An Experimental Comparison of the Effect of Teacher Versus Self-evaluation/self-reflection

Feedback on College Students' Behavioral Observation Skills

Abstract

An experimental investigation of the effectiveness of two types of feedback on college students' acquisition of behavioral observation skills was conducted. Special education and psychology students completed two training assignments involving behavioral observations of students engaging in problem behavior. Depending on the condition to which they were randomly assigned, participants experienced either teacher or self-evaluation/self-reflection feedback immediately after each assignment was completed. Participants in the teacher feedback condition scored higher on the post-training assignments and viewed it more positively than those in the self-evaluation/self-reflection condition. Additional research is needed to identify the relevant variables contributing to effective teacher feedback since it is a frequent component of instructional situations.

Keywords: Feedback, Behavioral observation, Teacher, Self-evaluation, Self-reflection

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Feedback may facilitate learners' acquisition of information and skills by rewarding the student's improvements, cueing desirable behavior, and/or motivating a student to improve or try again (Gibbs & Taylor, 2016; Griesbaum & Gortz, 2010; Komaki, Heinzmann, & Lawson, 1980; Mangiapanello & Hemmes, 2015; Mory, 2004; van de Ridder, McGaghie, Stokking, & Cate, 2015). Feedback is defined as "knowledge of results" where an individual (e.g., teacher, parent, employer, or mentor) relays the degree to which the learner did something well and describes how to make improvements toward a particular standard or goal (Ellis & Loughland, 2017; Hattie & Yates, 2014; Sadler, 1989). Feedback content may be qualitative or quantitative and provided in verbal, visual, or written formats (Luck, Lerman, Wu, Dupuis, & Hussein, 2018). In a classroom setting, two avenues of feedback delivery that may facilitate students' learning are teacher feedback and self-evaluation/self-reflection.

Effective procedures for delivering teacher feedback involve presenting the feedback in a timely, specific, and clear manner (Higgins, Hartley, & Skelton, 2002) as well as establishing grading rubrics and learning objectives to clarify instructor's expectations (Randall & Zundel, 2012). Some research suggests that teacher feedback may promote students' knowledge, skill acquisition, and motivation (Brock et al., 2017; Higgins, Hartley, & Skelton, 2002; Randall & Zundel, 2012; Ruegg, 2015; Zhao, 2010). For example, Ozogul et al. (2008) investigated the effectiveness of teacher, peer, and self-evaluation feedback on preservice teachers' performance on writing technology integrated lesson plans using a quasi-experimental research design. Results of the lesson plan analysis indicated that the teacher feedback condition was more effective than peer and self-evaluation conditions at improving students' performance.

Additionally, students perceive teacher feedback as valuable (Higgins et al., 2002; Olina & Sullivan, 2004; Zhang, 1995). Despite its many positives, a major difficulty with teacher feedback is that it may not be feasible to deliver individualized and timely feedback to all students in a large class.

An alternative to teacher feedback that alleviates teacher time constraints is self-evaluation/self-reflection feedback, which involves the student reviewing the teacher's answer key, comparing it to one's own work, evaluating performance, and setting improvement goals. Self-evaluation occurs when students identify and analyze the qualities of their own learning process, action, and outcomes (Panadero, Brown, & Strijbos, 2015; Yan & Brown, 2017). Self-reflection is when students: (a) elaborate the problems encountered during the learning process; (b) identify their strengths and weaknesses; and (c) change practice based on this review (Brown & Harris, 2013; McFarland, Saunders, & Allen, 2009; Yan & Brown, 2017). The purpose of both self-evaluation and self-reflection is to help students improve learning and achieve their learning goals (Yan & Brown, 2017).

Self-evaluation/self-reflection feedback may promote students' self-management skills and foster deep learning strategies (e.g., in-depth understanding, organizing and reviewing material, goal setting), potentially facilitating transfer of skills to new situations (Hattie & Donoghue, 2016). This form of feedback requires students take an active role in their learning which may boost learning, accountability, and responsibility (Black & Wiliam, 1998; Bransford, Brown, & Cocking, 1999; Davies, 2002; Liu, Lin, & Yuan, 2002). Other advantages with self-evaluation/self-reflection feedback include that it allows immediate feedback to be provided to students by comparing their answers to a key (Huxham, 2007), may promote self-regulation, and

is less time-consuming for instructors to implement (Price, Handley, Millar, & O'Donovan, 2010).

