Cybercoaching: Rubrics, Feedback, and Metacognition, Oh My!

Naomi Jeffery Petersen, Ed.D.

Indiana University South Bend School of Education

NJP@iusb.edu

What can shift a student from thinking an assignment's technicalities to the learning processes intended to be exercised by the assignment? Try 'Cybercoaching' using e-mail and online tools for feedback and assessment. Cybercoaching techniques focus on students' continuous awareness of their own success in developing transferable skills. The Cybercoaching workshop is structured for participants to design analytical developmental rubrics; to rehearse the use of technological applications; and to troubleshoot a course syllabus. A glossary (Appendix A), templates, and rubrics will be provided. Participants will be invited to participate in an ongoing study of the model's effectiveness.

This workshop addresses three invited topics of Putting Student Learning First:

1) *Deep thinking*. Selected response tests with 'one right answer' can assess facts but not reasoning or skills required by complex projects (Anderson et al, 2000; Hills, 2003; Schunk & Pajares, 2002).

2) *Technology*. Using familiar word processors and electronic mail to focus attention on the cyboercoaching model rather than mastering new technology, instructors are more prepared to embrace technological innovation, thus fostering adaptive rather than technical change (Bandura,1997; 2004; Linnskey & Heifitz, 2002).

3) *Assessment.* Formative and summative assessment together provide teaching tools as students become familiar with the development described in the rubrics for each criteria, and students recognize their own changes within each criteria (Marzano, Pickering, & McTigue, 1993). Rubrics provide a forum for discussing course quality among multiple instructors of the same course (Stiggins, 2005.

This tutorial approach rests on the coaching role of monitoring and adjusting student learning, the coaching tools of the least sophisticated and most accessible computer technology, and the coaching technique of personalized, objective-related feedback (see Table 1). The feedback is for the purpose of improving student performance and self-regulation (Zimmerman &

Kitsanas, 2002). The theory and research behind the use of online technology (cyberspace), the instructor's coaching role, and the feedback techniques discussed here may apply to any online feedback, but cybercoaching is specifically intended for personalized feedback appropriate for higher levels of thinking, i.e., analysis and synthesis (Anderson, Krathwohl, Airaisian, Kruikshank, & Wittrock, 2001).

Current theory, research and pedagogical standards support student-centered 'best practice' for more effective learning (Danielson & McGreal, 2001; Lambert & McCombs, 1997; McLoughlin & Luca, 2002), but another powerful reason to be student-centered at the university level is the dependence on student satisfaction. Personal attention from instructors is expected by university students as tuition-paying consumers, as evidenced by the fact that many items on typical student surveys concern instructor-student interaction and students' active engagement. In fact, the National Study of Student Engagement survey (http://websurvey.indiana.edu/nsse2004/submit.cfm) specifically asks students to rate how available, helpful, and sympathetic their instructors are. Another question asks how frequently the student has "Received prompt feedback from faculty on your academic performance (written or oral)". Therefore, the cybercoaching model may support several dimensions of instructors' values that must be constantly coordinated (Kennedy, 2004).

Table 1

Components of the Cybercoaching Model

	Component	Characteristics	Features
	Cyberspace	commonly available online technology	E-mail
			Microsoft Word
+	**Coaching**	monitoring and instructing during the	Monitor & Adjust
		process of refining skills (tutoring);	Rubrics
=	**Cybercoaching**	goal-oriented feedback with an opportunity	Feedback
		to revise before summative evaluation	

Cyberspace. The simple speed of communication is of such great value that a new culture of immediate response has developed. -According to the 2003 National Survey of Student Engagement, 80 percent of the students reported that their assignments include interaction via Internet and various forms of computer technology (Center for Postsecondary Research, 2004; Zhao & Kuh, 2004). In addition, word processing programs are now almost universally readable, even by competing systems (Mac v. PC). The Cybercoaching model assumes that instructors and students have compatible online technology and word processing tools. Online technology includes available tools for feedback, which students use for improvement of their assignments, but only if the purpose of the interaction is well-defined.

Coaching is defined here to include a tutorial function of monitoring student progress in order to provide feedback for improvement. The coaching term is used outside of sports, for instance, Nelson, Apenhorst, Carter, Mahlum, & Schneider (2004) observed that the coach "questioned and prompted reflective practice in building confidence and critical thinking" (p. 32). In a similar way, the focus of coaching in the classroom is on the process of giving feedback in order to develop performance before the final assessment (Clark, 2004).

