DOCUMENT RESUME

ED 465 787 TM 034 172

AUTHOR	Hampton, Scott E.; Reiser, Robert A.
TITLE	From Theory to Practice: Using an Instructional Theory To Provide Feedback and Consultation To Improve College Teaching, Learning and Motivation.
PUB DATE	2002-04-01
NOTE	40p.; Paper presented at the Annual Meeting of the American Educational Research Association (New Orleans, LA, April 1-5, 2002).
PUB TYPE	Reports - Research (143) -- Speeches/Meeting Papers (150) -- Tests/Questionnaires (160)
EDRS PRICE	MF01/PC02 Plus Postage.
DESCRIPTORS	*College Students; Educational Practices; *Feedback; Higher Education; *Student Evaluation of Teacher Performance; *Teaching Assistants; Teaching Methods

ABSTRACT

The purpose of this study was to examine how midterm student ratings feedback and consultation on instructional practices affected teaching practices, ratings of teaching effectiveness, learning, and motivation. Thirty-seven teaching assistants (TAs) for undergraduate computer science and chemistry courses were randomly assigned to either a feedback/consultation group or a control group. TAs in the treatment group received feedback and consultation on midterm student ratings from the Instructional Activities Feedback Form (IAFF), which assess the use of instructional activities described in a model of instruction. Final student rating results revealed significant differences ($p<0.05$) in favor of the feedback/consultation group on teaching practices, ratings of teaching effectiveness, and student motivation. Significant positive relationships ($p<0.01$) between use of the instructional activities and final exam scores were also evident. These findings suggest that both U.S. and international TAs can use student ratings feedback to improve teaching practice. Suggestions for future research and practice using the IAFF and consultation process are also discussed. An appendix contains the AIFF. (Contains 3 tables, 1 figure, and 49 references.) (Author/SLD)

Reproductions supplied by EDRS are the best that can be made
from the original document.

TM

Running head: FROM INSTRUCTIONAL THEORY TO TEACHING PRACTICE

ED 465 787

From Theory to Practice: Using an Instructional Theory to Provide Feedback and Consultation to Improve College Teaching, Learning and Motivation

Scott E. Hampton

U.S. Military Academy

Robert A. Reiser

Florida State University

TM034172

U.S. DEPARTMENT OF EDUCATION
Office of Educational Research and Improvement
EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)
☑ This document has been reproduced as received from the person or organization originating it.
☐ Minor changes have been made to improve reproduction quality.
• Points of view or opinions stated in this document do not necessarily represent official OERI position or policy.

PERMISSION TO REPRODUCE AND DISSEMINATE THIS MATERIAL HAS BEEN GRANTED BY
S. Hampton
TO THE EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)
1

Paper presented at the American Educational Research Association Conference (Session 4.42) in New Orleans, LA, on April 1, 2002

Note: The views expressed in this publication are those of the authors and do not necessarily represent the views of the Department of Defense or its Components.

BEST COPY AVAILABLE

Abstract

The purpose of this study was to examine how mid-term student ratings feedback and consultation on instructional practices affected teaching practices, ratings of teaching effectiveness, learning and motivation. Thirty-seven teaching assistants (TAs) for undergraduate computer science and chemistry courses were randomly assigned to either a feedback/ consultation group or a control group. TAs in the treatment group received feedback and consultation on mid-term student ratings from the *Instructional Activities Feedback Form* (IAFF), which assesses the use of the instructional activities described in a model of instruction. Final student rating results revealed significant differences ($p < .05$) in favor of the feedback/consultation group on teaching practices, ratings of teaching effectiveness, and student motivation. Significant positive relationships ($p < .01$) between use of the instructional activities and final exam scores were also evident. These findings suggest that both United States and International TAs can use student ratings feedback to improve teaching practice. Suggestions for future research and practice using the IAFF and consultation process are also discussed.

From Theory to Practice: Using an Instructional Theory to Provide Feedback and Consultation to Improve College Teaching, Learning and Motivation

In recent years at large universities in the United States, the percentage of lower-level undergraduate courses taught by teaching assistants has risen to over 50% (Allen & Rueter, 1990; Curry et al., 1999). Unfortunately, however, only half of the teaching assistants (TAs) teaching such courses receive formal training to prepare them for their teaching responsibilities (Gray & Buerkel-Rothfuss, 1991), and the majority of this training is in the form of brief workshops before each term (Ronkowski, 1989). Thus, even the training that TAs receive is quite limited.

After they begin teaching their classes, TAs rarely receive guidance from experienced teachers (Moore, 1996). McMillen's (1986) survey of 600 TAs across the country revealed that 50% of TAs were never observed teaching by a faculty member. It is unfortunate that our institutions of higher learning often place the graduate teaching assistant in front of undergraduate students with little or no training or feedback about how to teach those students.

Student ratings feedback may offer an efficient and effective means of providing TAs with valid feedback on their instructional practices. Two extensive meta-analyses (Cohen, 1980; L'Hommedieu, Menges & Brinko, 1990) have shown significant improvements in teaching effectiveness and student affect for those teachers who receive mid-term student ratings feedback, especially when that feedback is combined with consultation. However, researcher examining the effects of such feedback have expressed concern that the ratings instruments used to provide feedback are generally surveys of broad teaching constructs or behaviors that are found on typical end of semester student ratings forms (McKeachie, 1997; Murray, 1983, 1997). They indicate that such instruments do not provide instructors with information regarding the

specific instructional activities they need to improve. To overcome this problem, several researchers (Abrami, d'Apollonia, & Cohen, 90; Cranton & Smith, 1990; d'Apollonia & Abrami, 1997; Marsh, 1984) have suggested linking ratings instruments to theories of teaching or learning.

A relevant theory to link to a rating instrument intended to improve instruction is Gagné's (1985) theory of instruction. Based on the information-processing learning theory, Gagné's theory describes fundamental principles for designing and delivering effective instruction while incorporating nine events of instruction.

Building on Gagné's theory, Reiser and Dick (1996) developed an instructional model for teachers, which incorporates most of Gagné's nine events of instruction. The six major instructional activities in this model are: Motivating students; informing students of objectives; helping students recall prerequisite knowledge; presenting information and examples; providing practice and feedback; and summarizing the lesson. This model of instruction was used as the basis for the *Instructional Activities Feedback Form* (Hampton and Reiser, 2000), the student rating instrument employed in this study.

The *Instructional Activities Feedback Form* (IAFF) allows students to provide feedback to their teachers about specific instructional practices related to each of the six instructional activities in the Reiser and Dick model. Thus, the information students provide when they respond to the items on the IAFF can be tied directly to particular types of instructional activities in the classroom. The complete IAFF can be found in the Appendix.

As mentioned earlier, previous research has demonstrated that mid-term student ratings feedback is particularly effective when it is combined with consultation (Cohen, 1980;

L'Hommedieu et al., 1990). Therefore, we developed a consultation process to aid TAs in interpreting and implementing the IAFF student ratings feedback.

Several researchers have developed and assessed consultation procedures based on established models of consultation (Brinko, 1988, 1990; Orban, 1981; Rutt, 1979, Wilson, 1986). These models fall on a continuum from being very directive and consultant driven to being less directive and client-centered. Brinko (1990; 1991) studied 10 instructional consultants from 8 universities and found that consultants used more of a prescriptive approach for novice teachers, such as TAs, because they needed more guidance due to a lack of teaching experience.

The consultation approach employed in this study was a prescriptive approach similar to one described by Brinko (1991). During the first phase, establish the relationship, the consultant and each TA met to establish rapport, discuss expectations, and arrange a schedule for data collection and review. In the second phase, data collection, which took place at mid-semester, the *Instructional Activities Feedback Form* (IAFF) was used to gather student reactions to the instructional practices employed by the TA. During this phase the consultant also observed the TA teaching a class and took notes on the teaching practices the TA employed. During the third phase, the conference, the TA and consultant met to review the feedback the students and consultant provided via the IAFF and classroom observation and how that feedback might be used to help improve the TA's instructional practices. The fourth phase, follow-up, is a follow-up observation and meeting to verify that the TA understood how to implement the activities in the classroom.