Although there are many advantages to self-evaluation/self-reflection feedback, the research outcomes assessing this approach are mixed. Huxham (2007) experimentally compared a condition in which students compared their work to model answers versus a teacher feedback condition. Students scored significantly better in the model answers condition, even though they preferred the teacher feedback condition. In contrast, Ozogul and Sullivan (2009) found no difference between teacher, peer, and self-feedback conditions using a quasi-experimental design. Gibbs and Taylor (2016), also using a quasi-experimental research design, found no differences in correct responding nor perceptions of effectiveness when teacher personalized feedback was compared to when students used the answer key. The self-evaluation condition involved exposing students in a large class to an answer key projected on a large screen at the front of the classroom. It is possible that had a self-reflection component been added to the self-evaluation condition in Gibbs and Taylor's (2016) study, the impact on student learning might have been greater.

There are limitations to arranging student self-evaluation/self-reflection as feedback for learning material. Some students may (a) not spend enough time reviewing their work to evaluate it correctly (Evans, 2013); (b) not recognize the differences between their work and the answers on the key (Larreamendy-Joerns, Leinhardt, & Corredor, 2005); and/or (c) perceive that they are inappropriately asked to teach and assess themselves (Kreiner, 2006).

In the current study, the effectiveness of teacher versus self-evaluation/self-reflective feedback approaches were experimentally evaluated within the context of students learning how to perform a complex task, namely, behavioral observation. Behavioral observation involves the

systematic identification, measurement, and analysis of an individual's behavior (Desrochers &

Fallon, 2014; Thompson, Symons, & Felce, 2000). Behavioral observation is an essential skill

for teachers, behavior therapists, and other professionals to have in their repertoire to enable

assessment and treatment of the individuals under their care. This technique allows the

professional to determine amount of behavior the individual displays, identify possible causes of

the individual's problem behavior, and evaluate whether behavior intervention plans are effective

(Cooper, Heron, & Heward, 1987). Examining students' acquisition of behavioral observation

procedures is a task that involves higher order thinking skills, which provides a rigorous

evaluation of the effects of different types of feedback on student learning.

Although feedback has been shown to be a critical component when teaching behavioral

observations (LaBrot, Radley, Dart, Moore, & Cavell, 2018), a dearth of research has examined

which type of feedback is most effective to teach this important skill. Additionally, use of an

experimental research design in this study will allow a causal determination of the effect of

feedback on student learning. An experimental comparison of teacher feedback versus self-

evaluation/self-reflective conditions on students' behavioral observation skills was performed. It

was hypothesized that student learning in the teacher feedback condition would be greater than

that in the self-evaluation/self-reflective condition.

Method

Participants

This study was conducted in courses that included the topic of behavioral observation

held during spring semesters in 2015 and 2016. Students from four courses, two hybrid and two

classroom-based, in a four-year public university in Northeastern United States were invited to

participate, including Introduction to Special Education, Assessments for Special Education,

Psychology Research Methods, and Applied Behavior Analysis courses. A total of 43 students, including special education ($n = 29$, 67.4%) and psychology ($n = 14$, 32.6%) undergraduate and graduate students signed the informed consent form and voluntarily participated in this study. Mann Whitney U test analyses results indicate that there was no statistically significant differences between the two feedback conditions for the participants' year in college ($p = $ ns), age ($p = $ ns), nor GPA ($p = $ ns). Table 1 presents the frequency and percentage of the participants' demographic characteristics by condition.

Settings

The settings for this study were two computer labs of similar size containing 20-30 desktop Dell computer workstations or two classrooms with approximately 30 desks and chairs with Dell laptop computers, depending on the course and term.

Materials

To conduct this study, videos, training materials, and assessments were used. There were four brief professionally produced videos used in this study depicting students' problem behavior (e.g., disruptive and/or talking back behaviors) in school settings ranging from elementary to high school grade level (Liaupsin, Scott, & Nelson, 2000). These videos ranged from 1:13 to 1:54 sec in duration and were used with author's permission.

The online Behavioral Observation tutorial consisted of a PowerPoint® and iSpring® presentation with recorded oral instruction to provide participants with the standardized background knowledge required to conduct behavioral observations and successfully complete the assignments. Instructional objectives, textually presented at the start of the tutorial, included that the student would learn to: (a) create a good behavioral definition of the individual's challenging behavior; (b) identify, select, and conduct the appropriate behavioral observation and

recording strategy; (c) calculate an appropriate interobserver reliability score and evaluate its adequacy; and (d) analyze the behavior and identify a functional hypothesis or reason for the child's challenging behavior. Additionally, as part of this tutorial, several video examples were given of children engaging in problem behavior with ABC observation and students were asked to perform this assessment before comparing their answers to the key. The Behavioral Observation tutorial, which may take approximately 30-60 minutes to complete, can be accessed at http://www.acs.brockport.edu/~mdesroch/Observational%20Assessment/.

