structured reflective commentary from the students within the three higher-stakes assignments. The most marked difference was demonstrated in the oral presentations in which the students reflected verbally on their experiences across the course. I believe that, as the only change made to the course, the more formalized reflective writing assignments enhanced student engagement in, and understandings of the subject matter. For this reason I intend to increase the value of each reflective writing excerpt in the future and, given the students' earnest request for feedback, to modify the rubric to accommodate/address analyses of the more specific existential parameters informing course content.

Conclusion

Research has demonstrated that writing can help students learn how to learn (Cisero, 2006; Drabick et al., 2007; Emig, 1977; Soysa et al., 2013) and that, as a form of low-stakes informal writing, reflective journaling is an especially promising pedagogical strategy for student development through writing across the curriculum in higher education (McLeod, 1992). Reflective writing allows students to engage with course concepts in ways that compel them to integrate and derive meaning on their own terms (Emig, 1977), leading to improved content retention. When these assignments include structure and multiple opportunities to write across the term, reflective writing assignments can also contribute to greater comfort with and increased deployment of learned skills and concepts on subsequent, more

substantive writing assignments (Johnstone, Ashbaugh, & Warfield, 2002). Moreover, the flexibility of reflective writing makes it a viable tool for use within any discipline, and any course. Inspired by such outcomes, this essay explores our implementation of informal reflective writing strategy in our courses. As a result of our combined effort, we both enjoyed a stronger appreciation of reflective writing as a pedagogically effective activity capable of enriching our students' educational experiences through increased engagement with the subject matter. Moreover, we found a way to evaluate and assign grades to the reflective writing excerpts (using a holistic check-plus, check, check-minus rubric) without necessitating an untenable amount of time. Given our positive experiences and our students' positive experiences, we encourage our colleagues in higher education to consider the integration of reflective writing assignments into their courses and curricula.

References

Bazerman, C., Little, J., Bethel, L., Chavkin, T., Fouquette, D., & Garufis, J. (2005). *Reference guide to writing across the curriculum.* West Layfayette, IN: Parlor Press LLC.

Chanock, K. (2000). Comments on essays: Do students understand what tutors write? *Teaching in Higher Education, 5,* 95-105. http://dx.doi.org/10.1080/13562510011498 4

Cisero, C. A. (2006). Does reflective journal writing improve course performance? *College Teaching, 54*, 231-236. http://dx.doi.org/ 10.3200/CTCH.54.2.231-236

Crisp, B. R. (2007). Is it worth the effort? How feedback influences students' subsequent submission of assessable work. *Assessment & Evaluation in Higher Education, 32*, 571-581. http://dx.doi.org/10.1080/02602930601116912

Drabick, D. A. G., Weisberg, R., Paul, L., & Bubier, J. L. (2007). Keeping it short and sweet: Brief, ungraded assignments facilitate learning. *Teaching of Psychology, 34*, 172–176. http://dx.doi.org/10.1080/00986280701498558

Dyment, J. E., & O'Connell, T. S. (2011). Assessing the quality of reflection in student journals: A review of the research. *Teaching in Higher Education*, *16*, 81-97. http://dx.doi.org/ 10.1080/13562517.2010.507308

Emig, J. (1977). Writing as a mode of learning. *College Composition and Communication, 28,* 122–128. http://dx.doi.org/10.2307/356095

Grimmett, P. P., & Mackinnon, A. M. (1992). Craft knowledge and the education of teachers. *Review of Research in Education, 18*, 385-456. http://dx.doi.org/10.3102/0091732X018001385

Johnstone, K. M., Ashbaugh, H., & Warfield, T. D. (2002). Effects of repeated practice and contextual-writing experiences on college students' writing skills. *Journal of Educational Psychology, 94*, 305-315. http://dx.doi.org/10.1037/0022-0663.94.2.305

Jonsson, A., & Svingby, G. (2007). The use of scoring rubrics: Reliability, validity and educational consequences. *Educational Research Review, 2*, 130-144. http://dx.doi.org/10.1016/j.edurev.2007.05.002

Kalman, C. S. (2008). *Successful science and engineering teaching: Theoretical and learning perspectives*. Secaucus, NJ: Springer.

Kalman, C. S. (2011). Enhancing students' conceptual understanding by engaging science text with reflective writing as a hermeneutical circle. *Science & Education, 20*, 159-172. http://dx.doi.org/10.1007/s11191-010-9298-z

Kellogg, R. T., & Raulerson, B. A. (2007). Improving the writing skills of college students. *Psychonomic Bulletin & Review, 14*, 237-242. http://dx.doi.org/10.3758/BF03194058

Kiefer, K. (n.d.). The WAC Clearinghouse. Retrieved from http://wac.colostate.edu/intro/pop2d.cfm

Lipnevich, A. A., McCallen, L. N., Miles, K. P., & Smith, J. K. (2014). Mind the gap! Students' use of exemplars and detailed rubrics as formative assessment. *Instructional Science*, *42*, 539-559. http://dx.doi.org/10.1007/s11251-013-9299-9

Lonka, K., Slotte, V., Halttunen, M., Kurki, T., Tiltinen, A., Vaara, L., & Paavonen, J. (2001). Portfolios as a learning tool in obstetrics and gynaecology undergraduate training. *Medical Education, 35*, 1125-1130. http://dx.doi.org/10.1046/j.1365-2923.2001.01054.x

McGuire, L., Lay, K., Peters, J. (2009). Pedagogy of reflective writing in professional education. *Journal of the Scholarship of Teaching and Learning, 9*(1), 93-107. http://josotl.indiana.edu/issue/view/157

McLeod, S. H. (1987). Defining writing across the curriculum. *WPA: Writing Program Administration, 11*, 19-24.