A coach, as opposed to a referee or a spectator or even a player, looks for skills to develop rather than errors committed or goals scored. Just as athletic coaches work closely with their athletes, developing skills through practice and feedback before a final game or competition (Gilbert & Trudel, 2004), academic instructors work closely with their students, developing skills of logic and expression in written products. It is important to recognize the personal relationship that develops between the coach and the individual being coached. If a coach responds with the same automatic response to every player, is not coaching for improvement so much as monitoring activity. We offer our model for instructors who are interested in developing complex skills needed for proficient performance, which means that judgment is required.

Cybercoaching is a way to use readily available technology for the coaching function of an instructor. It works when the student's product under development can be communicated via cyberspace. The authors firmly believe that computer technology provides a viable tool and context for teaching and learning, and this chapter is therefore not a defense of online technology. Rather, it is an argument for a coaching role that instructors may not embrace—but is made much easier with the use of online technology. Technology is therefore serving to improve instruction and assessment. Cybercoaching outlines the techniques.

The "cyber" part of cybercoaching refers not only to online technology or cyberspace through which the coaching occurs, but to the organization of the relationship that encourages feedback. The study of communication and control between man and machine was introduced as cybernetics (Smith & Smith, 1965), a theory of individual and organizational learning based on the need for feedback to adjust the momentum and direction of progress. Current theory and research in cognitive science have influenced standards of teaching to include the need for students to receive feedback. Vygotsky's concept of intersubjectivity explained that the student's "zone of proximal development" would expand through interaction with a more skilled learning partner (Lindblom-Ylanne & Pihlaijamaki, 2003).

According to the ZPD concept, the guide, or helper, detects the need of the learner and renders the assistance accordingly. In the process of instruction, the instructor gets to know the learner's weaknesses based on pre-stated objectives. The knowledge is formulated through consistent reflection centered on the objectives from the learner's perspective. The coaching role of the instructor can provide that modeling of skillful practice that the learner must observe and then rehearse. The instructor uses techniques that increase the learner's development and also inspires active engagement to increase time on task.

The teaching-learning cycle is well established as a process of continuously monitoring and adjusting effective instruction. This interaction of teacher decisions may be seen in Figure 1 and is further revealed in the diagram describing the cybercoaching elements added to it, as seen

in Figure 2. The first figure emphasizes the interaction and shows the parallel assessment sequence, while the second figure highlights the specific activities of teaching, learning, and assessing within the context of the course design. The interior arrow signifies formative assessment. This monitors whether the stated objectives have been mastered; it then returns to the teaching activity because feedback is an opportunity to extend and personalize instruction. Providing feedback is considered a process of instruction (Williams, Davis, Metcalf, & Covington, 2003).

This feedback loop may be articulated further to identify the opportunities for feedback and the function of continuous feedback and subsequent decisions. As highlighted in Figure 2, the instructional decisions are in a cyclical sequence: first the learning targets are identified, then the teaching activities are designed which often involve learning activities at the same time. These learning activities provide the focus for the instructor to assess the student's understanding, and it is through feedback to these activities that the coaching occurs. These decisions must align with each other; otherwise the communication is not meaningful for learning. This is the difference between formative and summative assessment.

Formative assessment is the coaching feedback provided before the final, or summative, evaluation. The assessment of student learning is then used by the instructor to self-assess the effectiveness of all the instructional decisions. This is the complete harmonic loop (Chang & Petersen, in press).
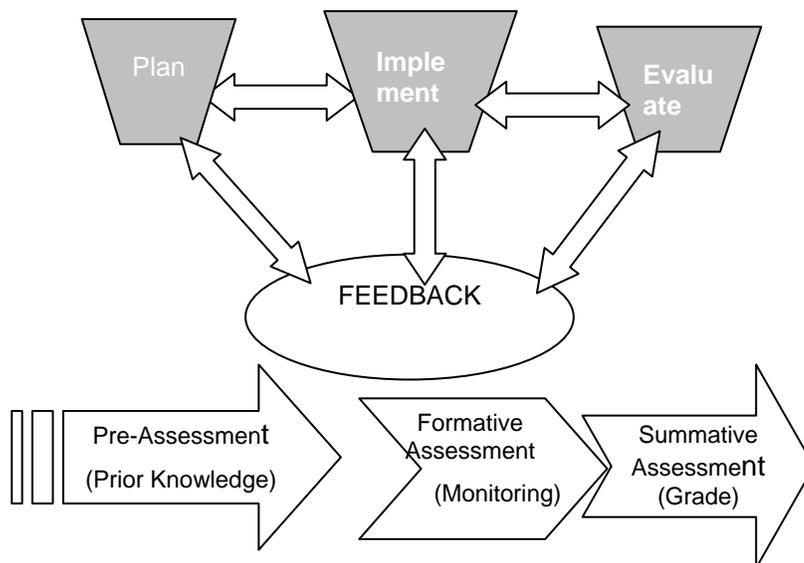

Figure 1. Teaching as Feedback-based Decision-Making, with Parallel Assessment Sequence. (Petersen & Sprague, 2005).