The purpose of this study was to examine how the midterm feedback students provided to TAs via the IAFF, combined with the consultation process described above, affected TA use of various instructional activities, student ratings of teaching effectiveness of the TAs, and the

learning and motivation of the students. TAs in the treatment group received feedback and consultation on the midterm IAFF student ratings while TAs in the control group did not receive any feedback or consultation. Inasmuch as the feedback and consultation TAs received was directly related to the six instructional activities examined in this study, it was expected that the TAs who received this feedback and consultation subsequently would make greater use of those activities than the TAs in the control group. Moreover, as previous research has indicated (Cohen, 1980; L'Hommedieu, et al., 1990), it was expected that those TAs who received feedback and consultation would subsequently receive higher ratings of teaching effectiveness than their counterparts who did not receive such feedback.

It was also hypothesized that students of TAs in the treatment group would learn more and have higher levels of student motivation toward the course than students of TAs in the control group. This was based on previous research, which revealed that students of TAs who received feedback and consultation had higher final exam scores (Overall & Marsh, 1979) and more positive attitudes toward the course content (Erickson & Sheehan, 1976; McKeachie, et. al, 1980; Overall & Marsh, 1979) than students whose TAs did not receive feedback and consultation.

Finally, it was hypothesized that TA utilization of the instructional activities examined in this study would be positively related to student learning. Feldman's (1989) thorough reanalysis of Cohen's (1981, 1987) meta-analyses revealed rather strong correlations between certain teaching practices (or dimensions) and student learning within multi-section courses. Many of the 28 practices Feldman analyzed can be categorized into one of the six types of instructional activities we were examining.

Method

Participants

The primary participants in this study were 37 TAs who were teaching one of two lower-division courses at a large southeastern university. Twenty TAs taught a computer literacy course that was a required class for every undergraduate student attending the university. The other 17 TAs taught a basic chemistry lab course that was a required course for all undergraduate chemistry majors. All TAs from both courses volunteered to participate in the study.

Seventeen TAs were from the United States and 20 were from other countries. The computer literacy department had seven international TAs in each treatment condition, and the chemistry department had three international TAs in each treatment condition. Most of the TAs had between 5 to 8 hours of teacher training and 1.6 semesters of teaching experience, however, 14 TAs had no prior teaching experience. There were no significant differences between TA teaching experience, $F(1,35) = .115$, $p = .737$, or teacher training, $F = .008$, $p = .930$, between the treatment groups.

The TAs in this study taught a total of 93 sections of classes. The students in these sections were the other participants in the study. The number of students per section ranged from 15-24, and the total number of students involved in the study was approximately 1600. All of the students who participated in the study were in their freshman or sophomore year.

We attempted to assess the initial equivalency of the students in the two treatments by conducting two analyses. Inasmuch as previous research in this area (Cohen, 1981; Overall & Marsh, 1979) had used math SAT scores to assess initial differences between groups, we examined this variable and found that there was no significant difference in the math SAT scores of the students in the two groups, $F(1,35) = 1.738$, $p = .196$. In addition, we found that there was

no significant difference between the students in the two groups with regard to their level of interest in the course content at the beginning of the semester, $F(1,35) = .114$, $p = .738$.

Independent Variable

The independent variable examined in this study was midterm student ratings feedback and consultation related to the six instructional activities described by Reiser and Dick (1996). The two levels of this variable were no feedback on the midterm student ratings (control group) and written feedback with personal consultation on the midterm student ratings (treatment group).

The written feedback summarized how students responded to each of the 38 items on the *Instructional Activities Feedback Form* (IAFF). Twenty items on this form were designed to student perceptions of the frequency with which their TA employed each of the six instructional activities examined in this study. As suggested by reviewers of student ratings literature (L'Hommedieu et al., 1990, Marsh, 1984; McKeachie, 1997), two to five items on the IAFF were used to assess the TA's utilization of each instructional activity. For example, one question assessing the 'motivating students' activity asked students to indicate how often, (1 for almost never to 5 for almost always) the TA began the lesson with an interesting or exciting fact, demonstration, or question.

In addition to measuring the frequency with which TAs used various instructional activities, the IAFF also included four items designed to measure student motivation toward the course and one item that asked students to rate, on a five point scale, the overall teaching effectiveness of their TA. More information about the IAFF, which was also administered at the end of the semester as a measure of some of the dependent variables examined in this study, is contained in the next section of this paper.

The midterm written feedback received by each TA listed, for each of the first 36 items on the IAFF, the mean score the TA received on that item, as well as well the mean score on that item for all of the TAs in the study. Written feedback regarding the last two items on the survey, which were open-ended questions regarding what students liked and disliked about the TA's instructional practices, categorized all of the open-ended responses according to the six instructional activities examined in this study.

The personal consultation aspect of the independent variable involved observing and consulting with each TA in the treatment group twice during the semester. The first observation session took place between the second and fifth week of the semester. During this observation session, the researcher listed specific examples of a TA's use of each of the six instructional activities examined in this study. If the TA did not use one or more of the instructional activities, the researcher listed strategies the TA could have used to incorporate those activities into the classroom session.

The first consultation session, or 'conference,' took place during the seventh week of the semester, shortly after the first administration of the IAFF. During this session, which lasted for approximately 75 minutes, the researcher helped the TA review his or her ratings on the IAFF, focusing on how the TA could improve those instructional activities for which the TA had received relatively poor ratings. The notes the researcher had taken during the first observation session served as the basis for most of the suggestions the researcher offered.

The second observation session, which was much like the first, took place during the eighth or ninth week of the semester. Immediately after this session, the second consultation, or follow-up session, took place. This session lasted approximately 15 minutes, during which time

the researcher provided further suggestions as to how the TA might improve his or her instructional activities.

Dependent Variables

The dependent variables for this study included (a) the extent to which the TAs employed each of the six instructional activities examined in this study, (b) student ratings of the overall teaching effectiveness of the TAs, (c) student learning, and (d) student motivation in the course.

The extent to which the TAs employed each of the six instructional activities was measured by the items on the IAFF that asked students to rate TA use of those activities. There were between two to five items related to each of the six activities, and the Cronbach Alpha reliability coefficient for these six sets of items ranged from $r = .83$ to .89. The construct validity for this portion of the IAFF was also assessed. An exploratory factor analysis (Crocker & Algina, 1986), yielded a five-factor structure paralleling five of the six instructional activities the IAFF was designed to assess. The 'objectives' and 'present information' items loaded on the same factor.

As is commonly done in the student ratings literature (L'Hommedieu, 1990), students rated the overall teaching effectiveness of their TA by responding to one item on the IAFF, which asked: "Overall, how effective would you rate your teacher's instruction?" The 5-point Likert scale ranged from 'poor' to 'excellent.' All student ratings for each TA in each treatment group were combined to produce a mean teaching effectiveness score for all the TAs in that group.

Student learning was measured by averaging the final exam scores in each TA's section. In both the chemistry and computer literacy courses, the final exam measured student acquisition of the course material that was covered during the second half of the term, after the intervention

took place. This material was outlined in the prescribed syllabus for each course. Each TA in the chemistry lab course taught students the same common lab procedures and introductory 'hands-on' lab exercises. Each TA in the computer literacy course taught the same basic computer applications such as PowerPoint, Microsoft Word, and Excel. The reliability of the chemistry lab final exam was $r = .41$, and the reliability of the computer literacy final exam $r =$ was .59. Finally, student motivation was measured by four items on the IAFF, each of which measured one of the four components (attention, relevance, confidence and satisfaction) of Keller's ARCS model (1987a, 1987b). The reliability of this section of the IAFF was $r = .80$.

