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Abstract: Planning time for giving students effective feedback is an important and challenging aspect of the teaching and learning process. In our article we describe and analyze how we engage students as partners in providing formative feedback in time for students to modify their own thinking or behavior to improve learning. We have found ways to provide formative feedback more frequently and to involve students in providing effective formative feedback to each other. The four techniques we describe are the following: a) three-color group quiz with feedback on product, process, and progress; b) midterm student conferencing; c) shared revision of student generated questions and statements; and d) timely feedback using collaborative assignment blogs. These techniques give feedback in time for revisions to occur, provide scaffolding for learners, inform instruction, and most importantly, involve students as partners in assessment. These pedagogical strategies showthat the resulting benefits of improved instruction, enhanced student learning, and better student products are worth the time and effort and contribute to a productive classroom climate where the focus is on learning more than on grading. Formative feedback involving students as partners is a key strategy to enhance the teaching and learning process.

Keywords: active learning, formative assessment, formative feedback, learning strategies, postsecondary learning, student learning

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It was the last day of the last class. I was conferencing with a graduate student whom I'd previously taught as an undergraduate. I was looking forward to this conference because after the previous class, she'd rewarded me with expressions of how her personal and educational understandings had been positively impacted. This time she bluntly told me how disappointed she was because she had gained nothing from the course. I was left to ponder the differences between the two courses. I was wishing that this issue had come to light sooner in the semester. How had I missed it? Why had the student not done something about it sooner?

This called for a change in the way my graduate course was conducted. One of the major differences between the two courses was that the undergraduate course had frequent assessments of students' understanding during class. Students received frequent feedback that made their learning visible so they could make needed changes. Students evaluated their own work as well as that of others so they could see their own learning growth regardless of the level of expertise they'd brought with them. A discussion with my colleagues regarding the influence of formative assessment on my own students' growth and motivation resulted in these collaborative contributions of the ways we all use formative assessment in our graduate and undergraduate classes.

Creating a climate that maximizes student accomplishment in any discipline focuses on student learning instead of on assigning grades. This requires students to be involved as partners in the assessment of learning and to use assessment results to change their own learning tactics (Popham 2008; Stiggins 2008). The assessment approach that best accomplishes this is formative assessment. Formative assessment seeks to inform instruction and help students use the results to enhance their own learning. It is important because feedback given only at the end of a learning cycle is not effective in furthering student learning (Bollag 2006). In addition, Popham (2008) explains that consistent use of formative assessment "transforms a traditional, comparison-dominated classroom, where the main purpose of assessment is to assign grades, into an atypical, learning-dominated classroom, where the main purpose of assessment is to improve the quality of teaching and learning" (49).

Feedback is a key strategy of formative assessment. Formative feedback furthers student learning as the student engages in a continuous loop of self-assessment based on particular criteria (Bollag, 2006; Leahy, et al. 2005). "Formative feedback represents information communicated to the learner that is intended to modify the learner's thinking or behavior for the purpose of improving learning" (Shute 2007, 1). Effective formative feedback must be specific, simple, descriptive, and focused on the task. This allows learners to set clear expectations of themselves and to make decisions that influence their own successes (Butler 1987; Nyquist 2003; Shute 2007; Stiggins 2008). For maximum benefit, feedback must focus on more than one aspect of learning; thus formative feedback is given on the product (assignment or performance), on the process (how it's done), and on the progress (improvement over time) of the learning (Guskey 1996; Shute 2007; Stiggins 2008). Effective formative feedback comes from the instructor as well as from self and/or peer assessment and is based on clear criteria (Sadler 1989; Fontana & Fernandes 1994; Vispeol & Austin 1995; Tunstall & Gipps 1996; Frederiksen & White 1997; Black & William 1998; Smith 2007).

In our article, four colleagues in various disciplines of Teacher Education describe and analyze how we involve students as partners in assessment in order to give formative feedback more frequently. The formative feedback strategies we explain help us to improve our teaching, to help students adjust their own learning tactics, and to develop a class climate focused more on learning than on grading. The four strategies we share in this paper are: three-color group quiz with feedback on product, process, and progress; midterm student conferencing; shared revision of student generated questions and statements; and timely feedback using collaborative assignment blogs.