Clear targets. The American Association of Higher Education developed nine principles of good practice for assessing students, including "Assessment works best when the programs it

seeks to improve have clear, explicitly stated purposes. Assessment is a goal-oriented process " (Astin et al, 2004, para. 3). It is therefore crucial to emphasize the importance of clear objectives to be assessed (Wiggins & McTighe, 1998), and their use in feedback (Miller, 2003).

When the objective of the course is to develop more advanced thinking than simple memory or comprehension, or when the student lacks confidence in making creative decisions, feedback is certainly warranted. The distinguishing characteristic of the cybercoaching model based on this harmonic teaching-learning cycle is the personalized feedback made possible by current technology. Computer technology may speed communication and simplify record-keeping but it does not improve a poorly designed course or compensate for a poorly prepared student. Student engagement is defined as "how much time and effort students put into their studies and other educationally purposeful activities" (Kuh, Gonyea, & Palmer, 2001, p. 1). The instructor is expected to facilitate those purposeful activities, which include interaction related to the learning objectives-- between students and instructor as well as among students.

One problem is the different perspectives of students and faculty. Consider these findings reported in the 2004 National Study of Student Engagement (NSSE): While almost 90% of faculty reported there was prompt feedback to academic performance, less than 60% of students agreed. There was also considerable difference in the two groups' opinion of whether the coursework emphasized memorization: Nearly 70% of the students thought so and an equal proportion of faculty thought not. The significance in this difference is that faculty may misread the students' understanding and thereby misjudge the feedback needed. It is therefore prudent for the faculty to closely and personally monitor the student's progress, and to be sure students are consciously aware of the emphasis on thoughtful decision-making rather than rote memorization.
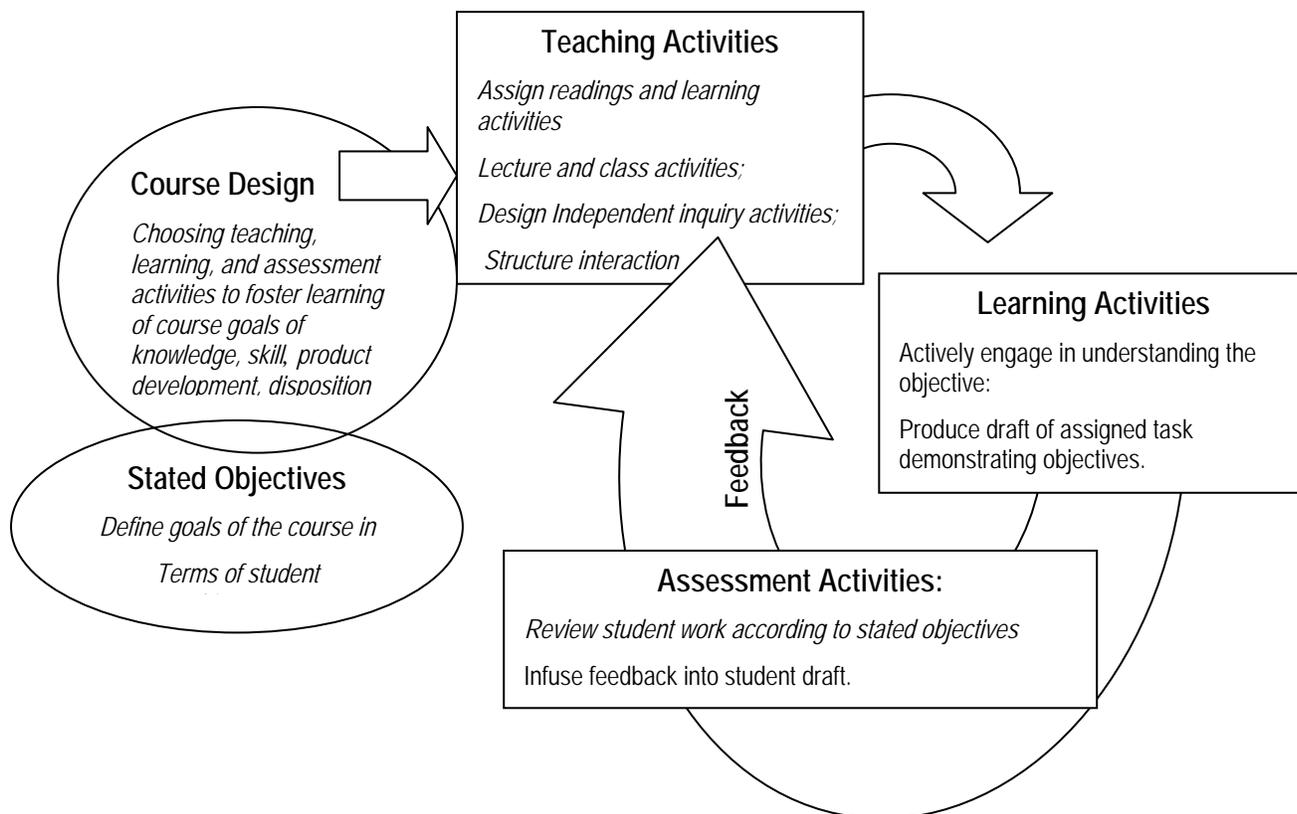
Figure 2. The Harmonic Feedback Loop (Chang & Petersen, in press)