Other materials included the Behavioral Observation Assignment containing the following questions: (1) construct a behavioral definition for the problem behavior of the student depicted in the video; (2) indicate the aspect of behavior to measure; (3) detail the measurement system, and state why you selected it; (4) observe the student's behavior in the video and perform an ABC observation; (5) calculate an interobserver reliability (IOR) score; (6) evaluate the adequacy of the IOR score; (7) if the IOR score is inadequate, state why; and (8) identify the function of the student's behavior. Two answer keys, one for each of the two assignments, were used in both conditions to standardize feedback. See Appendix A for an example of one of the answer keys with points used in the assessment coding added.

The self-evaluation/self-reflection assignment was developed to promote higher order thinking skills, especially the evaluation and analysis skills at the higher levels of Bloom's taxonomy (Anderson et al., 2001). This assignment contained questions for the participant to analyze what he or she did well and what skills the participant still needs to develop. It also asked the participant to evaluate what was learned during the assignment which may contribute to his/her professional growth, and how the participant will apply this self-reflection to guide improvement in the specific area(s). See Appendix B for this form.

The Subjective Evaluation Survey included questions, with rating a 7-point likert-type scale, concerning how helpful the instructional feedback was in the observation class, how much was learned, how difficult/easy the assignment was, whether it would be recommended, how prepared the student was, how well the student does on tests in general, and whether the student enjoyed participating in their condition of the study.

Procedure

Research Design. A two-group posttest only randomized experiment was used to evaluate the effect of type of feedback on participants' acquisition of behavioral observation skills. No pre-test was administered to reduce testing effects. Three researchers conducted the study. All participants who volunteered to participate were randomly assigned into teacher feedback or self-evaluation/self-reflection condition within each of the four courses. All participants were informed by the researchers that the content and assigned activities were a part of their regular course content. The training assignments were completed in-class during two class periods and the two assessments that served as dependent measures were completed as homework individually by the participant for course grade.

Pre-Training Phase. To provide participants with background knowledge in how to conduct behavioral observations, participants were asked to complete the online Behavioral Observation tutorial for homework prior to the in-class training phase.

Training Phase. During the training phase, participants in each of the four participating courses were randomly assigned to either the teacher feedback ($n = 24$, 55.8%) or self-evaluation/self-reflection ($n = 19$, 44.2%) condition. Training sessions occurred at the same time for both conditions during regular class time--either one 75- min or two 50-min classes. Participants in each condition were brought into one of two different but similar (size, type of

desks) computer labs or classrooms with a researcher. In both conditions, there were 4-6 students present in the classroom and participants were directed to review the online Behavioral Observation tutorial if they had any questions about the material prior to the delivery of feedback. Both groups were provided with two online videos via their course management system (Blackboard®) and given instructions about how to access it by the researcher. Participants in each condition were given the Behavioral Observation Assignment sheet and asked by the researcher to complete two video scenarios, one at a time. When each set of questions for a video scenario was completed, participants received the feedback according to the condition to which they were randomly assigned.

In the *teacher feedback* condition, the first author provided teacher feedback to students in Psychology Research Methods and Applied Behavior Analysis courses, while the second author provided teacher feedback to the students in Introduction to Special Education and Assessments for Special Education courses. The two authors used the same answer key and followed the same scripted procedure when providing feedback to participants. The researcher asked participants to raise their hand when they reached question 5 after conducting their own observations so that another observer's score could be given to enable calculation of the interobserver reliability score. Participants were also asked to raise their hand when they completed an assignment so that the teacher (within 5 min) could provide one-on-one verbal and textual feedback to the participant soon after each assignment was done. The teacher spent approximately 3 min with each participant delivering feedback. Based on the correspondence between the answer key information (see Appendix B) and the student's response, the researcher delivered written feedback consisting of checkmarks on the participant's worksheet next to participant's correct answers and brief comments (directives and/or explanations) next to

incorrect answers. The Behavioral Observation Assignment sheets were collected by the researcher at the end of the session. A random review of 33% of participants' worksheets showed that teacher checkmarks were made on 100% of them and comprised approximately 75% or more of the type of feedback delivered by the researcher.

