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The Impact of Feedback as Formative Assessment on Student Performance

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This article provides an evaluation of the redesign of a research methods course intended to enhance students' learning for understanding and transfer. Drawing on principles of formative assessment from the existing academic literature, the instructor introduced a number of increasingly complex low-stakes assignments for students to complete prior to submitting their final project. Concrete, constructive feedback from either the instructor or peers or both was offered at each stage of the project so that students could have the opportunity to review their work and improve particular aspects prior to moving on to the next assignment. Student performance on each subsequent submission was assessed through the use of a scoring rubric. Although there was significant improvement from one draft of a given assignment (T1) to the next (T2), the instructor's decision not to require a preliminary draft of the final project ultimately yielded mixed results at the end of the course (T3); this serves to highlight the importance of providing multiple active learning opportunities for students by using a progressive scaffolding approach.

For the past ten years, the culminating project in my research methods course has consistently been a research proposal. As early as the first day of the semester, students are given a description of the assignment and a copy of the rubric that will be used to assess their work. All learning outcomes and objectives are student-centered, highlighting knowledge that they will be able to evaluate critically and skills that they will be able to demonstrate upon completion of the course. The first half of the semester is content-driven. Students spend approximately eight weeks surveying various methodologies, comparing and contrasting their utility and function with respect to answering specific criminological questions, with the intention of clarifying their thinking about their own research agendas. Toward the end of that eight-week period, they are expected to submit their research question for approval, a necessary preliminary step in light of the fact that some ideas are too broad, some are too narrow, and some simply do not lend themselves to any kind of empirical measurement. The second half of the course emphasizes skill development; lessons highlight important considerations in conducting literature reviews, choosing a data collection technique, and preparing for data analysis procedures. Every year, I remain confident that students are being provided with all of the necessary resources and skills that they might need in order to complete the assignment. Alas, every year I am disappointed with the results. Some students demonstrate that they are unable to differentiate between a literature review and an annotated bibliography while others are so baffled by the idea of proposing a research methodology that they misconstrue the assignment and invent hypothetical data, reporting their fictitious findings in their papers. As summative assessment measures go, this has taught me one very important lesson: that what we think we are teaching our students is not necessarily what they are learning.

Literature Review

Accordingly, I decided to go back to the metaphorical drawing board and revisit my pedagogical approach. Pellegrino (2006) asserts that understanding the nature of learning is a fundamental step in making curricular and instructional improvements. Specifically, he discusses the reciprocal interplay and alignment that must occur between curriculum, instruction, and assessment. He defines curriculum as the set of knowledge and skills that students are expected to learn as a result of a given course; in a research methods course, for example, this would include the aforementioned foundational details about various methodologies and designs as well as proficiency in information literacy and the ability to communicate effectively in writing. Instruction, according to Pellegrino (2006), refers to the pedagogical approaches and particular learning activities utilized by an instructor to achieve a set of desired learning outcomes. He lists a number of principles about learning and understanding and suggests that the optimal instructional approach affords students opportunities to "learn with understanding" (p. 4) rather than simply to memorize and regurgitate. This is how they can develop a base of usable expertise and experience which might then be successfully accessed in other contexts, allowing for transfer of both knowledge and skills. Being able to organize information into a relevant, meaningful conceptual framework is key, and Pellegrino contends that providing students with multiple opportunities to apply what they have learned is a superior approach to relying upon a singular assignment for the purposes of achieving that goal. Assignments are subsumed under assessment, which Pellegrino describes as the process by which learning outcomes are evaluated as having been achieved (or not). Since the culminating project I had been using for the course was clearly ineffective as a form of

summative assessment, it was logical to conclude that my instructional approach needed to be modified to incorporate new and different learning activities.