The importance of interaction is hardly disputed. Zakrzewski and Bull (1999) reported significant grade point increases in final test results following students' participation in formative tests as part of their preparation for final testing (Peat & Franklin, 2002). No teacher would argue with the value of giving feedback and of reteaching concepts not yet grasped, but every teacher will tell you that it is labor intensive and difficult to manage (Bothel, 2002; Graves, 2002).

Less personal feedback is also possible thanks to technology. Many online platforms familiar to universities, such as Blackboard (www.blackboard.com), include online test or survey features; these can be programmed to insert comments automatically. The comments can be varied based on different responses, including ones that vary based on student responses. But how meaningful is this? Without the instructor's informed judgment at the time of student's requiring the feedback, the student is actually generating the feedback by submitting an answer that automatically triggers a pre-arranged response.

It is even possible to structure a mechanism for students to generate their own feedback deliberately. Peat (2000) studied the use of self-assessment modules for students to generate their own feedback. Although the students found these computer-based tests of learning helpful, they were limited to lower levels of thinking (Anderson et al, 2001). Thus the courses requiring more complex tasks, such as research reports or multimedia presentations, will not benefit because

judgment is required as well as the more skilled example modeled by the instructor (Bandura, 1997).

Mechanical responses. Computer-assisted assessment, that is, the use of computers to deliver, mark and analyze assignments or examinations, has a place (Rudner & Gagne, 2003) but they, too, may only be used when there are simple solutions, or 'one right answer' (Stiggins, 2005). Although mechanical corrections do provide welcome information (Peat & Franklin, 2002), it is pre-designed: It is an end in itself that may not develop further thought and may not provide adequate information for the teacher to analyze obstacles to student success. It is seen by the student as a summative assessment rather than as feedback for continued growth. Another limitation is that the average instructor certainly cannot have access to such sophisticated software for routine assignment feedback, nor the extravagant time required to program it. However, cost alone is not the reason to prefer the personal feedback suggested here. The main reason is to foster the coaching relationship that cares about individual change.

Assessment Activities

All the teaching and learning activities must be related directly to the course objectives; assessment activities determine whether the objectives are reached. As mentioned just above, self-assessment is the ultimate goal, while formative assessment is the short term goal of the instructor determined to make maximum use of limited time. The instructor must decide what and how to communicate the assessment to best serve the student's readiness to develop further. There are several ways of inserting feedback within the student's original text. The first step for any of the following techniques is to review the objectives of the course and intentionally limit feedback to those concepts identified as criteria for success with the task.

We have here the happy connection of the coaching role and the new online technology. It works when the product under development can be communicated via cyberspace. This chapter is therefore not arguing for the effectiveness of online instruction or assessment, for we firmly believe that computer technology provides a viable tool and context for teaching and learning. Computer technology may speed communication and simplify record-keeping but it does not improve a poorly designed course or compensate for a poorly prepared student.

Formative v. summative assessment. Although the cybercoaching model is a form of 'paperless assessment', it is important to distinguish formative assessment from summative assessment: the former is intended to adjust the instruction and learning in response to the student's performance while the latter is used to evaluate the student's mastery. Formative assessment involves monitoring the student's progress and then inserting focused mini-lessons that direct the student to particular skills required for adequate performance of the assignment.