In the *self-evaluation/self-reflection* condition, when the participant completed each assignment, the researcher (a) provided the assignment answer key for the participant to review and score his or her answers; (b) gave the Self-evaluation/self-reflection sheet to the participant; and (c) stated, "please grade your assignment and write out your reflections." The Behavioral Observation Assignment sheets and Self-evaluation/self-reflection sheets were collected by the researcher at the end of the session. A random review of 33% of all self-evaluation/self-reflection sheets showed that all participants wrote answers to each of the four questions and specifically addressed them.

Assessment Phase. Following the training phase, all participants were asked by the researcher to complete two graded assignments within two weeks after the in-class training phase. The homework behavioral observation assignment involved answering the same eight questions as that during the training phase for each of two video classroom scenarios. The assessment videos differed from those presented during training but were similar in duration. Next, a subjective evaluation survey with seven questions concerning the participants' learning experiences was either completed online or in class depending on the course and term.

Following submission of the assessment materials by all participants, the course instructor debriefed the participants regarding the purpose of the study. A trained researcher "blind" to the participant's condition scored each participant's answers for the two assessments. The participant's answer to each question was compared to the assignment answer key and given

a score based on incorrect, partially correct or fully correct for a total of 5 possible points for each assignment.

Interobserver reliability agreement (IOA) procedures were performed to determine accuracy in the researcher's coding of the post-assessment data. The IOA procedure entailed a second researcher independently scoring a randomly selected 25% of all participants' post-assessments. An IOA score was calculated based on the number of agreements for each assignment question (#'s 1-8) score between researchers over number of agreements plus disagreements multiplied by 100. An overall IOA score of 86.25% was obtained.

Results

Overall, the post-assessment results suggest that participants performed better in the teacher feedback condition compared to that in the self-evaluation/self-reflection condition. Using an independent samples t-test, a significant difference in participants' total scores for assignments 1 and 2 differed between conditions ($t(40) = 2.84$, $p = 0.01$). Participants' total assignments 1 and 2 scores in the teacher feedback condition were significantly higher than those in the self-evaluation/self-reflection condition (see Table 2). Figure 1 shows that individual participants' total scores in the teacher feedback condition are more stable and at higher values than those in the self-evaluation/self-reflection condition.

Although participants' assignment 1 total score between the conditions did not differ ($p =$ ns), an independent samples t-test showed a significant difference between conditions for assignment 1 question 1, *construct a behavioral definition of the student's problem behavior* ($t(40) = 2.33$, $p = 0.05$), question 6, *Evaluate the adequacy of the IOR score based on your data* ($t(40) = 2.30$, $p = 0.05$) and question 8, *state why the student's problem behavior is occurring and explain why you think so* ($t(40) = 2.13$, $p = 0.05$). For all of three questions, participants'

scores in the teacher condition were higher than those in the self-evaluation/self-reflection condition (see Table 2).

For Assignment 2 total score, a significant difference in participants' overall scores were found between the two conditions as shown in an independent samples t-test ($t(40) = 3.36$, $p = 0.01$). Participants who received teacher feedback scored significantly higher compared to those in the self-evaluation/self-reflection condition. Specifically, an independent samples t-test showed significant differences between conditions for assignment 2 question 2 that asked *Indicate the aspect of behavior to measure* ($t(40) = 3.36$, $p = 0.01$), question 6 ($t(40) = 2.30$, $p = 0.05$), and question 8 ($t(40) = 2.51$, $p = 0.05$). For all three questions, participants who received teacher feedback scored significantly higher than those in the self-evaluation/self-reflection condition (see Table 2).

Participants' Subjective Evaluations

Among the 43 participants who turned in the subjective evaluation survey, 22 indicated their codes identifying the feedback condition to which they were randomly assigned (54.8%). Reported results are for those participants who stated their codes on the subjective evaluation survey sheet, consisting of 10 who were in the teacher feedback condition (29.4%) and 12 in the self-evaluation/self-reflection condition (35.3%).

The results of an independent samples t-test indicated a significant difference in participants' ratings for the subjective evaluation survey question (1) *How helpful was the instructional feedback given during the behavioral observation class* ($t(21) = 2.05$, $p < 0.05$). The teacher feedback ($M = 5.73$, $SD = 1.35$, $SE = 0.41$) was rated by participants higher than that in the self-evaluation/self-reflection condition ($M = 4.42$, $SD = 1.68$, $SE = 0.48$).