Carpenter and Lehrer (1999), in their discussion of how mathematical understanding develops in school-aged children, reinforce the idea that learning for understanding facilitates the likelihood of transfer to new settings and contexts. They posit that this is especially important given the emergence of new technologies on a continuous basis, cautioning that students need to be prepared to solve problems which are currently impossible to anticipate; this can only be accomplished, they argue, if students are encouraged to learn for understanding, a process which encompasses ongoing mental activity through the construction of relationships, the application of existing knowledge, the practice of self-reflection, an articulation of what has been learned, and a sense of ownership that makes the learning process personally relevant. Their recommendation is that learning activities must include first-hand application and practice, a more active than passive sort of learning, so that students become engaged with the material in a meaningful way.

There are multiple observations made throughout the literature on ways to support meaningful learning and teaching for understanding that highlight the importance of scaffolding the learning process and providing constant feedback to students. Darling-Hammond (2008) asserts that using feedback and formative assessment continuously has incalculable implications for effective teaching and learning. She notes that structuring performance-based assessments thoughtfully and concretely allows students to stretch beyond a rudimentary demonstration of their abilities and encourages them to improve upon their own work. Moreover, teachers can benefit from crafting appropriate formative assessment measures by using these as diagnostic tools and becoming more reflective and intentional about their own pedagogical practices, and similarly, students who engage in self-assessment assume greater responsibility for their own learning. She refers to studies across various disciplines which have consistently shown that effective teachers facilitate the process of meaningful learning by scaffolding the learning process, assessing student learning continuously, and providing clear standards and constant feedback (Darling-Hammond, 2008, p. 5).

Earlier work by Perkins (1993) likewise prioritizes the provision of meaningful formative assessment in teaching for transfer and understanding (pp. 34-37). He argues that there must be a combination of active engagement or performance on the part of the students and ongoing, rich, appropriate feedback provided by the instructor (Perkins, 1993, p. 31). While Perkins focused most of his research (1993; 1998) on improving teaching approaches aimed at middle-school children, he was highly influential in describing understanding as a form of performance or action, challenging the prevailing misconceptions that understanding is something that could be known, perceived, or possessed. Accordingly, he recommends using ongoing assessment and informative feedback so that both the teacher and student are able to evaluate whether understanding is actually taking place during the learning process. Wiske (1999) describes this pedagogical approach as a performance view, one which encourages students to spend the greatest amount of time possible progressing from "messing about [to] guided inquiry [to] culminating performances" (pp. 238-239).

The value of providing useful feedback to students, and the appropriateness of the way in which this is accomplished, cannot be overstated. Nicol and MacFarlane-Dick (2006), following a comprehensive review of the literature on formative assessment, propose seven principles of good feedback practice to facilitate the development of student self-regulation and to aid in the active construction and acquisition of knowledge and skills by students. Firstly, they posit that good feedback practice helps clarify what good performance is, possibly by providing students with written documentation outlining assessment criteria that define various levels of achievement; rubrics, then, are key, particularly ones that are clearly articulated and involve concrete, measurable outcomes. Secondly, Nicol and MacFarlane-Dick propose that good feedback practice facilitates the development of self-assessment and reflection in learning; structured opportunities for self-monitoring comprise a critical part of the process. Thirdly, the authors advocate the delivery of high quality information to students about their learning, where quality can be interpreted as insight that focuses not only on pinpointing strengths and weaknesses in student work but also offering corrective, constructive advice for improvement that relates back to the goals of the assignment. Nicol and MacFarlane-Dick further recommend encouraging peer and teacher dialogue rather than viewing learning as a process that involves a unidirectional transmission of information; discussions with the instructor and with classmates may be highly motivational and may also prompt students to view their own work with greater detachment. The emphasis on positive motivational beliefs and self-esteem is at the heart of the fifth principle mentioned by Nicol and MacFarlane-Dick, which suggests crafting multiple low-stakes assignments that are intended to generate feedback for the purposes of helping students gauge progress and achievement rather than to focus on grades as indicators of success or failure. Closing the feedback loop, that gap between current and desired performance, is the penultimate principle presented by Nicol and MacFarlane-Dick, and they specifically call

for providing opportunities for students to resubmit a piece of work following an external feedback cycle to see whether performance has improved. Finally, and consonant with the aims of assessment in higher education, good feedback practice should also provide useful information for teachers that can be used to improve subsequent activities and courses.