Procedures

The TAs from each department, 20 in computer literacy and 17 in chemistry, were randomly assigned to either the feedback and consultation (treatment) group or the control group. TAs did not know which group they were assigned to until after the first observation for the feedback group and the midterm survey administration for the control group.

Students in treatment and control groups responded to the items on the IAFF for the first time in the 6th week of the term. A student in each class section administered and collected the confidential surveys at the beginning of class by reading a script provided by the researcher. As noted earlier, the researcher observed each TA in the treatment group twice during the semester, once during the 2nd - 5th week of the 15-week term and again in the 8th or 9th week. The researcher also consulted with each TA twice. The initial session taking place approximately one week after the students completed the IAFF for the first time, with the second consultation session taking place approximately two weeks after the initial one. TAs in the control group were not observed or consulted with because these procedures were part of the experimental treatment.

At the end of the semester, students in the treatment and control groups took the final exam for their course and responded to the items on the IAFF for a second time. As was previously the case, this confidential survey was administered and collected by a student in each class section.

After the semester was over, the researcher met with all the TAs in the study to provide them with the results from the second administration of the IAFF. At the conclusion of this session, the TAs completed an attitude survey designed to provide the researcher with feedback on the utility of the IAFF and the consultation process.

Research Design and Data Analysis

A 2X2 Analysis of Covariance (ANCOVA), a technique common in the student ratings literature (Cohen, 1980; L'Hommedieu et al., 1990) was used to assess the effects of the independent variable on the dependent variables and also test for any interactions between the chemistry and computer literacy departments. To assess the effects of the intervention on student learning, however, a One-Way ANCOVA was used to examine effects within each academic course separately. The TA was the unit of analysis except where noted.

We also examined the relationships between the use of the instructional activities and the dependent variables, such as learning outcomes, ratings of teaching effectiveness, and student motivation, using Pearson Product Moment correlations. All hypotheses and analysis discussed were apriori, except where noted.

Results

Teaching Practices

We hypothesized that feedback and consultation on the IAFF would positively affect TAs' subsequent use of the teaching practices in the classroom as evident by the final student

ratings. The adjusted mean final assessment scores, based on the initial assessment scores (covariate), for each group are presented in Table 1. The ANCOVA helped reduce error variance and statistically controlled for the minor (non-significant) initial differences between groups on their ratings of each teaching practice before the intervention as suggested by reviewers of the student ratings literature (L'Hommedieu et al., 1990). The total score on the IAFF represents the mean score of items 1 through 20. As evident in Table 1, students rated TAs in the treatment group significantly higher, $p < .01$, than TAs in the control group on all six activities or practices. Higher ratings mean that students noticed the TAs using a particular instructional activity more frequently.

A 2 X 2 ANCOVA examined the main effects between the feedback and control group and possible interactions between the chemistry and computer science departments. The covariate was significant, $p < .001$, for each analysis. The Bonferroni procedure (Kirk, 1995) was also used to protect for inflation of the family-wise error rate for the examination of the six separate activities and the total score. The interaction between the treatment group and department was not significant for any comparisons.

Results of the ANCOVAs are also presented in Table 1 and illustrate that the feedback group received significantly higher ratings, $p < .01$, on all six activities and the total score, which supported the hypothesis on teaching practices. The Eta^2 results in Table 1 also illustrate the proportion of variance attributed to the treatment, which was fairly large (ranging from .36 to .48) for each of the six instructional activities. The effect sizes (Cohen, 1988) for each activity ranged from $d = .53$ for the practice and feedback activity to $d = .90$ for the motivating students activity. The effect size for the total score, combining all six activities, was $d = .77$.

Teaching Effectiveness

The hypothesis that TAs in the treatment group would be rated higher than TAs in the control group would be rated in teaching effectiveness was also supported. For the teaching effectiveness item on the IAFF, the adjusted mean scores and standard deviations for each group on the final assessment were 3.26 (SD = .64) for the control group (N = 19) and 3.58 (SD = .35) for the feedback group (N = 18). The initial assessment score for each TA on the same item was used as the covariate to produce the adjusted mean score. By department, the adjusted mean scores for both groups are shown in Figure 1.

The ANCOVA revealed that TAs in the feedback group were rated significantly higher in teaching effectiveness than TAs in the control group, $F(1,32) = 15.410, p < .01$. The interaction between the treatment group and department was also significant, $F(1,32) = 5.235, p = .029$. Figure 1 illustrates the interaction between the treatment group and the department for teaching effectiveness. The positive effect of the interventions' influence on teaching effectiveness ratings was significantly greater for TAs in the chemistry department than TAs in the computer literacy department. Analysis of the simple main effects within each department revealed significant differences in favor of the treatment group over the control group in the chemistry department, $F(1,32) = 17.52, p < .01$. The differences between groups within the computer literacy department, however, was not statistically significant, $F(1,32) = 1.44, p = .239$.

Student Learning

The hypothesis that the intervention would positively affect student learning was not supported. Using the TA as the unit of analysis, as suggested by reviewers (Marsh & Roche, 1997; Feldman, 1989), all student scores were consolidated to provide an average exam score for each TA's students. The average student math SAT score, which was significantly related to

final exam performance ($F = 8.0, p = .011$), for each section and standard deviation of that score were used as covariates to control for initial differences between student sections. The adjusted mean scores and standard deviations for each group on the final exam in each department is listed in Table 2. On average, students from TAs in the feedback group in both departments scored slightly higher on the final exams, by approximately 2%, than students from TAs in the control group, however, this difference was not statistically different for either department.

As mentioned earlier, we also hypothesized that there would be a positive relationship between TA utilization of the instructional activities and student learning, performance on the final exams. Although there was not a significant effect between groups on the final exam, there were significant positive relationships between ratings of the frequency of use of five of the six instructional activities and final exam scores in the computer literacy course (see Table 3), which supported the hypothesis. For each student section (N = 61), the TA's mean frequency score for each activity and the total score on the IAFF were compared to the mean final exam score for all the students in that section by using Pearson Product moment correlations. The correlations between each activity and the final exam scores ranged from $r = .28$ for practice and feedback to $r = .36$ for present information (see table 3). The correlations were also positive, though much lower, for the chemistry lab course (N=32), but none were statistically significant. In examining these correlation, it is important to keep in mind that the two posttests employed as measures of learning had fairly low levels of reliability ($r = .59$ for the computer science exam and $r = .41$ for the chemistry exam). In such circumstances, through a process known as attenuation, observed correlations are predictably lower than they would have been had the measurement instruments been more reliable. Although one must work with the data at hand, it is reasonable to anticipate

that the correlation between posttest performance and the extent of use of the Reiser and Dick instructional activities would be higher were measurement error more effectively controlled.

Incidentally, the ratings of teaching effectiveness were also related to final exam scores, r (N = 61) = .40, $p < .01$. Thus, TAs who scored higher on student ratings of teaching effectiveness and more frequently used Reiser and Dick's activities also had students who scored higher on the final exam. Although this finding does not imply a causal relationship, there is a significant positive relationship between use of the instructional practices and learning outcomes in the computer literacy course, which also provides support to the Reiser and Dick model.

Student Motivation

The hypothesis that the intervention would also positively affect student motivation for those students of TAs in the treatment group was not supported. The four items on the IAFF final assessment (# 33-36) that measured elements of student motivation were combined to produce a mean 'student motivation' score. Scores ranged from one to five, with higher scores signifying higher student motivation. The initial assessment score for each TA on the 'initial student interest in the course' item was used as the covariate to produce the adjusted mean score. The adjusted mean scores and standard deviations for each group on the final assessment were 3.07 (SD = .43) for the control group (N = 19) and 3.23 (SD = .37) for the feedback group (N = 18). Although the motivation score for students in the feedback group was higher than the motivation score for students in the control group, the difference was not statistically significant, F (1,32) = 3.474, p = .072.