McLeod, S. H. (1992). Writing across the curriculum: An introduction. In S. H. McLeod & M. Soven (Eds.), *Writing across the curriculum: A guide to developing programs* (pp. 1-11). Newbury Park: Sage Publications. Retrieved from http://wac.colostate.edu/books/mcleod_soven/mcleod_soven.pdf

Nicol, D. J., & Macfarlane-Dick, D. (2006). Formative assessment and self-regulated learning: A model and seven principles of good feedback practice. *Studies in Higher Education*, *31*, 199-218. http://dx.doi.org/10.1080/03075070600572090

Nevid, J. S., Pastva, A., & McClelland, N. (2013). Writing-to-learn assignments in introductory psychology: Is there a learning benefit? *Teaching of Psychology, 39*, 272-275. http://dx.doi.org/10.1177/0098628312456622

Orsmond, P., Merry, S., & Reiling, K. (2002). The use of exemplars and formative feedback when using student derived marking criteria in peer and self-assessment. *Assessment & Evaluation in Higher Education*, *27*, 309-323. http://dx.doi.org/10.1080/0260293022000001337

Rogers, T. B., Kuiper, N. A., & Kirker, W. S. (1977). Self-reference and the encoding of personal information. *Journal of Personality and Social Psychology, 35*, 677-688. http://dx.doi.org/10.1037/0022-3514.35.9.677

Ruland, J. P., & Ahern, N. R. (2007). Transforming students' perspectives through reflective writing. *Nurse Educator*, *32*, 81-88. http://dx.doi.org/10.1097/01.NNE.0000264328.56039.1b

Soysa, C. K., Dunn, D. S., Dottolo, A. L., Burns-Glover, A. L., & Gurung, A. R. (2013). Orchestrating authorship: Teaching writing across the psychology curriculum. *Teaching in Psychology, 40*, 88-97. http://dx.doi.org/10.1177/0098628312475027

Spalding, E., Wilson, A., & Mewborn, D. (2002). Demystifying reflection: A study of pedagogical strategies that encourage reflective journal writing. *Teachers College Record*, *104*, 1393-1421.

Biographies

Kristie Dukewich is a lecturer at the University of Toronto in Psychology. She has been teaching perception and cognition courses in higher education for the last 8 years. Her primary objective in teaching is to give students the opportunity to practice transferrable skills, including evidence-based argumentation, critical thinking, and coherent written and oral communication. Her practice is strongly rooted in the pedagogical literature.

Deborah Vossen is an Associate Professor in the Department of Human Kinetics at St. Francis Xavier University where she has been teaching courses in Sport Philosophy since 1998. Using sport as a metaphor for life itself, her mission as a teacher of higher education is to empower reflective life-long questing via the cultivation of a self-affirming philosophy of personal and professional practice.

Appendix
Reflective writing marking rubric

A similar marking rubric was provided to students and was used to assess the reflective writing entries in both courses. This version of the rubric has incorporated changes to include accuracy, depth, and insight in order to emphasize to students that informal does not mean uninformed.

Component	Level 1	Level 2	Level 3
Background information & theme	• The theme, topic, or concept is ambiguous, content appears to be related to several themes, topics or concepts • Several discipline-specific concepts are not defined, or relevant background information is missing or not clearly described	• The theme, topic, or concept is described & most content is related to the central theme, topic or concept • Most discipline-specific concepts are defined; some definitions lack clarity, or some piece of background information is missing	• The theme, topic, or concept is clearly described & all content in the entry is clearly related to a central theme, topic, or concept • All discipline-specific concepts are clearly defined, all relevant background information is clearly described
Reflection	• Personal interpretations/point of view are shallow and insincere, confusing, or missing altogether	• Entry includes personal interpretations/point of view	• The entry includes thoughtful personal interpretations and a personal point of view
Organization & coherence	• It is unclear how all of the ideas are related • Connections drawn are difficult to follow, claims are either supported by weak evidence or unsupported • Order of ideas is ineffective • The entry lacks discrete sections, there is little structure	• It is somewhat clear how all of the ideas are related • The connections drawn are somewhat logical, claims are supported but evidence is a bit weak • Order of ideas is somewhat effective • There is some evidence of structure in the entry, but the sections are not totally discrete	• It is clear how all of the ideas are related • The connections drawn are logical & claims are supported by evidence • Order of ideas is effective • The entry is structured so that there are discrete sections with specific ideas discussed in each
Accuracy, depth, & insight	• Content indicates a lack of comprehension of cognitive concepts or experiments • The entry is mostly devoid of meaningful content	• Content suggests some misconceptions about cognitive concepts or experiments • The entry includes analysis that focuses on somewhat superficial or obvious observations	• Content reflects comprehension & insight of cognitive concepts or experiments • The entry displays evidence of depth of thinking
Writing style	• The language and vocabulary used in the entry ineffective and unclear • The tone of the entry is too casual, relying on slang or popular cultural references that aren't explained; "you" is over-used • The entry is wordy, relying on clichés and stock phrases to fill in space	• The language and vocabulary used in the entry is mostly clear • The tone of the entry is informal but a bit too casual • The entry mostly avoids clichés and stock phrases	• The language and vocabulary used in the entry is effective & clear • The tone of the entry is informal but not too casual (no use of slang; personal pronoun "I" is allowed; there is a conservative use of the pronoun "you"; use of contractions is allowed; complete sentences are used; repetition is avoided) • The entry employs an economy of words