Methods

I thought about some of the higher-order thinking skills associated with learning for understanding: application, evaluation, analysis. This is what I wanted my students to be able to do with various data collection techniques, but we seem to have gotten stalled at the lower levels so that their attention was focused on recall, identification, and description: all of those competencies that the literature discussed as being unlikely to result in true learning for understanding and subsequently to aid in the transfer of knowledge. I decided a drastic redesign was called for, and the next time I taught the class, I implemented an entirely new approach. Firstly, I abandoned the use of a textbook, with the rationale that textbooks are too prescriptive. Students become so intent on highlighting and memorizing definitions with a view to regurgitating the information on their tests (the aforementioned passive sort of learning I want to avoid) that they inadvertently become terrified of deviating from anything the textbook says. Thinking independently, therefore, and deciding which methodology would best fit their individual needs, seemingly involves great risk, one which they are reluctant to take. I revised my lecture notes to ensure that important content was covered, but the underlying central message was always simple: there is no single universal "best method" out there, and different strategies may be more or less suited to answering different research questions. I reiterated that message in every new unit, encouraging students to think about their own personalities and preferences in order to determine which methods they found promising (and why).

Secondly, in recognition of the literature cited above, I acknowledged that learning for understanding could only take place if students were provided with opportunities to become actively engaged with course content. The course redesign involved using fewer lecture-based lessons and more interactive strategies. Students were involved in small group discussions, an on-site presentation with the information literacy librarian, and various activities that incorporated the use of social media (including Twitter, Facebook, and in-class polling). These innovations were intended to clarify particular issues addressed in lectures and to highlight possible research-related applications that students had not previously considered.

The third key element of the course redesign, and the one which was studied most intensively for the purposes of this article, pertained to scaffolding and the ongoing use of feedback. Since the research proposal assignment in its original form had repeatedly failed to meet its intended outcomes, I believed that breaking it up into discrete successive steps and working with students to move progressively and incrementally toward the final draft would be a much more sound pedagogical approach. Consequently, students were instructed to complete a number of low-stakes mini-assignments throughout the semester, each of which would garner specific, concrete feedback and would necessitate making revisions prior to moving on to the next. This, perhaps more than any other strategy employed in the course redesign, proved to have a tremendous positive impact on student learning, as Nicol and MacFarlane-Dick had predicted it would, and ultimately comprised the substance of my data collection and data analysis efforts. I intended to document students' grades (as scored by specific rubrics) at three separate points in time (T1, T2, and T3, as described below) and subsequently to utilize descriptive statistics both to note relevant measures of central tendency at each interval and to trace students' progress on individual and aggregate levels from one time period to the next.

In accordance with institutional review board protocol, I took steps to minimize any potential harm to my students during the data collection and data analysis processes. I explained to my class—both at the outset of the semester and midway through, when the progressive low-stakes assignments began in earnest—how and why I had redesigned the course. They were informed that, although they would have to complete the assignments for course-related purposes and for individual grades, they had the option of declining to have their scores (and any qualitative comments gleaned from self-reflection) included in my data collection and analysis efforts; moreover, they were also notified that they could opt out of the research at any stage, even if data had already been gathered at an earlier interval, and that their withdrawal would have no impact on their subsequent grade for the course. They were also instructed that they could decline to participate in the student perception survey that would be administered at the end of the semester. Furthermore, I assured them that their results and comments would be anonymous and that any statistical calculations during the data analysis stage showing progress from T1 to T2 to T3 would not be conducted until after course grades had been submitted for the semester. All students in the class consented to participate and to have their scores and comments included in the final report.