Summative assessment is a final evaluation, after which the instructor does not expect to influence the student. Online communication does contribute an important opportunity to summative assessment for students report liking to check their course grade as their sepearate assignments develop. The limit to this value is that once a grade is recorded, the students tend to see it as a permanent indication of their value or potential. Cybercoaching is therefore concerned with techniques for self-assessment and formative assessment which inspire growth before any formal evaluation published. .

Simple v. complex tasks. There is a big difference between tasks that have one right

answer and tasks which are more complex. The first are often selected response items   (i.e., true/false, multiple choice, matching, fill-in-blank) or else strictly mandated formats. Instead of a coach, these require only a referee to make a call of in or out, fair or foul. In contrast are tasks that demonstrate more than one objective. This means there is more than one criterion for success and more than one way of doing it. A coach, as opposed to a referee or a spectator or even a player, looks for skills to develop rather than errors committed or goals scored. Whether the student is writing a research proposal or designing a lesson plan or generating a graph or charting a path, there are many skills involved, each benefiting from specific feedback.

Richard Stiggins (2001) called essay assessment 'subjective and powerful' compared to the 'flexible and efficient' selected response items. Essays are not the only tasks to have more than one way to be right, and more than one dimension of quality. Having more than one right answer is a characteristic of all assignments that require the creative combination of many elements for understanding one topic. For instance, maps are visual essays and football plays add a time element to the spatial. In teacher education, the most common such task is the design of a lesson plan or instructional unit. Just like an essay, it has a conventional structure and identified purpose. Therefore, selected response items have only one criterion, accuracy, while essay-type tasks will have many. The complexity is not just a matter of quantity, but quality, because accuracy is fairly concrete while many of the other criteria of excellence are vaguely defined. The challenge is to convert the subjective into the objective, and this is done by analyzing the writing in order to focus on separate traits while maintaining a perspective of the whole.

Rubrics: The Coach's Tool of Choice for Feedback

A *rubric* is the tool used to analyze a task according to multiple criteria. A holistic rubric will describe the whole essay at each level of proficiency; an analytic rubric will describe each criterion, typically organized in a matrix to show gradual changes in quality (Mertler, 2001). The advantage of developing a completely articulated analytic rubric that describes each criterion in concrete terms for recognizing insufficient to proficient work is that the teacher has a common language for discussing the issue with students (Andrade, 2000). Asking about the meaning of a rubric descriptor is a completely different dynamic in the relationship between instructor and student than challenging a grade. The rubric therefore becomes a versatile tool for the learning environment because it fosters clarity and independence as the student begins to recognize the descriptions as applying to his or her own work.

The *prompt* is the question to which the essay (or project) is a response. If the essay is a experimental research report, the prompt is the hypothesis or research question. Cybercoaching supports the development of tasks requiring higher levels of thinking, because the prompt must be logically related to the objectives of the course, and the objectives of the course become the criteria articulated in the rubric, which in turn helps students understand the task.

Holistic rubrics. This convenient matrix identifies multiple criteria used to assess performance and the gradual development from weak to strong performance. A naïve or holistic rubric will be a single scale describing the general characteristic of each level. An example can be found in Table 2, provided by Frances Bell at http://www.isi.salford.ac.uk/staff/fb/. These holistic rubrics could be refashioned using more specific criteria, such as factual knowledge,

conceptual knowledge, procedural knowledge, and metacognitive knowledge, again using the revised Bloom's model of cognition.

Table 2
Holistic Rubric Example

Quantity of Online Participation	Score
The student contributed regularly.	4 - 5
The student's level of contribution was acceptable/of average value.	3
The student hardly contributed.	1 - 2
The student did not contribute at all.	0

To repeat the point made earlier about aligning activities with objectives, none of these criteria is appropriate unless it was established as an objective of the course.

Analytical rubrics. The best use of rubrics is self-assessment, but students may find it difficult to use holistic rubrics because the criteria assume familiarity, as seen in the mid-point, or 3, levels which describe each characteristic as "contribution was acceptable/of average value". A more specifically articulated rubric would describe the range from unacceptable to exemplary performance in concrete terms that students could recognize. Table 3 is an example of a comprehensive rubric for undergraduate writing assignments (Petersen, 2004) developed using the Six Trait model of analyzing writing (Northwest Regional Educational Laboratory, 1998; Spandel, 2000; Stiggins, 2001).