Three-Color Group Quiz With Feedback on Product, Process, and Progress—Professor A's Perspective

Learning is enhanced when formative feedback is given on three separate aspects of learning evidence: (1) product, (2) process, and (3) progress (Guskey 1996; Guskey 2001; Shute 2007; Stiggins 2008). Using an activity called the three-color quiz (black, green, and blue ink), formative feedback is given on all three aspects of learning. Students prepare for a three-color quiz on a topic through readings, written response, discussion, and explicit instruction. A short-answer constructed response quiz is then completed in three colors of ink. Black ink is for writing what an individual knows. Green ink is for writing what the members of the group know. Blue ink represents knowledge from the textbook or lecture notes.

Each group of four or five students forms a collaborative group. First, students write their own responses to the quiz questions silently in black ink with closed books. Next, group members discuss the questions that remain unanswered and/or responses that may need revising. They then write additional answers or revisions to the questions in green ink based on the information they learned from and with each other. Finally, students write in blue ink to add further answers or revisions based on information they retrieve on the spot from their textbooks, notes or other classroom resources, including the professor.

The three-color quiz is designed to help students receive feedback on all three aspects of learning evidence: (1) product, (2) process, and (3) progress. First, feedback on the product is given because, the responses in black ink allow each student's current performance or knowledge product to be assessed and affirms his/her current personal level of achieved knowledge on the topic.

Second, feedback on process is given because students who do their homework and study are validated for their efforts (process). The amount of black ink visibly acknowledges the work it took to produce it. In addition, the process of group discussion to gain knowledge is acknowledged with the green ink. The

process of learning continues as students respond to my written formative feedback after I read their quizzes.

Third, feedback on progress is given as the amount of black, green, and blue ink changes from quiz to quiz, thus giving an indication of how much students are able to write on their own (black ink), how much they rely on peers (green ink), and how much they rely on the text book (blue ink). For example, as amount of blue ink decreases from quiz to quiz, this suggests a decreasing need to go back and find the answers in the text materials.

Analysis of benefits of the three-color quiz

In order to determine the effectiveness of the three-color quiz, I surveyed 43 graduate students anonymously in two classes from different semesters using a 5-point Likert scale. The survey indicated that the majority of students felt more satisfied with their learning (95%), had more understandings clarified (90%), and felt less nervous (79%) while taking a three-color quiz than when taking a traditional closed book quiz.

While 84% of the students reported that after taking the three-color quiz, they looked up what they didn't known to further learning, only 37% reported looking up what they didn't know after taking a traditional closed-book quiz. This new format was a change from the traditional quiz, and about 9% of students reported a preference for taking a traditional closed-book quiz, with 86% reporting that the three-color quiz was a worthwhile learning activity. In addition, I noted more quality class discussions, a more positive learning atmosphere, more student comments and questions, and better quality achievement than when compared to previous semesters.

In summary, receiving formative feedback from peers and the professor using a three-color quiz enhanced student learning and motivation because it gave feedback not only on students' assigned products, but also on their learning processes and intellectual progress. It involved students in making decisions about how much they knew, how much they needed to know and how to gain the knowledge they needed. The classroom climate shifted to a positive focus on learning instead of an anxious focus on grading.

Midterm Student Conferencing—Professor B's Perspective

My reading/language arts methods class is taught with a field experience for elementary education majors who work with children using a reading/writing workshop format in a local elementary school for 8 weeks. I conduct individual conferences midway through the term to provide descriptive feedback, to connect with each student, and to review his or her performance in class and in teaching the field experience.

Stiggin's (2001) recommendation is that the teacher's role in conferences is to be a listener first and serve as a consultant or coach to improve students' performance. Thus, I give students the conference format and criteria that will be followed several weeks before the conferences are held so that they can collect their materials and begin to think about what they will say as they reflect upon their class performance. Students primarily do the talking while I take notes, answer questions, offer suggestions, and give my perspective on how students are doing, but ultimately students lead this conference. "Effective conferences don't rely on traditional, one-way communication. Rather, they work best when teachers share both the control of the meeting and the responsibility for directing the communication" (Stiggins 2001, 498).