The results of an independent samples *t*-test indicated a significant difference in participants' ratings for the subjective evaluation survey question (4) *Would you recommend the behavioral observation class to your friends and classmates* ($t(21) = 2.22$, $p < 0.05$). The teacher feedback ($M = 5.55$, $SD = 1.51$, $SE = 0.45$) was rated higher by participants than that in the self-evaluation/self-reflection condition ($M = 4.17$, $SD = 1.47$, $SE = 0.42$).

Discussion

In the current experiment, teacher feedback appeared to be more effective in facilitating students' acquisition of behavioral observation skills compared to self-evaluation/self-reflection feedback. This finding was consistent across two homework assignments due two weeks after training that required participants to define, code, and analyze video-recorded examples of student problem behaviors in the classroom. Not only did participants learn best with teacher feedback, they also perceived the teacher condition more positively than the self-evaluation/self-reflection condition.

In our experiment, similar to Ozogul et al.'s (2008) study, participants' performance on a complex task in the teacher feedback condition surpassed that in the self-evaluation/self-reflection condition. In Ozogul et al.'s study, construction of lesson plans was taught while in the current study behavior observation methods were the target of training. Investigation of the effectiveness of feedback on learning different tasks provides evidence of generalizability of the finding across activities that require analysis and synthesis of information or deep learning (Hattie & Donoghue, 2016).

A greater success with teacher feedback may also have been due to the students' past learning history and/or magnitude of reinforcement that might have differed between the feedback conditions. In the current study, feedback was attempted to be standardized across

conditions by using the same answer key and, although unmeasured, the duration of teacher

feedback was similar across students. Nonetheless, the teacher may have provided a higher

quality or quantity of praise for students' correct responding and/or a higher rate of constructive

comments for improvement compared to that delivered in the self-evaluation/self-reflection

condition. The quality of feedback or instructor elaboration of correct answers has been shown

to enhance students' learning (Finn, Thomas, & Rawson, 2017; van Ginkel et al., 2017). Also, it

may be the case that teacher feedback is more rewarding or motivating to students compared to

one's own review and evaluation (Story & Sullivan, 1986). According to the equilibrium model

of learning, teacher feedback may fulfill a variety of dimensions (e.g., motivation, coaching,

prompting self-regulation) to satisfy diverse student needs (Schelfhout et al., 2004), which may

not occur when feedback is provided by the student him/herself. Further research is warranted to

determine the specific components and function of teacher feedback that boosts students'

knowledge and skill acquisition.

Implications for Practice

> While teacher feedback appears to have a positive effect on student learning compared to

self-evaluation/self-reflection, the downside is that it may be time consuming for a teacher to

provide immediate individualized feedback to a class of 25 or more students. One possible

solution, applicable for an online course or when delayed feedback must be presented, is to

deliver more immediate audio-recorded feedback (Zimbardi et al., 2017). Another method to

address the time demands associated with teacher feedback is to vary the type of feedback

delivered according to *when* it is provided during the learning process. As Hattie and Yates

(2014) suggested, it may be efficacious to structure the type of feedback delivered according to

the student's task proficiency. Taking this idea one step further, the type of feedback delivered

may be strategically tailored to the stage of the student's learning process. For example, novice learners may academically benefit more from teacher feedback than other types of feedback (e.g., self-evaluation/self-reflection, peer) early in the learning process. When the concepts and skills have been acquired, students could be required to self-evaluate and self-reflect following review of their work to foster independence and self-sufficiency and promote maintenance of these skills (Hattie & Donoghue, 2016). Empirical evaluation of this type of feedback process where teacher and then self-feedback is tailored to the student's stage of acquisition is lacking in the research literature.

When knowledge or skills are acquired through use of feedback, retention and generalization are essential aspects of student learning experiences. In the current study, students' acquisition of behavioral observation skills were evidenced up to two weeks following training demonstrating some degree of maintenance of the skills learned. However, given the overall low scores earned by students in both conditions (an average of 74% in the teacher feedback condition and 59% in the self-evaluation/self-reflection condition for the assignment 1 and 2 total scores), more instruction and practice is likely needed for task mastery. Moreover, behavioral observation skills for pre-professionals who will one day work as educators or behavior therapists need to occur in the classroom with students.

Limitations

Several limitations may exist in this study. Although participants in the teacher feedback condition perceived their condition more favorably than those in the self-evaluation/self-reflection condition, only half of participants in both conditions provided ratings with condition codes. It is possible that different results would have been found had all participants' ratings

been included. Additionally, the study had a relatively low sample size overall and so generalizability of the findings is unclear.