This sort of articulated, or analytical, rubric is a key tool for online assessment, beginning with the fact that the student is already familiar with it before the feedback exchange. Students are asked to self-assess their drafts by looking for descriptors that apply to their draft. The last part of the rubric, 'next steps', emphasizes the metacognitive element. The goal is to foster self-assessment and self-regulated learning. The student must commit to paper some decision to revise the draft or not, or perhaps to work on some new draft that builds on these skills. This is frustrating for a student who is accustomed to 'spoon-fed' assessment (Kohn, 1999).

Inserting portions of the rubric. The capacity to work with more than one window at a time facilitates the need to copy and paste from one document to provide a familiar reference in another. The instructor uses the rubric while reading a draft, leaving it open in another browser while reading the student's work. After identifying a criterion from the rubric as a focus topic for some aspect of the draft, the instructor can select one row of developmental growth in that trait and paste it into the student's draft. This requires keeping more than one Word document open and toggling back and forth. Simply cutting and pasting a section of the rubric and highlighting the degree of proficiency with, say, yellow fill, will communicate enough. The instructor does not have to write an original note for each interaction. In yet another activity that does not require original messages, the instructor merely highlights problematic areas in the draft. The student is then given the task of analyzing which of the criteria are related to each of the

highlighted sections.

Table 3

A Writing Rubric for Expository Essays

Trait	Emerging	Competent	Proficient	Professional
Organization	Random list	Logic within paragraphs	Clear intro and conclusion	Flows smoothly
Ideas	Few; Superficial treatment; isolated concepts; no support	Some development; little connection between ideas; some support	More idea development; more theory & practice connection	Separate sections labeled with appropriate titles.
Word Choice	Slang, colloquialisms, contractions, inaccuracies, misuse of jargon	No unconventional English usage; Appropriate use of jargon.	Fluent use of professional vocabulary.	Helpful use of appropriate titles to summarize sections.
Sentence Fluency	Fragments, comma splices, run-ons; choppy or rambling.	Mostly complete thoughts with some attention to variety for emphasis.	Smooth transitions as ideas develop; no clichés or empty phrases.	Inspired turns of phrase.
Voice	Completely casual or extremely mechanical	Scholarly tone with consistent point of view	Scholarly with personal point of view	Scholarly with personal point of view and experience
Conventions	Trends of mistakes in mechanics and usage	Few errors of mechanics or usage	No errors of mechanics or usage; skilled use to improve meaning	Fluent, skilled mechanics and usage to improve reading.
Presentation	No title page or numbering, in consistent or distracting style choices	Mostly consistent, with adequate identification. Few distractions due to format.	Font and format enhances readability. No distractions of style.	Professional presentation: visually inspired, easy-to-read format.
Next steps				

Description. One important consideration when developing the rubric is to avoid language that implies right or wrong compared to developmental criteria. This means that critical language is avoided and simple observations of what would be true for that degree of development. For instance, Table 4 is one row from the comprehensive analytical rubric found in Table 3. The sequence of levels should describe a development from novice to expert,

communicating an observation of fact rather than a judgment.

Evaluation. Grades are a snapshot of success at a given point, not a description according to some standard. A particular column, or degree of proficiency, could be targeted for successful completion of a course that is in a longer program sequence. For instance, the 'competent' level in either Table 2 or 3 might be the target for an introductory course, but the proficient level might be expected by graduation. The grade given for the paper would be based on the target within the rubric. In this way, the rubric can establish a stable range of quality while respecting the progression toward exemplary proficiency. Expectations can rise with experience. This is particularly useful for performance tasks that are expected to improve gradually, such as a philosophy statement.

Table 4
Developmental   Rubric

CATEGORY	Emerging	Competent	Proficient	Exemplary
Conventions	Unconventional English usage and mechanics are frequent enough to distract and establish doubt regarding minimum skills.	There may be one or two errors of usage or mechanics.	No errors of spelling, mechanics, or usage.	Not only are there no errors but there is thoughtful use of format features.