A post hoc examination of each of the four motivation questions, however, revealed that students of TAs in the treatment group (N = 18) reported a higher 'interest in the course', M = 3.07 (SD = .30), compared to students of TAs in the treatment group, M = 2.86 (SD = .28). This

difference in student interest after the intervention, then, was statistically significant, $F(1,32) = 4.356$, $p = .045$, however, this finding is tenuous because of a possible inflation of the family-wise error rate due to four additional comparisons. As mentioned earlier, however, there was no significant difference between groups in initial interest in the course subject at the beginning of the term.

As with the student learning correlations discussed earlier, the student motivation dimension rating was also positively related to the teachers' use of all six instructional activities. Correlations ranged from $r = .70$ to $r = .89$. Thus, although the intervention did not have a significant effect on the overall student motivation dimension rating, it did have a significant effect on student 'interest' in the course content. As with the learning outcomes, the teacher's use of Reiser and Dick's activities were also positively related to student motivation.

Incidentally, the International TAs (ITAs) seemed to benefit even more from the intervention than the USTAs. The random assignment of TAs to treatment groups resulted in relatively equal numbers of ITAs and USTAs in each treatment group in each department. There were 10 ITAs and 9 USTAs in the control group and 10 ITAs and 8 USTAs in the feedback group. Results of the initial assessment revealed that USTAs scored higher than ITAs on the IAFF ratings for each instructional activity and the differences were significant in ratings of 'motivating students,' $F(1,35) = 6.26$, $p < .05$, and overall teaching effectiveness, $F(1,35) = 5.25$, $p < .05$. After the final assessment, however, there were no significant differences between ITAs and USTAs in their frequency of use of activities or their effectiveness ratings.

Discussion

The purpose of this study was to examine how mid-term student ratings feedback and consultation on instructional practices with college Teaching Assistants (TAs) affects teaching,

learning and motivation. In essence, could TAs translate student feedback and consultation, based on Reiser and Dick's model, into specified instructional practices and would those practices enhance their teaching effectiveness, student learning and student motivation. Results of this study illustrate that such feedback and consultation can have a significant impact on ratings of teacher practices, and ratings of teaching effectiveness and that such practices are significantly related to learning outcomes and student motivation.

Teaching Practices

Results from the IAFF supported the hypothesis on teaching practices and revealed that TAs in the feedback group used each of the six activities significantly more frequently than TAs in the control group. The practical importance of differences caused by the intervention is evident when examining the effect sizes and the proportion of variance accounted for by the treatment (Eta^2), which ranged from 29% to 48% (see Table 1). The effect sizes for the individual activities, $d = .53$ to .90, and all the activities combined, $d = .77$, represent large effects according to Cohen's (1988) criteria. The current study also exceeded effect sizes found in Cohen's (1980) meta-analysis of studies with 'augmented' feedback, which had an average overall effect size of $d = .64$.

A possible explanation for significant findings in the current study may have been due to the consultation that accompanied the ratings feedback. On average, studies that provided personal consultation with the student ratings feedback were nearly four times as effective in changing subsequent rating results than studies that did not provide consultation with the ratings (L'Hommedieu et al, 1990). Cohen (1980) adds: "Augmented feedback, or more specifically expert consultation, seems to be the key element for making student-rating data useable for improvement purposes" (p. 338). Weimer (1997) reviewed the impact of the five most common

instructional interventions on improving teaching. Of these interventions, which included personal consultation, teaching workshops/seminars, research grants, peers, and teaching resource materials, he concluded that: "The best empirical evidence for any intervention is that summoned on behalf of consultation over student ratings" (p. 424). During interviews with the TAs, interestingly, they highlighted the value of the consultation in helping them translate the feedback into their subsequent teaching practices. One TA noted that the consultation was "Very, very, very helpful. He [the consultant] helped me realize my weaknesses and found ways to correct them." Another TA simply stated: "I believe this [consultation] is the most helpful part of the study-extremely helpful."

In addition to the consultation procedure, another possible explanation for the significant increase in the frequency of TAs using the instructional activities may be due to the 'specificity' of the feedback provided to the TAs. Researchers have noted that 'specificity' and 'concreteness' in ratings instruments and consultation practices enhances teachers' ability to change their behaviors (Marsh & Roche, 1993; McKeachie, 1997; Murray, 1983). Cashin (1999) adds: "Specific, concrete, behaviorally oriented information is most useful in trying to improve your teaching ...items included on the form should be descriptive of specific and concrete teaching behavior" (p.34). TAs who participated in the feedback group in this study attributed their ability to change their teaching practices to the specificity of both the IAFF items and the consultation related to their IAFF and their teaching. When asked to describe the difference between the rating and feedback system used in this study compared to the university feedback system a TA stated that the IAFF and consultation was "more effective [than the university system] - there was more specific feedback. I liked the organization into categories...[which] helped me recognize what areas I needed improvement in." The results in this study were possibly due to

the combined aspects of providing specific feedback related to the IAFF ratings and providing consultation on specific classroom strategies to improve those ratings.

Teaching Effectiveness

The hypothesis that the intervention would positively affect ratings of teaching effectiveness was supported. TAs in the treatment group received significantly higher ratings of teaching effectiveness than TAs in the control group (see Figure 1). McKeachie's et al. (1980) study of 40 psychology teachers and Overall and Marsh's (1979) study of 30 computer-programming sections also found significant differences on teaching effectiveness in favor of the groups that received printed feedback and personal consultation related to student-ratings results. Taken together, these studies provide strong support for the use of this type of intervention.

McKeachie (1997) provides another possible explanation for the differences between treatment groups by stating, "Good teaching involves building bridges between what is in your [the teacher's] head and what is in the students' heads" (p.1223). One of the TAs echoed McKeachie's comment by saying that the feedback and consultation helped her "to know what I am-like a bridge between the students and me." Other TA comments were: "It gave me a better idea of what the students' thoughts and concerns were so I could teach them better;" "It has helped me see how I teach from the students' perspective. I was able to change the way I structure the class to please some of the students." Thus, if the TA is more aware of what the students need to enhance their learning, she is more likely to employ those practices or activities to build those 'bridges' between herself and the student to facilitate the learning process and ultimately become more effective at teaching.

Why was the effect of the intervention greater among TAs in the chemistry department than TAs in the computer literacy department? The difference in total hours of teaching

instruction between departments may provide an explanation. The computer literacy classes met once each week for 75 minutes while the chemistry classes met once each week for 3 hours. Because of a new testing schedule and procedure in the computer literacy department, students rated the TAs based on four class meetings, or five hours of instruction, after the initial assessment. The chemistry students, however, rated their TAs on the final assessment based on seven class meetings, or 21 hours of instruction, after the initial assessment. Thus, chemistry students had over four times more exposure to their TAs to evaluate their teaching effectiveness.

Both courses focused on hands-on applications of fundamental skills and procedures through guided practice. Because the chemistry course students actually had more face-to-face interaction with the TA than the computer literacy course students, they may have been more prepared to notice and rate changes in their TA's teaching effectiveness. A limitation to this study is that both courses focused on lower-level learning outcomes and were highly structured, a setting conducive to more direct instruction. The intervention may have different effects on higher-level learning type courses that are less structured and more student-centered.