The initial step taken in the implementation of progressive low-stakes mini-assignments was informed by a phenomenon I had observed in previous iterations of the course. Typically, I lectured on the basics and mechanics of literature reviews and asked students if they had any questions, a prompt which was invariably met with a resounding silence. Wanting to understand how they truly felt, I engaged students in one-on-one conversations and learned that many of them feared the "blank screen," that unavoidable time when they would sit down to write their first draft and would have no idea how or where to begin. In order to help them overcome that fear and bolster their internal motivation in the current semester, I delivered the same lecture as before; however, for the following class period, students were told to bring in two of the journal articles they had already identified as useful sources (having submitted a preliminary bibliography for approval the week before) and detailed notes about the main points contained in each. They were then prompted with specific questions to address in their summaries (i.e., what was the research objective in the article? What was the author's hypothesis? What do we know about the methodology used in this article? What findings and conclusions does the author discuss?) and provided with sample papers for examples of transition statements that would reflect a familiarity with the ways in which the articles connected to one another (i.e., they were methodologically similar or possibly sharply contrasted with respect to findings). Class time was then used to work independently on this initial stage of drafting a literature review as I worked my way from student to student to discuss all of their strategies and struggles with them; by the time the class was over, students had a product they could take home with them and to which they could continue to add. That initial "blank screen" obstacle had been overcome.

A few days later, students were instructed to submit a preliminary draft of their literature review, addressing a total of three sources. My reasons for the low number of sources at this early juncture were two-fold. Firstly, I wanted to be able to ensure that students were on the right track and to offer feedback to redirect their efforts if necessary before they got too far into their writing efforts and felt discouraged. Secondly, many of my students were more concerned with the page count of the final assignment than they were with the content of the literature review, and I wanted them to be able to reflect on their own work after summarizing and synthesizing three sources and to see how much more they had produced than they had anticipated. Indeed, some of the same students that had expressed concern about writing a ten- to fifteen-page final paper handed in very thorough, comprehensive reviews of three academic sources that were between six and eight pages in length. Their sheer delight in having written so much so soon was infectious.

The next class session was spent engaging in peer evaluation. I removed any identifying information (such as student name and ID number) from the cover page, made two copies of each assignment, and distributed one copy throughout the class so that each student was charged with evaluating a classmate's paper. The rubric that was provided to students was the same one that I used to score these drafts. Students could earn anywhere from one to four points on a number of dimensions, including assignment basics (i.e., the number, quality, and provenance of the articles cited), content (i.e., summary, synthesis, articulation of research question, and reference page), and presentation (i.e., length of individual summaries measured as a function of sufficiency rather than actual paragraph or page counts, APA format, and grammar and punctuation). In addition to calculating students' grades out of a maximum of twenty points, the peer evaluators were also instructed to make comments on the actual student papers if they believed a sentence needed to be rephrased or if certain paragraphs would be better moved elsewhere, as well as noting general observations and insights on the back of the rubric. Some time was spent at the beginning of the class session to review the importance of constructive criticism. Students were discouraged from writing hostile or negative comments. All evaluator remarks were aimed at helping the writer improve by making specific suggestions, and the importance of framing comments in a positive light was discussed. The intent of this peer evaluation process was not only to give students an additional perspective on their work (other than mine) but also to help the evaluators themselves reflect on their own writing with greater detachment as they highlighted areas of improvement for their classmates.