Another concern is that the teacher feedback condition differed from the self-evaluation/self-report condition in a couple of ways. The amount of participants' response effort due to engaging in self-reflection may have been greater than that due to teacher feedback. Although they were both in the same room, the distance between teacher and participant may have differed between conditions. In contrast to the self-evaluation/self-reflection condition, participants in the teacher feedback condition were in close proximity to the teacher as she verbally and textually provided feedback ensuring that participants directly received the information presented (Orsmond et al., 2005). It is unclear which aspect of teacher feedback compared to self-evaluation/self-reflection impacted student learning.

Future Research

Not only should future research investigate how best to present teacher feedback, study of a larger and more widespread sample of learners is needed to determine the generality of treatment effects. Furthermore, whether generalization of behavioral observation skills would occur in the classroom situation with actual rather than video-recorded children's behavior requires further investigation.

Conclusion

Given the increasing number of college students from diverse backgrounds, larger class size, greater need for advanced skills, and the fact that feedback is one of the most prevalent forms of formative assessment strategies provided by teachers to students (Ellis & Loughland, 2017), it is important to revisit and hone this useful instructional feature. This study suggests that teacher feedback is a more valuable tool to facilitate student learning compared to self-

evaluation/self-reflection. Further investigation is needed to clarify the relevant parameters for the most effective delivery of teacher feedback.

Compliance with Ethical Standards:

Ethical approval: All procedures performed in studies involving human participants were in accordance with the ethical standards of the institutional and/or national research committee and with the 1964 Helsinki declaration and its later amendments or comparable ethical standards. Informed consent: Informed consent was obtained from all individual participants included in the study.

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Table 1.
Participants' Demographic Characteristics by Condition

Aspect		Teacher Feedback	Self-evaluation
Discipline	Special Education	13 (30.2%)	15 (34.9%)
	Psychology	10 (23.3%)	4 (9.3%)
Gender	Female	16 (37.2%)	16 (37.2%)
	Male	8 (18.6%)	3 (7.0%)
Mean Age (SD)		25.63 (1.94)	22.79 (0.93)
Ethnicity	White Alone	19 (44.2%)	16 (37.2%)
	Black or African-American Alone	2 (4.7%)	0
	Latino/Hispanic	2 (4.7%)	2 (4.7%)
	Asian/ American Indian	2 (4.7%)	0
Year in College	Freshman	2 (4.7%)	0
	Sophomore	0	0
	Junior	7 (16.3%)	6 (14.0%)
	Senior	11 (25.6%)	11 (25.6%)
	Graduate Student	3 (7.0%)	2 (4.7%)
General Grade Point Average (GPA)	< 2.5	2 (4.7%)	1 (2.3%)
	2.6 – 3.0	4 (9.3%)	6 (14.0%)
	3.1 – 3.5	6 (14.0%)	6 (14.0%)
	3.6 – 4.0	9 (20.9%)	6 (14.0%)
N		24 (55.8%)	19 (44.2%)

Table 2. Assignment 1 and 2 Score Descriptive Statistics in the Self-reflection/Self-evaluation and Teacher conditions.

Assignment	Question	Condition	Mean	Standard Deviation	Standard Error
1 & 2	All	Self	5.91	2.09	0.48
		Teacher	7.4	1.3	0.27
1	Q1	Self	0.35	0.29	0.07
		Teacher	0.6	0.37	0.08
	Q6	Self	0.32	0.25	0.06
		Teacher	0.46	0.14	0.03
	Q8	Self	0.17	0.22	0.05
		Teacher	0.32	0.22	0.05
2	Total	Self	2.76	1.08	0.25
		Teacher	3.67	0.64	0.14
	Q2	Self	0.16	0.24	0.55
		Teacher	0.39	0.21	0.04
	Q6	Self	0.32	0.25	0.06
		Teacher	0.46	0.14	0.03
	Q8	Self	0.24	0.19	0.04
		Teacher	0.4	0.15	0.03