Student Learning

The hypothesis examining the effect of the intervention on student learning was not supported. Even though students of TAs in the treatment group scored higher than students of TAs in the control group (see Table 2), the difference was not significant. Likewise, McKeachie's et al. (1980) study of 40 psychology teachers only found significant differences between groups for one of the four courses examined. Overall and Marsh (1979), however, did find significant differences between groups on final exam scores in their study of 30 computer-programming sections. Their study, however, used the student as the unit of analysis (N=751), whereas the TA was the unit of analysis in the current study. Using the TA as the unit of

analysis, as suggested by reviewers of the literature in this area (L'Hommedieu et al., 1990; Cranton & Smith, 1990), and examining learning outcomes by department, limited the total sample size for each analysis to 20 and 17, which also reduced power.

Another possible reason that there was no difference in learning across the groups could be the nature of the final exams in both departments. Both departments in this study used new tests or testing procedures that may have distracted from the quality of the assessment. During the study, the computer literacy department used a new centralized and automated online testing procedure for the first time, and indeed the reliability of the 29-item final exam was only $r = .59$. The exam's low reliability, then, may have affected the results related to student learning.

The chemistry department also employed a new final exam. Previously, there had not been a final exam in this introductory laboratory course. However, for the purpose of this study, the department developed an assessment instrument consisting of ten multiple-choice items, with two questions for each of the five major lessons covered in the last half of the course. As evident by the overall mean score on the exam (65.56 %), students had difficulty with the test, which may not have effectively measured their learning from the course. In fact, the reliabilities of the eight versions of the exam ranged from $r = .22$ to .54, with an average reliability of $r = .41$. The quality of both the computer literacy and chemistry exams, then, may have actually limited the ability to detect differences in learning between the two treatment groups.

As Abrami et al., (1990) highlighted in their review, the type of criterion measures used must also be considered when assessing learning outcomes. Final exams are not the only means to assess student learning, and multiple-choice tests, which were used in the chemistry department, often assess lower-order thinking skills. Although multi-section final exams have been the predominant means to measure student learning outcomes in student ratings research,

reviewers (Marsh & Dunkin, 1997; McKeachie, 1997) suggest other means should be examined. In future studies in this area, student learning might be measured using more comprehensive assessment measures throughout the term, including performance-oriented measures.

Although the treatment condition didn't have an effect on student learning, there was, as predicted, a positive relationship between student learning and the frequency of use of five of the six instructional activities in the computer literacy department. Interestingly, the findings in the current study for computer literacy closely parallel the findings of Cohen's (1981, 1987) and Feldman's (1989) meta-analyses, which also reveal positive correlations between the use of particular instructional activities and student learning. Table 3 compares the findings of the current study to these two meta-analyses, which also share almost identical correlations (r = .40, .40, and .39) between ratings of teaching effectiveness and student learning. It is possible that the significant positive relationships found between the instructional activities and final exam scores in the computer literacy course and not the chemistry course may be due to the lower reliability of the chemistry exams that may not have adequately assessed student learning.

Student Motivation

The hypothesis on the overall student motivation rating dimension was not supported, but the post hoc analysis revealed that the 'student interest' item was significantly higher for the feedback group. An explanation for the difference in student interest between the two groups, which was not different before the intervention, may be related to the extent to which TAs in the treatment group focused their attention on motivating their students. As shown in Table 1, students indicated that TAs in the treatment group used this activity to a much greater extent than TAs in the control group. One of the primary purposes of this instructional activity is to increase student interest in what is being taught. However, because this study focused on all six

instructional activities, we cannot conclude which specific activity actually affected the students' interest. In this study, then, the use of Reiser and Dick's instructional activities did not significantly affect student learning or student motivation, however, the TAs' use of the activities were significantly related to student learning and motivation.

Effect on International TAs

As noted earlier, an incidental finding revealed that the current intervention was particularly helpful for the International TAs (ITAs). Before the intervention, the ITAs in this study scored significantly lower than TAs from the United States (USTAs) on the student ratings of 'motivating students' and 'teaching effectiveness,' a result similar to previous research findings (Twale, Shannon & Moore, 1997). After the intervention, however, there was no significant difference between the student ratings of ITAs and USTAs. A possible explanation for the positive effects the treatment had on the ratings of the ITAs may be due to the nature of the consultation. Many ITAs experience much more formal teacher-student relationships in their academic cultures than the relationships evident in college classrooms in the United States (Twale et al., 1997). During the consultation, several ITAs mentioned that, in comparison to students in their own countries, United States students were much more 'informal' and 'open' in class. One ITA noted that the consultation "helped to show how real world examples could be tied into the teachings and reinforced ways to better tie the material into the student's life/understanding." The consultant's discussion on how to incorporate the 'motivating students' activity, then, may have helped them 'bridge' this cultural gap while making class more relevant and enjoyable.

Future Research

The feedback and consultation procedure had a short-term effect on the teaching practice of TAs, but will it influence TA instructional practices over a longer period of time? The full impact of the intervention may not be evident until the following semesters when the teachers gain more confidence and competence in using the instructional activities. Giving teachers more time to practice the activities may then produce a greater impact on student learning and motivation outcomes. Or, conversely, the treatment may lose its impact over time. Thus, longitudinal research examining the resilience of the intervention should be undertaken.

In addition, other research procedures should be explored that economize the resources required to implement a similar intervention that yields similar results. Overall, the researcher averaged approximately five hours per teacher to; observe a class (1.25), provide feedback and consultation to the TA (1.25 hrs), observe another class (1.25 hrs), and provide follow-up consultation (.25). Considering the time it took to type the student comments and process the survey results for each TA, the total intervention time per TA averaged just under five hours. Finding sufficient university consultants to train a large number of TAs under procedures similar to those used in this study would be quite resource intensive.

An alternative approach may eliminate nearly 50 percent of the consultant time per TA and be more realistic for university consultants or even department supervisors. Instead of the 2.5 hour initial observation and one-on-one consultation at the beginning of the semester, all TAs could be offered a 75-minute workshop on incorporating the instructional activities in the classroom. This would leave two hours of dedicated one-on-one training per teacher, a much more realistic figure for university or department resources.

Implications

The current study has important practical and theoretical implications for student ratings research and instructor consultation. The effect of the ratings feedback and consultation on ratings of teaching practices, and ratings of teaching effectiveness, and lend support to prior research that has highlighted the importance of personal consultation. As mentioned earlier, new teachers also prefer such consultation to all other teacher-training initiatives combined. Yet, Erickson's (1986) survey of 630 four-year institutions found that only 38 percent of those institutions offered personal consultation in conjunction with student survey ratings. If colleges and universities do not have the resources to provide such personal consultation, our academic colleges and/or departments should consider providing new teachers with the personal consultation or mentoring that they desire and most likely need to enhance their effectiveness and confidence in the classroom. Such feedback and personal consultation can be even more beneficial to the many International TAs who are continuing to fill our TA and professor ranks, especially in the hard sciences. In addition to language proficiency training, Shannon, Twale & Moore (1998) emphasize that ITAs could benefit from more specific training on 'how' to teach.

The current study also points to the need for continued research into more theoretically-based student rating instruments. Reiser and Dick's instructional activities, which evolved from Gagné's theory of instruction and the information-processing model of learning, served as the theoretical 'anchor' for developing the IAFF instrument and consultation process. Positive correlations between the activities and student learning warrant further examination of the effects of focusing on these activities on student ratings instruments and during TA training and consultation.

This study was the first step in an attempt to examine the effectiveness of a student ratings feedback form and consultation process specifically linked to a theory of learning and instruction. The intervention had a positive affect on ratings of teaching practices and teaching effectiveness, but it did not produce higher learning outcomes. Fortunately, using Reiser and Dick's activities in the classroom was possibly related to student learning and motivation in this study. Continued research on the theoretically-based IAFF student rating instrument and consultation procedure may help uncover the most important finding of all, positive affect on learning.

References

Abrami, P. C., d'Appollonia, S., Cohen, P. A. (1990). Validity of student ratings of instruction: What we know and what we do not. *Journal of Educational Psychology, 82*(2), 219-231.