Putting the Person in Personalized Feedback

To return to an earlier point made regarding the coaching function and the powerful influence of positive interaction: The feedback should include minimum social courtesies of the student's name and mention of some aspect of the student known through shared experience. Like a letter, it should have an opening and a closing, and however long it takes to write them, contents must respect the need of the person sitting beside me to feel acknowledged as a living human being. One of the easiest strategies is simply to write the student's name at least three times: once in a salutation, at least once within the text as part of a feedback item, and once in the closing which will mention the age. These comments may be as simple as "Thanks for turning this in early, Dennis." or "What an interesting topic, Andrea," or "An important point, Angelo." They should focus on the author's decisions relative to the assignment rather than personal approval (Kohn, 1999). Because many of these comments are generic, one strategy would be to select them related to each assignment. Then copy and paste the comment. Another helpful routine is to note which students do NOT receive the generic comments targeted for a particular assignment. This may reveal why they have difficulty achieving some minimum standard, an important aspect of the coaching role. The use of database software is beyond the scope of this article but it is certainly not beyond the scope of the average classroom teacher.

Formative assessment strategies serve the purpose of helping students self-assess their progress and to set their own goals of improvement. The rubric alone is a teaching tool as well as an assessment tool because each time it is referred to the concepts in it are newly considered. Ultimately the student will use rubrics to organize information and in addition to using them will construct them.

Word processor functions. There are many software programs that allow instructors to insert comments directly into the student's documents. Microsoft Word has a Track Changes tool that allows for the automatic color change of deleted, added, or reformatted text. This has an advantage of instantly showing changes, but it can become confusing if the same draft goes back and forth several times. Newer versions remove the deleted text to margin notes, which simplifies the reading. Given that word processors and electronic mail are nearly universal among university students and instructors, it simply remains for the instructor to decide on some system to signal inserted information.

Track Changes Tool. The least defined approach is to simply read the student's work carefully and respond judiciously in order to encourage revision. Figure 2 is a sample from a student draft showing the use of Word Track changes to edit and coach.

> To ~~avoid being dismissed~~ raise the achievement of their students, educators ~~must~~ are encouraged to incorporate strategies ~~based on scientific research~~ that have been proven effective based on scientific research. The ~~focus of~~ proven strategy proposed in this paper ~~is using~~ is the use of homework ~~as a tool to increase academic achievement of~~ with twelfth grade U.S. Government students~~to meet the state proficiency level.~~
> ***Mention the 'proven' part: add (author, date).***

Figure 3. Feedback imbedded in Word document using Track Changes Tool. Used by permission of student.

Notice that the underlined text is added; strike-through text was removed. Some of the text was simply moved. The final comment is bracketed with double asterisks to indicate it is not a change in text but a comment about the writing process or assignment. At its simplest it is proofreading and minor editing; at its most sophisticated it will inspire an understanding of the deep structure of the composition.

Imbedded feedback cautions. The above figure is an example of imbedding comments in order to distinguish them from the original text. This technique is appropriate for directly coaching a particular thought development, or in this case, word-smithing. To advance the student to self-assessment, it would be helpful to include reference to some criteria of success already discussed. In this case, Word Choice (explained in the analytical rubric below) would be a logical trait to explain the suggestions. This technique can be confusing or even anxiety-provoking for students if there is too much colorful adjustment. The student will not be able to see that his or her own words are still there but simply re-arranged. For this reason instructors should be very selective, choosing one or two examples of the same concept if there is a trend in the paper.

Another caution is that once the instructor is skilled with this model of feedback, opportunities for teaching, as opposed to correcting, may be missed. The instructor should not provide all direct answers or the student may just wait for direction and change things accordingly, with no more thought than a word processor. Using rubrics will encourage students to self-assess and help them recognize the objectives of the exercise. Rubrics, attempt to translate abstract concepts into concrete descriptors. If the rubric makes no sense or cannot be applied competently, then the student should seek additional help.

Limited format cautions. Unlike the versatility of some systems, many e-mail programs do not have special formats of color or font. So it is helpful for the imbedded feedback conventions to be able to work in both situations, such as those in Table 5. Each item of feedback should be bracketed to signal beginning and end. Microsoft Word options allows these changes to be color-coded, so the final comment could be highlighted to indicate a sidebar. Although text can be read through the color options on screen, most printers render all but yellow too dark to read on the hard copy. Black-and-white printers will obscure the text with a gray field. Therefore, before using color options, the instructor must troubleshoot the recipients' experience. This naturally assumes that the instructor is asking for feedback regarding the use of the coaching features; acknowledging the students' reaction is a form of respect compatible with a coaching role.

Table 5
Low Tech Keyboard Stroke Indicators for Feedback

Keyboard Stroke	*= Feedback*	Keyboard Stroke	*= Feedback*
< or >	*Move to a different place.*	+	*Add*
~	*Suggest a different term.*	^	*Format change*
[[ ]]	*Remove*	**	*Sidebar comment*

Future Trends in Cybercoaching

Several trends we anticipate will benefit from the cybercoaching model of online feedback, related to increased demand for personal attention as well as higher standards of performance which naturally follow improved technology.