Figure 1. Each participant's total Assignment 1 and 2 score in the Self-reflection/Self-evaluation and Teacher conditions.
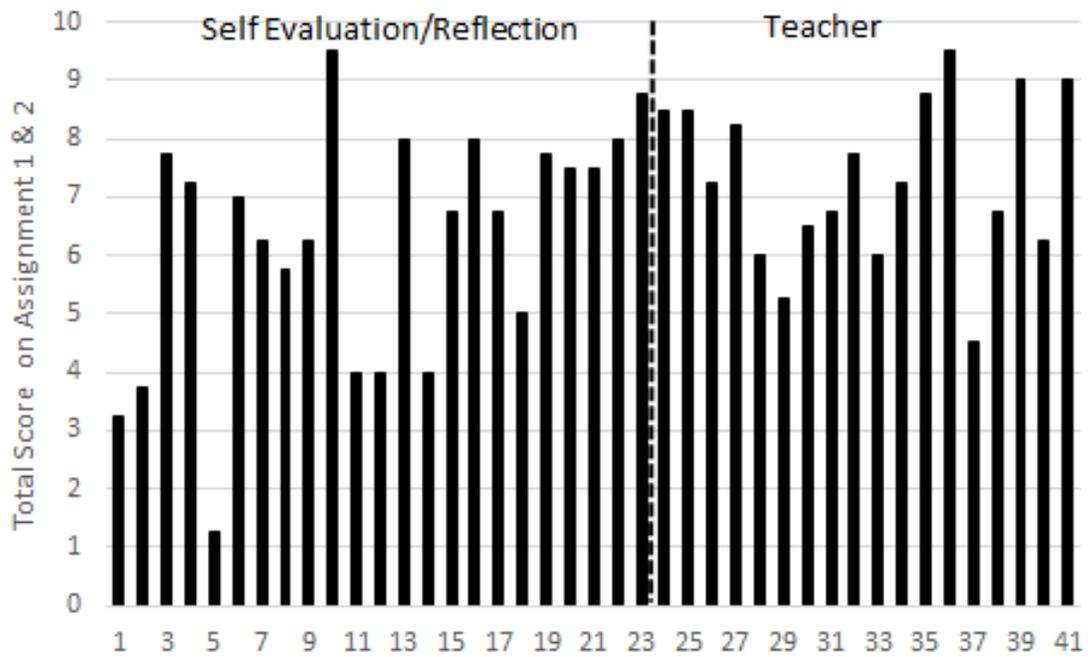
Figure 2. The percent of participants who rated *How helpful was the instructional feedback given during the behavioral observation class?*, along a 7-point rating scale, with 1 = Not at all helpful and 7 = Extremely helpful
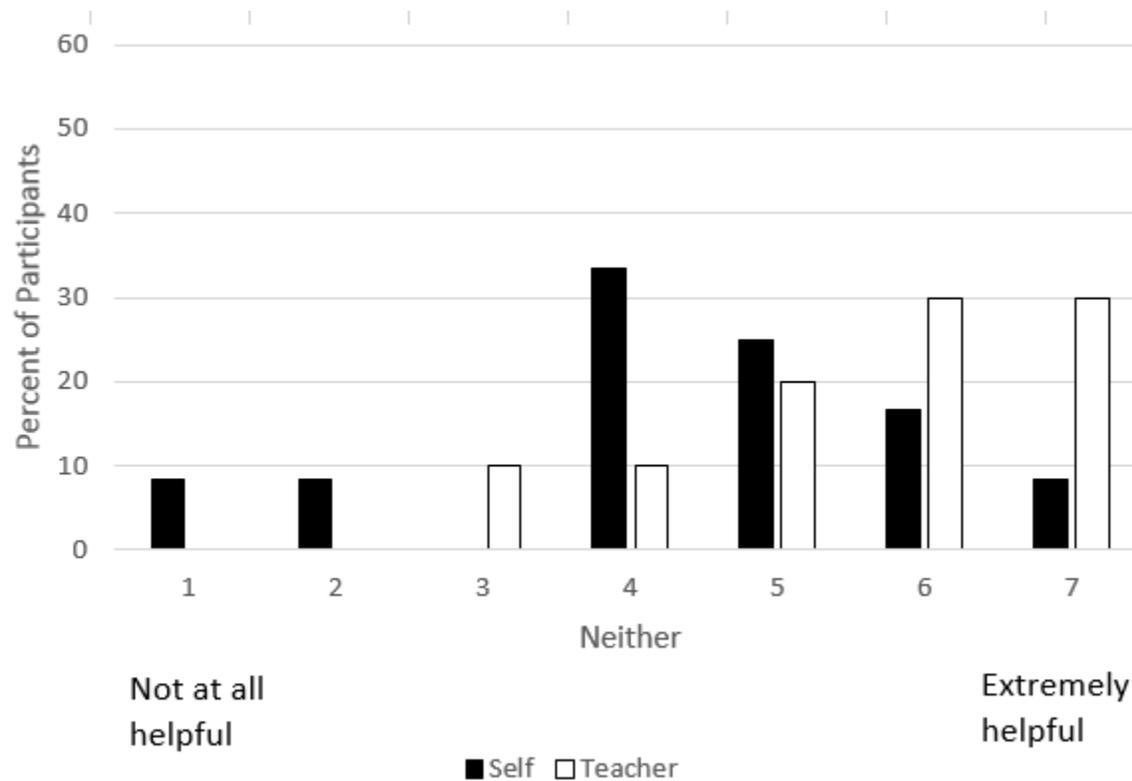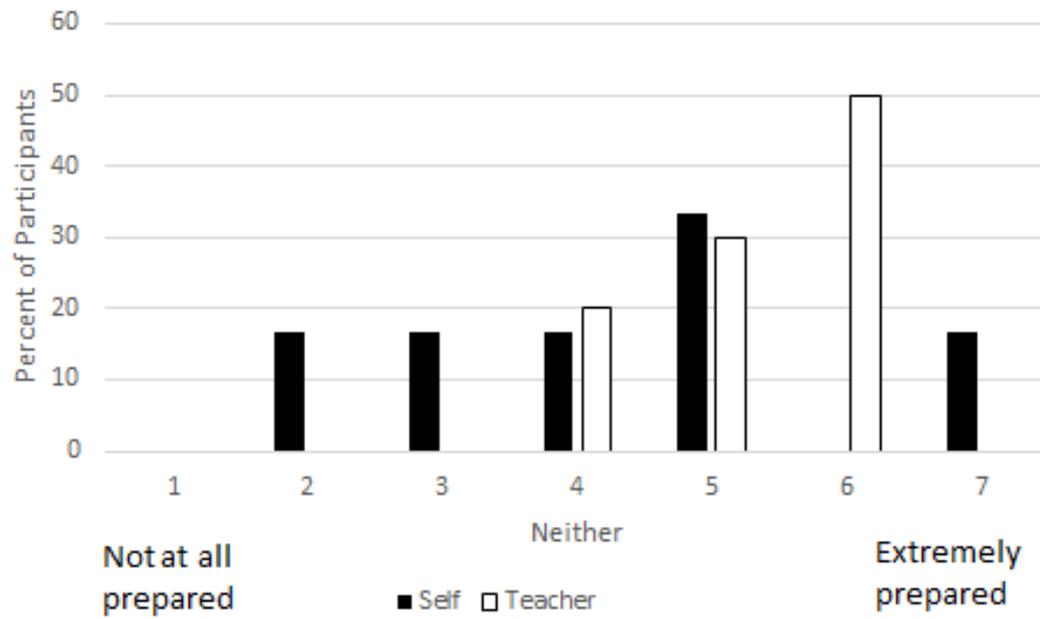
Figure 3. The percent of participants who, along a 7-point rating scale, rated *As a result of behavioral observation class, how prepared were you for the post assessment?*