Allen R. R., & Rueter, T. (1990). *Teaching assistant strategies: An introduction to college teaching*. Dubuque, Iowa: Kendall/Hunt Publishing Company.

Brinko, K. T. (1988). Instructional consultation with feedback in higher education: A quantitative and qualitative analysis. *Dissertation Abstracts International, 49*(8), 2120A-2121A (University Microfilms No. 88-22955).

Brinko, K. T. (1990). Instructional consultation with feedback in Higher Education. *Journal of Higher Education, 61*, 65-83.

Brinko, K. T. (1991). The interactions of teaching improvement. In M. Theall and J. Franklin (Eds.), *New directions for teaching and learning: No. 48 Effective practices for improving teaching* (pp. 39-49). San Francisco, CA: Jossey-Bass.

Cashin, W. E. (1999). Using student feedback to improve teaching. In P. Seldin (Ed.). *Changing practices in evaluating teaching: A practical guide to improved faculty performance and promotion/tenure decisions.* (pp. 1-24). Bolton, MA: Anker.

Cohen, J. (1988). *Statistical power analysis for the behavioral sciences* (2nd ed.). Hillsdale, NJ: Earlbaum.

Cohen, P. A. (1980). Effectiveness of student-rating feedback for improving college instruction: A meta-analysis of findings. *Research in Higher Education, 13*, 321-341.

Cohen, P. A. (1981). Student ratings of instruction and student achievement: A meta-analysis of multisection validity studies. *Review of Educational Research, 51*(3), 281-309.

Cohen, P. A. (1987, April). *A critical analysis and reanalysis of the multisection validity meta-*

analysis. Paper presented at the annual meeting of the American Educational Research Association, Washington, DC.

Cranton, P. & Smith, R. A. (1990). Reconsidering the unit of analysis: A model of student ratings of instruction. *Journal of Educational Psychology, 82*(2), 207-212.

Crocker, L., & Algina, J. (1986). Introduction to classical and modern test theory. New York: Harcourt Brace Jovanovich.

Curry, A., Marcus D., Garret, M., Hotinski, R. (1999, Jun 28). Graduate students don the union label. *U.S. News & World Report, 126*(25), 12.

d'Apollonia, S. & Abrami, P. C. (1997). Navigating student ratings of instruction. *American Psychologist, 52*(11), 1198-1208.

Erickson, G. (1986). A survey of faculty development practices. *To improve the academy, 5,* 182-194.

Erickson, G. & Erickson, B. (1979). Improving college teaching: An evaluation of a teaching consultation procedure. *Journal of Higher Education, 50*(5), 670-678.

Erickson, G. & Sheehan, D. (1976, April). *An evaluation of a teaching improvement process for university faculty*. Paper presented at the annual meeting of the American Educational Research Association, San Francisco. (ERIC Document Reproduction Service No. ED 131 111).

Feldman, K. A. (1989). The association between student ratings of specific instructional dimensions and student achievement: Refining and extending the syntheses of data from multisection validity studies. *Research in Higher Education, 30*(6), 583-645.

Feldman, K. A. (1997). Identifying exemplary teachers and teaching: Evidence from student

ratings. In R. P. Perry & J. C. Smart (Eds.). *Effective teaching in higher education: Research and practice*, (pp. 368-395) New York: Agathon.

Gagné, R. (1985). *The conditions for learning and theory of instruction.* (4th ed.). Chicago: Holt, Rinehart and Winston.

Gray, P. & Buerkel-Rothfuss, N. (1991). Teaching assistant training: A view from the trenches. In J. D. Nyquist, R. D. Abbott, D. H. Wulff, & J. Sprague (Eds.), *Preparing the professorate of tomorrow to teach* (pp. 40-51). Dubuque, IA: Kendall/Hunt.

Hampton, S. E. (2001). Student ratings feedback and consultation on instructional practices: Effects on teaching, learning and motivation. Unpublished Doctoral dissertation, Florida State University.

Hampton, S. E. & Reiser, R. A. (2000). *Instructional Activities Feedback Form.* Unpublished manuscript, Florida State University.

Keller, J. M. (1987a). Strategies for stimulating the motivation to learn. *Performance & Instruction, 26*(8), 1-7.

Keller, J. M. (1987b). The systematic process of motivational design. *Performance & Instruction, 26*(9), 1-8.

Kirk, R. E. (1995). *Experimental design: Procedures for the behavioral sciences*, (3rd ed.). Boston: Brooks/Cole.

L'Hommedieu, R., Menges, R., & Brinko, K. (1990). Methodological explanations for the modest effects of feedback. *Journal of Educational Psychology, 82*(2), 232-241.

Marsh, H.W. (1984). Students' evaluations of university teaching: Dimensionality, reliability, validity, potential biases, and utility. *Journal of Educational Psychology, 76*(5), 707-754.

Marsh, H.W. & Dunkin, M. J. (1997). Students' evaluations of university teaching: A

multidimensional perspective. In R. P. Perry & J. C. Smart (Eds.). *Effective teaching in higher education: Research and practice*, (pp. 241-320) New York: Agathon.

Marsh, H. & Roche, L. (1993). The use of students' evaluations and an individually structured intervention to enhance university teaching effectiveness. *American Educational Research Journal, 30*(1), 217-251.

McKeachie, W. J. (1997). Student ratings: The validity of use. *American Psychologist, 52*(11), 1218-1225.

McKeachie, W. J., Lin, Y. G., Moffett, M., Neigler, J.,Walz, M., & Baldwin, R. (1980). Using student ratings and consultation to improve instruction. *British Journal of Educational Psychology, 50,* 168-174.

McMillen, L. (1986). Increased training for teaching assistants. *The Chronicle of Higher Education, 33*(October 29): 9-11.

Moore, M. S. (1996). Assessing college effectiveness: A comparison of graduate TAs and students. *Dissertation Abstracts International, 57,* 05A (University Microfilms No. 96-29921).

Murray, H. G. (1983). Low-Inference classroom teaching behaviors and student ratings of college teaching effectiveness. *Journal of Educational Psychology, 75*(1) 138-149.

Orban, D. A. (1981). An ethnographic study of consultation to improve college instruction. *Dissertation Abstracts International, 42,* 5040A. (University Microfilms No. 82-12435).

Overall, J. U. & Marsh, H. W. (1979). Midterm feedback from students: Its relationship to instructional improvement and students' cognitive and affective outcomes. *Journal of Educational Psychology, 71*(6), 856-865.

Reiser, R., & Dick, W. (1996). *Instructional planning: A guide for teachers,* (2nd ed.). Boston: Allyn and Bacon.

Ronkowski, S. (1989). *Changes in teaching assistant concerns over time.* Paper presented at the National Conference on the Training and Employment of Teaching Assistants, Seattle. (ERIC Document Reproduction Service No. ED 315 012).

Rutt, D. P. (1979). An investigation of the consultation styles of instructional developers. *Dissertation Abstracts International, 40,* 624A. (University Microfilms No. 79-16959).

Seldin, P. (1999). Current practices - Good and bad – Nationally. In P. Seldin (Ed.). *Changing practices in evaluating teaching: A practical guide to improved faculty performance and promotion/tenure decisions.* (pp. 1-24). Bolton, MA: Anker.

Shannon, D., Twale, D., & Moore, M. (1998). TA teaching effectiveness: The impact of training and teaching experience. *The Journal of Higher Education, 69*(4), 440-466.

Thomas, C. F. & Monoson, P. K. (1993). Oral English language proficiency of ITAs: Policy, implementation, and contributing factors. *Innovative Higher Education, 17*(3), 195-209.

Travers, P. D. (1987). Better training for teaching assistants. *College Teaching, 37*(4), 147-149.