I then scored the second copy of the students' papers, also with the identifying information removed. I have found that too often I embark on the grading process with certain preconceptions or expectations about the performance of particular students, and I wanted this experience to be as objective as possible. This way, in theory, I had no way of knowing whose paper I was grading. However, given that the class only had twenty-three students enrolled and that preliminary bibliographies had been submitted to me previously, there was a slim chance that I would recall which students were researching which topics and thus connect the paper to the author. In addition to scoring the rubric as the peer evaluators had done, I spent an extensive amount of time reading and rereading each assignment in order to correct as many spelling and grammatical mistakes as I could find and to be able to offer specific suggestions for improvement moving forward. However good or bad the papers were, my comments always began by commending or praising

students on something they had done well, and the tone was intended to remain as upbeat and encouraging as possible, even if the list of items that needed remedying appeared exhaustively long. Grades for the first draft (n=19) were somewhat discouraging (see Table 1), but it was more important to me to point students in the right direction than to have them fixate on the grade they had earned. This was a low-stakes assignment, and the grade would only comprise a small percentage of their final project; what was far more important was that students would take the comments they had been provided by both their peers and by me and make the necessary revisions moving forward. It should be noted that the scores of four students should be regarded as more accurate representations of poor time management skills than of actual performance; two points were deducted for each day that the assignment was late, and for some, this had a tremendously deleterious effect on their initial grades.

Students were given back their papers the following class period and instructed that a second draft of the literature review, this time including five sources, was due the following week. By incrementally adding only a couple more articles at a time, I hoped to keep student anxiety levels low and their confidence and motivation relatively high. I also wanted to capitalize on the momentum we had already built so that they could continue working on their literature reviews while their concentration was optimal and before distractions from assignments in other classes set in. When they submitted their second drafts, I was the only evaluator. Using the same rubric I had used for the preliminary drafts, I noticed an appreciable increase in all scores, even though the number of sources required was greater (see Table 1). The mean percentage change for the students that handed in both assignments (n=19) was 41.6 and the median was 43. The mode, surprisingly, was 65. Along with their revised scores, students were again given very concrete, positively framed feedback. I avoided making statements like "very well written" and chose instead to specify which transitions were particularly effective and which aspects of certain articles were especially clear and easy to follow. I continued to make certain comments on the paper itself as well as outlining general observations and points to consider on a separate sheet of paper, and I allowed for time during the class period when these were returned to students to meet with them individually and address any questions or concerns.

While students continued working outside of class on subsequent drafts of their literature reviews, the focus in class turned to data collection and data analysis procedures. I continued alternating between lecturing and leaving time in class to work on individual projects so that students could review their notes and identify how the key concepts and questions addressed in the lecture might apply to their own work. They submitted reflection journals in which they documented what they learned from reviewing the literature and which techniques appeared particularly promising and/or have been largely underutilized. These reflections were ungraded; their sole aim was to enable me to monitor student progress and continue to offer feedback and advice. By the time we entered the final week of the semester, I felt reassured that each student in the class understood the purpose, nature, and format of the final project assignment and had made significant progress toward completing it.

Results

Sadly, I was mistaken. What I had failed to take into account was that, although students had developed a keen understanding of the requirements of a literature review and had had ample opportunity to reflect on what they would want to propose for their data collection and data analysis procedures based on their research, they had not been provided with the opportunity to put it all together into a preliminary final draft. The essence of what the literature review scaffolding exercise had taught me – namely that practice and formative assessment improves student performance – had not been applied to this final component of the course. Most grades improved between the first draft of the literature review (T1) and the final proposal (T3), with the exception of one that stayed exactly the same. The mean percentage change from T1 to T3 was 42.4, with a median of 28 and a mode of 15 (see Table 2). However, the same trend did not prove to be true for changes from the second draft of the literature review (T2) to the final proposal (T3). Results from this stage were mixed, with some grades improving significantly, others showing only marginal improvement, and still others declining (see Table 2). Subsequently, the measures of central tendency evaluating the percentage change from T2 to T3 were far more closely clustered, with a mean of only 4.2, a median of 2, and a mode of 3.