Analysis of benefits of midterm student conferencing

Previously, I held conferences at the end of the term, but feedback at the end was rarely beneficial to student learning. By switching to midterm conferences, I can now provide descriptive feedback about their writing and lesson planning earlier. This results in students using this feedback to revise and improve their products during the term. Another advantage of these midterm conferences is the joint development of individual plans for student improvement. When students struggle in their field experiences, for instance, together we develop an individual plan for improvement to assist them. The feedback in this plan guides the student and is revisited later if needed in an effort to improve the field experience performance. This process has improved student performance and assisted struggling students to succeed.

In addition, I gain insights through conferencing that would be missed in a large group setting because not all students feel comfortable contributing in a whole class discussion. I plan future class sessions and go over related instructional strategies based on the feedback I receive during conferences. "An assessment activity can help learning if it provides information that teachers and their students can use as feedback in assessing themselves and one another and in modifying the teaching and learning activities in which they are engaged" (Black, et al. 2004, 10). Allowing time for revision and giving feedback to guide improvements are keys to enhancing the teaching and learning.

Another benefit is that individual midterm conferences provide an opportunity to get to know my students better. The positive rapport that is developed with students make me more approachable to students and allows students to feel more comfortable asking questions and requesting help if they are unsure about content covered in class. These conferences also allow me to model the process of planning, preparing, and revising instruction using formative feedback from individual conferences, a process I hope they will use with the children they teach.

For those whose large class sizes make it difficult to arrange time to meet individually with each student, one-on-one conferencing can still be provided through alternative means. One way is by using simultaneous student-led conferences with peers while the instructor circulates the room. Another way is by structuring web-mediated peer reviews. Students benefit from these peer feedback experiences (Garcia-Barbosa & Mascazine 1998; Motto 2008; Trautmann 2007).

In summary, the midterm conference provides timely feedback enabling students to enhance their learning. It also gives me additional insights allowing me to self-assess and modify my instruction. A midterm conference provides away to meet individual student learning needs and build rapport that increases class participation and learning for the rest of the term.

Shared Revision of Student-Generated Questions and Statements—Professor C's Perspective

Prospective teachers from all disciplines in education are required to take a course in Reading and Writing Across the Curriculum. This blend of disciplines provides a perfect setting for introducing formative feedback techniques that can be used across content areas. Students see the value of ongoing assessment before, during, and after instruction. Specifically, they learn how descriptive feedback from peers and the professor changes and refines their work. An effective way my students provide each other with descriptive feedback is by having students respond to and refine questions or statements they have generated. Two examples of such activities are four-square Jeopardy and creating statements that generate student interest in a topic.

Four-square Jeopardy is used at the end of class. Students are asked to create two possible game questions with answers, one related to lecture and one related to text. They then share their Jeopardy questions with one other student. If the questions are unclear, the pair of students revises them. Then, they write two additional questions, one from lecture and one from the text, seeking to clarify content they do not fully understand. These additional questions are reviewed and clarified at the beginning of the subsequent class. This process improves the quality of the questions and clarifies the content.

Asking students if they agree or disagree with content-related statements is a way to generate discussion and activate students' background knowledge at the beginning of a topic of study (Head and Readence 1986). Creating these statements to generate student interest in a topic is another area where peer feedback helps improve the quality of student work. In order to pique student interest, the statement must be general enough that students could agree or disagree with it confidently from their own experience. Yet, the statement must also relate to the content topic. It is not an easy task to create a statement that does both. Peer feedback helps students develop such statements.

In order to help students develop general statements that stimulate curiosity yet relate to the content topics, they are shown quality statements developed by teachers of math, science, social studies, and P.E. The initial statements students make are often too specific, making them too difficult, thus discouraging others instead of piquing their interest. For example, a statement that is too specific regarding the Civil War would be, "The first Battle of Bull Run took place in Virginia." Due to a lack of background knowledge on the topic, most students could only randomly guess if they agreed or disagreed with this statement, instead of making a thoughtful prediction. A more appropriate statement would be, "It is not good to pit brother against brother." After initially responding to the statements, students then read about the topic (i.e., Civil War), then return again and respond to the same statements. Peer formative feedback is then used to improve the statements as they are shared using these criteria:

1. Do the statements pique interest in the topic?

2. Are statements general enough that any and all students would be able to respond with something from their own experience?