Twale, D. J., Shannon, D. M., & Moore, M. S. (1997). NGTA and IGTA training and experience: Comparisons between self-ratings and undergraduate student evaluations. *Innovative Higher Education, 22*(1), 61-77.

Weimer, M. (1997). Exploring the implications: From research to practice. In R. P. Perry & J. C. Smart (Eds.). *Effective teaching in higher education: Research and practice,* (pp. 411-435) New York: Agathon.

Wilson, R. C. (1986). Improving faculty teaching: Effective use of student evaluations and consultants. *Journal of Higher Education, 57,* 196-211.

Appendix

Instructional Activities Feedback Form

Instructions: Your feedback may assist your teacher's preparation and delivery of future classes. Please answer all questions on the space provided using a # 2 pencil. Teachers will receive a typed summary of results and NOT see original handwritten comments. For the following questions, please estimate how often your teacher uses the following activities or behaviors **during a typical class period.** The ratings are:
A=Almost Never B=Infrequently C=Occasionally D=Often E=Almost Always

E **Almost ALWAYS**
D **Often**
C **Occasionally**
B **Infrequently**
A **Almost NEVER**

1. Begins lesson with an interesting or exciting fact, demonstration, or question related to the lesson topic A B C D E
2. Uses interesting activities to maintain your interest and participation throughout class..... A B C D E
3. Is obviously enthusiastic and excited about lesson topics while teaching in class..... A B C D E
4. Offers praise, rewards, or recognition to students in class for excellent answers, ideas or performance A B C D E
5. Informs the class of the specific goal(s) or objective(s) for each lesson. e.g. By the end of this lesson, you should know or be able to do the following... A B C D E
6. Clearly indicates what you will be expected to learn during the class period..... A B C D E
7. Reviews information that was taught in a previous class(es) that will help you understand the new information or perform the new task. e.g. Remember, the three parts of a paragraph are A B C D E
8. Asks students questions about previous lesson topics that are related to the current lesson..... A B C D E
9. Relates new information to something you already know from previous classes or experiences..... A B C D E
10. Presents the information clearly to enhance your understanding of the lesson topic..... A B C D E
11. Provides the right amount of information to enable you to learn the key facts and/or skills being taught A B C D E
12. Provides adequate responses to student questions or comments to clarify the key facts and/or skills... A B C D E
13. Uses a variety of relevant examples to help you learn the key facts and/or skills being taught..... A B C D E
14. Provides guidance (tips) to students to help them remember the key facts and/or skills. e.g. Remember the colors of the rainbow with the name 'ROY-G-BIV' A B C D E
15. Provides adequate opportunities for you to practice in class the facts or skills being taught..... A B C D E
16. Provides relevant practice problems that enhance your understanding of the facts and/or skills..... A B C D E
17. Provides specific feedback about the practice problems in class to help you understand the correct answer A B C D E
18. Provides specific feedback about the practice problems in class to correct common student errors..... A B C D E
19. Summarizes the important aspects of the lesson before dismissing the class..... A B C D E
20. Reviews the objectives or goals of the lesson at the end of each lesson..... A B C D E

(Continued on Back)

Instructional Activities Feedback Form (Continued)

Directions: Items 22-28 are typical instructional activities for a class. How much improvement (if any) do you think your teacher needs to improve each of these activities in order to enhance your learning in class.

22. Motivating students to learn by making class interesting, relevant, realistic and fun..... A B C D E
    For 22-28: A=MUCH improvement needed **B=SOME improvement** needed **C=NO improvement** needed
23. Informing students of the objectives for the lesson.....A B C D E
    A=MUCH improvement needed B=SOME improvement needed C=NO improvement needed
24. Helping students recall prior knowledge essential for learning the new material.....A B C D E
    A=MUCH improvement needed B=SOME improvement needed C=NO improvement needed
25. Presenting information and relevant examples about the facts and skills being taught.....A B C D E
    A=MUCH improvement needed B=SOME improvement needed C=NO improvement needed
26. Providing an opportunity for in-class student practice of the skills being taught..... A B C D E
    A=MUCH improvement needed B=SOME improvement needed C=NO improvement needed
27. Providing adequate feedback on practice problems to correct common errors.....A B C D E
    A=MUCH improvement needed B=SOME improvement needed C=NO improvement needed
28. Summarizing the key points of the lesson at the end of the class.....A B C D E
    A=MUCH improvement needed B=SOME improvement needed C=NO improvement needed
29. Overall, how effective would you rate your teacher's instruction?.....A B C D E
    A=Poor B=Below average C=Average D=Above average E=Excellent
30. Overall, how important do you think the activities in questions 22-28 are for the teacher to use in order for you to learn as much as possible in this class?..... A B C D E
    A=Not at all important B=Not very important C=Important D=Very important E=Extremely important

The following questions allow you to provide more detailed feedback to your instructor and the researcher. Please write your answers in the space provided or mark the appropriate letter to the right where appropriate. To ensure confidentiality, your instructor will be given typed comments and **never see** the handwritten comments.

31. What is your gender? A=Female B=Male..... A B C D E

32. What academic area do you believe you will major in?..... A B C D E
    A=Natural Sciences B=Computers/Engineering/Math C=Arts D=Humanities E=Education/Business
33. Overall, how interesting is this course compared to other courses you have taken? ..... A B C D E
    A=Not at all B=Less interesting C=Similar D=More interesting E=Most interesting
34. How useful do you believe this course will be to your future academic studies and/or success in this field?... A B C D E
    A=Not useful B=Somewhat useful C=Useful D=Very useful E=Extremely useful
35. What is your level of confidence that you can apply what you learned in this course in the future?..... A B C D E
    A=Not confident B=Somewhat confident C=Confident D=Very confident E=Extremely confident
36. Overall, how satisfied are you with this course? ..... A B C D E
    A=Extremely dissatisfied B=Dissatisfied C=Satisfied D=Very satisfied E=Extremely satisfied

37. Describe what you really **like** about your teacher's instruction.

38. Describe what you do **NOT** like about your teacher's instruction (if any).

Thank you for your honest feedback!

Table 1

Ratings of Frequency of Use of Instructional Activities: Mean and Standard Deviation by Treatment Group*

Activity	Feedback (N = 18)	Control (N = 19)	*Eta*^{2}
Motivating students	**3.50** (.39)	**3.05** (.61)	.36
Telling students objectives	**4.19** (.41)	**3.88** (.56)	.48
Informing students of prerequisites	**3.56** (.42)	**3.13** (.55)	.45
Presenting information & examples	**3.89** (.38)	**3.51** (.63)	.45
Providing practice & feedback	**3.70** (.49)	**3.40** (.65)	.29
Summarizing the lesson	**3.74** (.46)	**3.29** (.64)	.36
Total mean score	**3.74** (.40)	**3.36** (.59)	.43

Note. Scale ranges from 1 (not at all) to 5 (almost always). Means adjusted based on initial assessment scores. Standard deviations in parentheses. *Eta*^{2} = proportion of variance attributed to treatment

* $p < .01$ for all group comparisons

Table 2

Adjusted Student Performance on Final Exam Scores by Department*

Department	Feedback Grp	Control Grp	*F*	*p*
Computer Literacy	**81.07** (2.95)	**79.68** (3.08)	1.380	.257
Chemistry	**66.40** (2.96)	**64.71** (5.23)	.997	.336

*Exam scores based on 100-point scale and adjusted with math SAT and standard deviation of math SAT scores as covariates. Standard deviations of scores in parenthesis.