Two students did not hand in their final proposal, so a comparison could only be made across all three phases for seventeen students. It should also be noted that some of the students who demonstrated the most marked improvement from T1 to T3 still earned below average grades; significant increases in scores did not always amount to excellent quality. Yet a comparison between the final proposal grades during the current semester and those from a previous semester yields somewhat encouraging results. The mean score for T3 during the current semester was 79.6, with a median of 75 and a mode of 68; the last time the course was offered, before the redesign had been implemented and any of the scaffolding techniques utilized, the mean

Table 1
Percent Change in Student Grades from T1 to T2

T1 (out of 20 points)	T1 as Percentage	T2 (out of 20 points)	T2 as Percentage	% Change
11.8	59	12.5	63	6
14.0	70	16.0	80	14
10.0	50	15.0	75	50
9.4	47	15.0	75	60
10.6	53	17.5	88	65
17.6	88	20.0	100	14
14.4	72	15.0	75	4
15.6	78	19.0	95	22
13.0	65	15.0	75	15
9.8	49	14.0	70	43
6.4	32	8.0	40	25
10.6	53	17.5	88	65
8.8	44	14.5	73	65
17.6	88	18.8	94	7
5.6	28	13.0	65	132
8.0	40	13.0	65	63
11.6	58	19.0	95	64
9.4	47	13.0	65	32
10.8	54	15.5	78	44

Table 2
Percent Change from T1 and T2 to T3

T3 as Percentage	% Change from T1	% Change from T2
68	15	7
70	0	-14
79	58	5
67	43	-12
68	28	-29
98	11	-2
83	15	11
96	23	1
75	15	0
72	47	3
80	150	100
95	79	8
71	61	-3
97	10	3
69	73	6
97	67	2
68	26	-15

score for T3 (when n=15) was 76.1 and the median was 72; the mode was 70. It is expected that the inclusion of an additional assignment, namely a practice attempt at the final proposal in its entirety submitted before the true final proposal, might make a meaningful difference at improving overall student performance further.

In addition to these direct measures of assessment to track the impact of the scaffolding approach to the final research project, I also employed a student perception survey as an indirect measure of learning. At the end of the semester, students were asked the following three questions: Firstly, in comparison to other research methods courses, how would you rate your learning in this course? Secondly, which aspect(s) of the course had the greatest impact on your learning? Lastly, which aspect(s) of the course did you enjoy the most? The majority of students (n=19, or 82%) indicated that they learned “somewhat more” (n=10, or

43%) or "much more" (n=9, or 39%) than they had in previous classes, with the remaining four students, or 18%, distributed between "about the same" (n=3, or 13%) and "somewhat less" (n=1, or 4%); no student described their learning as "much less" than other courses. Moreover, students commented that the most meaningful course elements were "seeing how I was doing before I handed in the final paper" and "finding out specific things I needed to work on," suggesting that the scaffolding approach with its successive steps and specific points of feedback were helpful. "Getting to get someone else's take on my paper" and "reading someone else's paper to see what I was doing right" were noted as two of the more enjoyable aspects of the course, although a number of additional remarks pertained to the students' happiness at "getting to use my cell phone in class" and "seeing how what we were learning could be applied to real life things like Twitter," suggesting that the active learning strategies focusing on social media are also promising approaches to explore further in the future.

Finally, a thematic analysis of qualitative data gathered from students' reflection journals, specifically about the literature review assignment, revealed further encouraging insights. Six students reported feeling that the assignment was worthwhile and represented time well spent. Comments included such statements as, "This definitely wasn't busy work. I feel like I really got something out of it." Another student wrote, "I thought it was going to be a pain to hand in draft after draft but it [sic] actually end [sic] up getting a better grade in the end." Five students remarked about the usefulness of the peer evaluation process. Observations such as, "I wasn't happy at first about having some other person read my stuff but what they wrote was really good. It made me see what I was doing wrong when I thought I got it," revealed that feedback from peer evaluators was largely regarded as helpful; likewise, such statements as, "I never really got the whole point of reading my paper over and over to catch typos like you tell us to, because I figure spell check catches stuff. But then you see someone else's paper and you're like it's really distracting to have to keep circling spelling mistakes," demonstrated that serving as a peer evaluator facilitated students' own self-reflection. Two students reported struggling with writing a literature review, with one mentioning, "I still don't get it," and the other stating, "This is really confusing." Since my intention was to promote learning for understanding, I found these comments worrisome. However, given that no additional information was provided, ascertaining the source of these students' confusion was problematic. I tried to solicit more details by asking questions during the journal review process, but none were forthcoming.

