

**Assessing Student Learning Outcomes:
An Investigation of the Relationship Among Feedback Measures**

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ABSTRACT

The goal of the present study was to examine the relationship among the various measures of feedback on male and female students' perception of the feedback process. The findings indicated that male students perceived their professors as giving more critical feedback than female students.

The past thirty years of feedback research has identified a number of constructs related to instructional development in service and academic organizations (Bourhis & Allen, 1998). Constructs such as source of feedback (Greller, 1980), recipient of feedback (Brinko, 1993; Clark & Bergstrom, 1983), content of feedback (Murray, 1987), mode of feedback (Ilgen, Fisher, & Taylor, 1979), and occasion of feedback (Brinko, 1993) have contributed to the process of feedback as an evaluative practice. Even though majority of literature has focused on student evaluative feedback of teachers' instructional performances (Cohen & Herr, 1980), extant literature revealed that relatively few studies have focused on teacher feedback of students' performances (Griffee, 1996).

Organizational behavior, education, sociology, and cognitive psychology scholars contended that effective feedback is beneficial to individuals' professional development (Nelson & Quick, 2000). The practice of effective feedback on performance evaluations was critical to the academic success of college students (Griffee, 1996). With this in mind, college professors shared feedback to help students improve their performances and study habits. Additionally, professor-student social interactions tended to influence the enactment of the kind of feedback (e.g., positive, negative, neutral, accurate, concrete, descriptive, focused, etc.) students received from their professors.

In defining feedback, the authors draw on two definitions. First, feedback is "the pathway that completes two-way communication" (Nelson & Quick, 2000, p. 250) from professor to student. Feedback occurs when the professor (source) provides the student (receiver) with a response to an assignment (message). Given this definition, the authors examined the relationship among the various measures of feedback.

Feedback Research

Source of Feedback (Who): Source of feedback may be faculty members who make evaluative judgments of student performances. An examination of the literature in education and psychology on effects of feedback generally focused on feedback from one source. More recently, education researchers have focused their attention on several sources of feedback (Brinko, 1993). For example, scholars and practitioners suggest that feedback is effective when the source is a criterion-referenced measurement that provides students with behavioral objectives that incorporate technology (e.g., e-mail, Website lectures) into various assignments (Bourhis & Allen, 1998).

Recipient of Feedback (Who): The recipient of feedback is most effective when it is viewed as two-way communication. Communication and organizational behavior instructors believe that feedback is more effective when students proactively seek feedback from their professors to improve their performances (Crant, 2000).

Mode of Feedback (How): Mode of feedback can be effective when conveyed in a variety of modes. It can be structured or unstructured (Brinko, 1993). It can be conveyed through the use of technology (e.g., e-mail, Website lectures) where students are required to engage the learning process.

Content of Feedback (What): Content is the most critical component of the feedback process. Feedback is more effective when it is concrete, specific, focused, and descriptive. For example, in small group settings, faculty can help students with specific issues when their oral performances are videotaped.

Occasion of Feedback (When): Feedback is more effective when it is given soon after a performance. For example, if a student presents an oral assignment and the professor provides critical feedback soon after that performance, the feedback will be more effective, timely, and necessary to help students change their self-perception and behavior resulting from the performance.

The following research question and hypothesis are posed:

RQ: What is the relationship between feedback as a learning process and the types of feedback students receive?

METHOD

Participants and Instrumentation

One hundred four volunteers drawn from communication and education courses (41 men, 63 women) at a university located in the South participated in this research.

The items were adapted from research by Brinko (1993), and Menges & Brinko (1986) studies on classroom assessment techniques on feedback practices.

Reliabilities

All scales were measured on a 5-point scale 1= strongly agree, 5 = strongly disagree. Reliability estimates, as determined by Cronbach's alpha, for the feedback measures were source of feedback = .83; recipient of feedback = .71; mode of Feedback = .78; content of feedback = .80; and occasion of feedback = .82. Reliability estimates for the total scale was .89. A high reliability coefficient (.70 or higher) indicates that the individual items on the instrument produced similar patterns and were homogeneous and reliable.

Correlational Analysis

The research question focused on the relationship between feedback as learning process and the types of feedback students receive. A procedure outlined by Bruning and Kintz (1997), where significant correlations were observed between the two groups, was used to test for significance of the difference between the correlations, thus yielding a z statistic. This was done by converting each of the Pearson r values into a variable called Fisher's z_r transformation and then applying the Z test. According to Bruning and Kintz (1997), "a z larger than 1.96 is significant at the .05 alpha level using a two tailed test. A significant z tells us that the two correlation values are very likely different" (p. 82).

As indicated in the Table, the relationship between source of feedback and feedback as a learning process was positive and significant for both samples, although the correlation was significantly greater for males, $z = 3.01$, $p < .05$. There were positive and

significant relationships between mode of feedback and feedback as a learning process for both males and females, although the correlation was significantly greater for males, $z = 2.88, p < .05$. There were positive and significant correlations between content of feedback and feedback as a learning process in both samples, $z = 2.53, p < .05$. Finally, there were positive and significant correlations for both samples between occasion of feedback and feedback as a process, although the correlation was slightly greater for males than for females, $z = 2.70, p < .05$. The correlations between recipient of feedback and feedback as a learning process were not observed as significant for males or females.

TABLE

Bivariate correlations between Feedback as Learning Process and Feedback Subscale Measures

Feedback as Learning Process	Source	Recipient	Mode	Content	Occasion
Males	.63**	-.14	.73**	.76**	.93**
Females	.35*	-.12	.32**	.44**	.80**

* $p < .05$, ** $p < .01$

DISCUSSION

The research question examines the relationship between feedback as a learning process and the types of feedback students receive. Male students perceived that their professors gave more effective critical feedback than female students. The results also indicated that the relationship between the types of feedback and students' perception of feedback as a learning process differed significantly between males and females. For both samples, increased feedback was associated with the increased status or credibility of the source of feedback (e.g., professors, peer teams); the mode of feedback—the manner in which it is given (e.g., written); and the content of feedback—the kinds of assignments evaluated (e.g., research projects, exams). The results also indicated that both males and females were more concerned about the credibility of the evaluator (source), in what manner the feedback was given (mode), and under what circumstances the feedback was given (occasion), although the correlations were greater for males than for females. As the results suggest, when professors provide students with critical feedback, it should be given soon after a task performance, made clear to the recipient, and presented in a manner sensitive to the students' learning styles. In this way, students benefit from feedback when preparing for future task performances.

Finally, this results suggested that feedback as a learning process has a salutary effect on student performance (e.g., research participation). When professors give an assignment or a task, they are agreeing to be held accountable for providing critical feedback to their students. This accountability puts pressure on professors to provide students with the necessary feedback to help them improve their task performances.

IMPLICATIONS FOR INSTRUCTIONAL IMPROVEMENT

Feedback is a necessary condition for student goal setting-performance (Erez, 1977). Extant literature in the fields of psychology and education indicates that more effective

feedback programs for instructional improvement are needed. Faculty members will need to contact the center for instructional development at their respective universities. In doing so, the center for instructional development can explore the faculty member's teaching history, teaching style, and locus of control. The center for instructional development can also assist the faculty member in identifying areas in his/her teaching that are rewarding and/or troublesome by selecting the sources and modes of feedback that are particularly useful. The center for instructional development can also survey the teaching strategies of faculty members and provide them with a copy of the report. Another alternative procedure for instructors would be to fill out a student rating form indicating expected student response rather than self-perceptions.

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