Table 3

A Comparison of Correlations Between Student Rating Dimensions and Student Learning by Section (N=61) in Computer Literacy Course

IAFF Activity/ (Comparable Rating Dimension)	Hampton Study (2001)	Cohen Meta-analyses (1981,1987)	Feldman Meta-analyses (1989,1997)
Motivating students	.31*		
(Rapport)		.30	
(Interest/Motivation)		.26	
(Simulate interest in course)			.38
(Motivate student to do best)			.38
(Enthusiasm for subject or teaching)			.27
(Pleasantness of classroom)			.23
(Value/usefulness/relevance of course			.17
Objectives	.22	N/A	.35
Prerequisites	.29*	N/A	N/A
Present information	.36**		
(Interaction)		.45	
(Clarity & understandableness)			.56
(Discussion)			.36
(Encourage questions/opinions)			.36
(Elocution)			.35
Practice/Feedback	.28*		
(Feedback)		.29	.23
(Availability & helpfulness)			.36
Summarize lesson	.27*	N/A	N/A
Total IAFF Score (items 1-20)	.32*		
(Structure)		.55	
(Pursued/met course objectives)			.49
Teaching Effectiveness	.40**	.40	.39

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

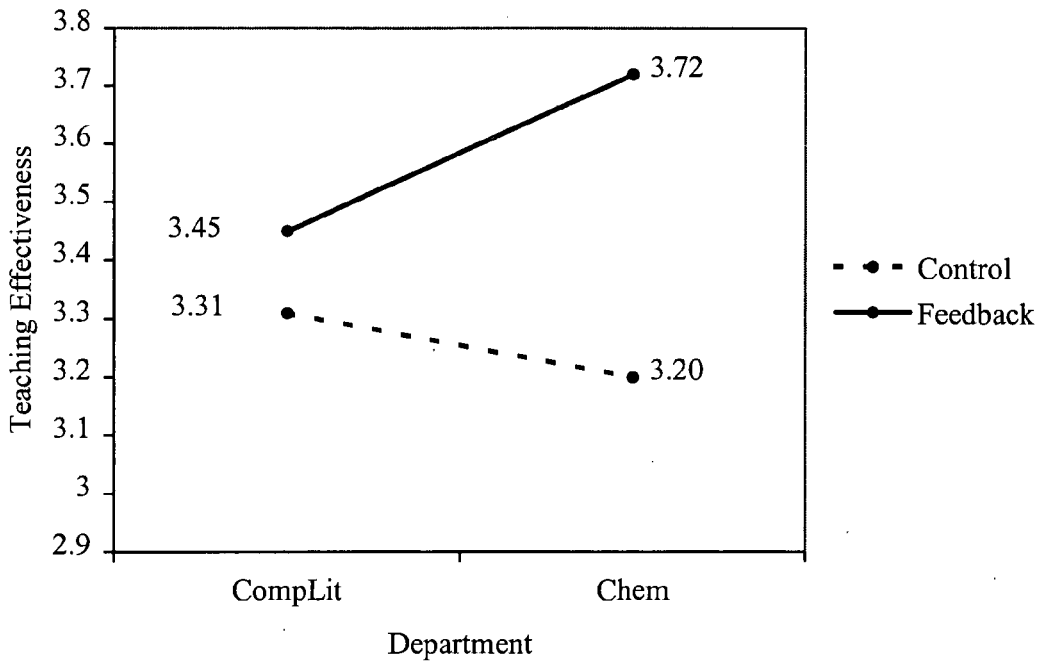

Figure 1. Adjusted Mean Teaching Effectiveness Scores for Feedback and Control Groups across Departments

TM034172

U.S. Department of Education
Office of Educational Research and Improvement (OERI)
National Library of Education (NLE)
Educational Resources Information Center (ERIC)

ERIC Educational Resources Information Center

American Educational Research Association

Reproduction Release
(Specific Document)

NOTE: Paper presented at AERA Conference in New Orleans on 1 Apr 2002

I. DOCUMENT IDENTIFICATION:

Title: From Theory to Practice: Using an Instructional Theory to Provide Feedback and Consultation to Improve College Teaching, Learning and Motivation	
Author(s): Scott E. Hampton (US Military Academy) & Robert A. Reiser (Florida State University)	
Corporate Source:	Publication Date: 1 April 2002

II. REPRODUCTION RELEASE:

In order to disseminate as widely as possible timely and significant materials of interest to the educational community, documents announced in the monthly abstract journal of the ERIC system, Resources in Education (RIE), are usually made available to users in microfiche, reproduced paper copy, and electronic media, and sold through the ERIC Document Reproduction Service (EDRS). Credit is given to the source of each document, and, if reproduction release is granted, one of the following notices is affixed to the document.

If permission is granted to reproduce and disseminate the identified document, please CHECK ONE of the following three options and sign in the indicated space following.

The sample sticker shown below will be affixed to all Level 1 documents	The sample sticker shown below will be affixed to all Level 2A documents	The sample sticker shown below will be affixed to all Level 2B documents
PERMISSION TO REPRODUCE AND DISSEMINATE THIS MATERIAL HAS BEEN GRANTED BY SAMPLE TO THE EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)	PERMISSION TO REPRODUCE AND DISSEMINATE THIS MATERIAL IN MICROFICHE, AND IN ELECTRONIC MEDIA FOR ERIC COLLECTION SUBSCRIBERS ONLY, HAS BEEN GRANTED BY SAMPLE TO THE EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)	PERMISSION TO REPRODUCE AND DISSEMINATE THIS MATERIAL IN MICROFICHE ONLY HAS BEEN GRANTED BY SAMPLE TO THE EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)
Level 1	**Level 2A**	**Level 2B**
↑ ☒	↑ ☐	↑ ☐
Check here for Level 1 release, permitting reproduction and dissemination in microfiche or other ERIC archival media (e.g. electronic) *and* paper copy.	Check here for Level 2A release, permitting reproduction and dissemination in microfiche and in electronic media for ERIC archival collection subscribers only	Check here for Level 2B release, permitting reproductic and dissemination in microfiche only

Documents will be processed as indicated provided reproduction quality permits.

If permission to reproduce is granted, but no box is checked, documents will be processed at Level 1.

I hereby grant to the Educational Resources Information Center (ERIC) nonexclusive permission to reproduce and disseminate this document as indicated above. Reproduction from the ERIC microfiche, or electronic media by persons other than ERIC employees and its system contractors requires permission from the copyright holder. Exception is made for non-profit reproduction by libraries and other service agencies to satisfy information needs of educators in response to discrete inquiries.

Signature:	Printed Name/Position/Title: SCOTT E. HAMPTON / LTC / Assistant Professor	
Organization/Address: Department of Behavioral Sciences & Leadership United States Military Academy West Point, NY 10996	Telephone: (845) 938-2491	Fax: (845) 938-2236
	E-mail Address: LS0425@usma.edu	Date: 4/26/02

III. DOCUMENT AVAILABILITY INFORMATION (FROM NON-ERIC SOURCE):

If permission to reproduce is not granted to ERIC, or, if you wish ERIC to cite the availability of the document from another source, please provide the following information regarding the availability of the document. (ERIC will not announce a document unless it is publicly available, and a dependable source can be specified. Contributors should also be aware that ERIC selection criteria are significantly more stringent for documents that cannot be made available through EDRS.)

Publisher/Distributor:
Address:
Price:

IV. REFERRAL OF ERIC TO COPYRIGHT/REPRODUCTION RIGHTS HOLDER:

If the right to grant this reproduction release is held by someone other than the addressee, please provide the appropriate name and address:

Name:
Address:

V. WHERE TO SEND THIS FORM:

Send this form to the following ERIC Clearinghouse:

Note: Paper Presented at AERA Conference in New Orleans, 2002

However, if solicited by the ERIC Facility, or if making an unsolicited contribution to ERIC, return this form (and the document being contributed) to:

ERIC Processing and Reference Facility
4483-A Forbes Boulevard
Lanham, Maryland 20706
Telephone: 301-552-4200
Toll Free: 800-799-3742
e-mail: ericfac@inet.ed.gov
WWW: http://ericfacility.org

EFF-088 (Rev. 2/2001)