3. Are statements ones that will relate to the topic being covered?

From the peer feedback they receive, students rewrite their statements. At that point, they receive additional feedback from me enabling them to improve the statement quality.

Effectiveness of shared revisions of student-generated questions and statements

In addition to stimulating interest in a content topic and clarifying the content, student-generated questions and statements with peer feedback improve students' skills in critical thinking. You can't just say, "Think critically" and expect students to understand how to do it. The word *critically* often creates a negative perception of what critical thinking is all about. Instead, by thoughtfully trying to improve each others' products, students naturally engage in the analytic and generative processes we call *critical thinking*. As a result, not only are student products better, but students improve in thinking and communication skills as well. Another benefit is that the student feedback received during these activities allows me to assess my instruction and to clarify class materials not understood. Several graduate students who presently teach in schools have reported using these techniques successfully in their own classrooms to create thoughtful discussions and clarify areas of confusion.

Timely Feedback Using Collaborative Assignment Blogs—Professor D's Perspective

In Library Science education classes, we have found that descriptive feedback is an inclusive and empowering practice that invites and encourages all learners to participate as members of the learning community. Library Science faculty and students consistently provide two conditions—timeliness and collaborative technology—that enable and manage the use of descriptive feedback in order to enhance our learning.

Timeliness. Students and faculty are often involved in a variety of activities within a particular course. Descriptive feedback, given directly after an assignment has been completed, informs our students of strengths and areas in need of improvement and allows them to address these items before they embark on the next assignment or final draft. This eliminates the need to correct similar items in consecutive assignments/drafts and saves both the student and the faculty member time and energy.

We use a variety of techniques in providing timely feedback. The most efficient is the use of criteria-specific templates developed for each assignment that serve as both anchors and guides for the assigned descriptive narrative. A template focuses both faculty member and student on key aspects of the assignment and decreases meaningless statements—e.g., "Good Job!" or "Needs Work." For example, in giving feedback on a marketing campaign brochure, specific comments are given on each particular aspect listed on the template, such as on "Slogan"—e. g. "Your slogan is relevant and uses inferences and direct phrasing that would catch the interest of your target audience of first- year auto mechanic students in a rural Iowa community college."

Collaborative technology: Maximizing benefits and managing limitations

Providing detailed, descriptive feedback noticeably enhances the quality of students' work compared to when descriptive feedback is not used; yet the time and energy it requires is often why some faculty avoid or are reluctant to provide this type of feedback. In Library Science, we break up the monotony of providing long, written feedback on projects and papers by using Web 2.0 technologies to communicate, collaborate, and disseminate feedback. We developed "assignment blogs" to receive questions and provide feedback about certain aspects of an assignment, so that all students can benefit from the instructor's information-rich, detailed answers. We use these same "assignment blogs" to speak and teach "patterns" of strengths and areas of concern that show up in drafts of particular assignments, allowing students to self-assess if they've been making similar mistakes or have shown similar prowess and progress.

Faculty benefits of timely feedback using collaborative assignment blogs

We have found that when we incorporate formative assessment during a course, we then have the information needed to adapt our instruction to better meet our students' needs. Providing descriptive feedback that is honest and fair requires us to review our own intentions for the course or a particular assignment, and to support revision and spontaneity. This is often greatly appreciated by students. We believe that faculty who are willing to self-assess are more likely to get students to do the same. Descriptive feedback then supports all members of our learning community.

Conclusion

The techniques for providing formative feedback that we have presented show how to enhance postsecondary student learning in a variety of disciplines. These techniques give feedback in time for

revisions to occur, provide scaffolding for learners, inform instruction, and most importantly, involve students as partners in assessment. These pedagogical strategies show that the resulting benefits of improved instruction, enhanced student learning, and better student products are worth the time and effort, and contribute to a productive classroom climate where the focus is more on learning than on grading. Formative feedback involving students as partners is a key strategy to enhance the teaching and learning process.

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