Equity and excellence of instruction. One social concern is the economic divide among students defined by access to advanced technology and access to campus resources; extending this is the problem of adjunct professors with limited access to resources which then place their students at a disadvantage. Cybercoaching support for underprepared and disadvantaged students as well as beginning or adjunct faculty can improve the quality of instruction and the community of learning.

Quality and frequency of communication. Online technology has become so widespread that the standards of communication are already rising. The traditional method of handing in a hard copy and waiting for a professor to read it and return it, which necessarily reduced the opportunity to revise before the end of a course, is now unnecessarily slow and cumbersome. A future trend will undoubtedly be that every face-to-face course will have an online component (Raschke, 2002). Instructor-student interaction will be defined more specifically to include feedback; future teachers will be taught to design systems of communication that use electronic messages.

Quality and frequency of assessment. The trend toward regulation of jobs will mean

greater demand for evidence that a candidate is qualified to do the job. This will mean that assessments must be clearly aligned with goals and standards. The process of identifying targets, describing performance, and giving feedback to students' efforts to develop greater proficiency will not change but the standard for analyzing each step will. As part of the trend of accountability we may expect the quality of assessment to continue to rise, with students demanding syllabi and articulated rubrics for their complex assignments (Shavelson & Huang, 2003).

Continuous professional development. There is great demand for flexible and personal instruction as workers must update their skills or change careers. This often involves dispositional knowledge more than technical skills. Related to this, in response to increased violence and sophisticated piracy there is also an increasing demand for ethical behavior, best fostered through close communication. The cybercoaching model provides a framework for the reflective and tutorial functions required to develop personal paradigm shifts.

Increased research on formative assessment. Current models of teaching and assessment that emphasize feedback need more study. However, its personalized nature makes it less standardized and therefore more difficult to measure. Much of the literature so far is limited to survey research concerning student opinion, i.e., Peat and Franklin's (2003) finding that although students saw value in formative assessment opportunities, there was no significant difference in summative assessment outcomes based on their use. There is compelling reason to study the relationship between formative and summative assessment techniques, course content, nature of tasks, and student characteristics.

Summary

Cybercoaching, an emerging model of online formative assessment, was introduced in this chapter. Formative rather than summative assessment is the focus of this model, which means it serves teaching and learning activities as well as evaluation. Important steps include 1) the thoughtful development of rubrics to articulate gradually more proficient performance of each criterion of success, and b) troubleshooting the uses and cautions of electronic mail and Word documents for efficient and effective communication and storage. Finally, further research was suggested in order to understand the dynamics of the teaching and learning process through formative assessment.

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Glossary

Attachment: Electronic document combined with electronic mail message. In many programs, the file must be closed before the attachment can take effect. A copy of the entire selected document will be made; sometimes formatting may not translate systems.

Criteria: Characteristics of a project which are aligned with course objectives. See *rubric*.

Cybercoaching: Using common online technology to monitor and adjust student learning of multiple objectives in complex tasks.

Descriptors: Concrete, observable performances that indicate degree of mastery of a particular criterion for success. Typically organized in columns of graduated quality.

Draft: Any student document submitted for feedback in order to improve before final evaluation.

Feedback: Instructor communication that connects some student performance in draft stage to course objectives and resources.

Formative assessment: Instructors' deliberate and equitable monitoring of student progress toward mastering the goals of the course. Some instructors give formative assessment some weight toward final grades, but the intent is to provide opportunities to improve in time to reach proficiency.

Mastery learning: A tutorial approach that requires students to improve to a minimum level of proficiency instead of assigning status of failing. It is based on the assumption that mastery is necessary for later learning, not on the coercive effect of deadlines.

NSSE: The National Survey of Student Engagement is an ambitious research project studying the nature and significance of student involvement in learning.

Prompt: The directions that guide an assigned task.

Revision: Changes to a draft in response to feedback and self-assessment.

Rubric: An established set of target characteristics used to assess performance of a complex task. Rubric range from simple checklists to thorough descriptions of gradually more proficient performance of each criteria of success.

Summative assessment: The final evaluation, or grade, of a student's proficiency based on data related to the course objectives.

Task analysis: The knowledge, skills, and dispositions required for successful completion of an assigned task. These separate concepts will usually be defined and often serve as the focus of didactic instruction.

Track Changes Tool: A feature of Microsoft Word software that highlights changes to a document, using font color and sidebars.