Discussion

The process of redesigning my research methods course to align more closely with each of the principles of good feedback practice outlined by Nicol and McFarlane-Dick (2006) and to facilitate greater student learning for understanding confirmed some beliefs I had already held and revealed other important considerations. Firstly, the construction (and dissemination) of clearly articulated rubrics that detail concrete rather than vague concepts and outcomes is vital. Students need to be made aware of exactly what it is that they will be expected to do and how they will be expected to perform. Instructors may find that students will fixate – rather infuriatingly – on the more cosmetic, superficial aspects of the assignment, such as the length of the paper or the point value of each category on the rubric. This is normal, and will begin to subside as students get more involved in the assignment and begin to take ownership of their work.

Secondly, shifting the paradigm from focusing on teaching for information transmission to emphasizing learning for understanding requires relinquishing a certain amount of instructional control. I realized early on during this process that I would probably not be able to cover as much content as I had previously done in other classes, simply because I was devoting class time instead to independent and peer-based work on student projects. Initially this felt worryingly foreign and wrong; how could I possibly be teaching if the students were working quietly on their individual papers? I reminded myself my intention was to foster greater student learning for understanding, and that this type of active, engaged, performance-based process required me to assume a different role. In a sense, I functioned as more of a coach than a teacher, abandoning my strictly lecture-based approach in favor of one that recognized the value of praise, advice, and constructive criticism. I may not have covered as much content in class, but ultimately, more learning took place; moreover, what the students learned was far more likely to be retained and applied in subsequent assignments.

Thirdly, providing a greater number of progressive, low-stakes assignments as opportunities for students to practice and hone their skills prior to submitting a final project does not equate to lowering the bar. The fact that I only required students to address three journal articles in the preliminary draft of their literature review instead of the twelve required in the final paper is not symptomatic of a lighter approach nor of less stringent standards; it merely recognizes that scaffolding an assignment and breaking it down into its composite parts so that students gain a clearer understanding of what is expected enhances the likelihood of learning. Students are less likely to be afraid of taking risks and making mistakes since the assignments are not the be-

all and end-all of their final course grade and, consequently, are far more likely to be receptive to the formative assessment resources with which they are being provided. In other words, they focus on the feedback they have been given rather than the grade they have earned, but only if the feedback is both positive and constructive, if it is framed in a motivational way by both the instructor and their peers, and if the comments offered are both specific and concrete. It should be noted that this practice of offering ongoing formative assessment is invariably time-consuming, particularly if the class is large. Instructors wishing to adopt this type of strategy need to be mindful of the amount of time and energy they can expect to expend reading and rereading student work and providing very detailed feedback.

I will be implementing this same approach to teaching and learning the next time I teach research methods with two minor modifications. I will ask students to keep reflection journals throughout the course so that they can chart their own progress from brainstorming through to execution, that process of graduating from "messing about" to "guided inquiry" to "culminating performances" described by Wiske (1999). I will also insert an additional low-stakes assignment between the second draft of the literature review (T2) and the final research proposal (T3), since students clearly need to have the opportunity to practice assembling their final paper and receive—and respond to—feedback on it before submitting a higher-stakes version that comprises a significant proportion of their overall grade. Otherwise, although the literature review contained within the paper is much improved, the other sections may be alarmingly poor. Unsurprisingly, if students have come to rely on the value of formative assessment, failing to provide that for them when it matters most seems a woefully ineffective practice.

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