Appendix A

Example of one of two answer keys used by the teacher to provide feedback in the teacher condition and given to the participant in the self-evaluation/self-reflection condition.

Video 1: Shane Answer Key

1. Construct a behavioral definition of Shane's non-compliance behavior. (1 point)
Shane's non-compliance behavior: any episode of not correctly responding to a teacher delivered request within 3 sec; not answering teacher question within 3 sec
One episode is noncompliance to each instruction or request by the teacher, even if it is presented repeatedly, counts as an occurrence.

2. Indicate the aspect of behavior to measure. (0.5 point)
Frequency of the non-compliance behavior: how many times Shane showed the non-compliance behavior described above.

3. Detail the measurement system you plan to use to record the behavior and state why you selected it. (0.5 point)
Continuous recording-Frequency recording method, since the behavior is discrete, at low rate, and within a short duration.

4. Observe and record the behavior independently. (1 point)
Shane showed 11 times of non-compliance behavior during the observation.

A	B	C	I	N	D
Teacher- "Take out your math books. Turn to page 47 please. Look at problem number 1"	Everyone takes out their math book except Shane. He continues to doodle on paper	**Teacher**- "Shane, would you take out your math book and turn to page 47?"	x		
Teacher- "Shane, would you take out your math book and turn to page 47?"	Shane slams math book on his test but does not open it. Continues doodling	**Teacher**- "Shane, would you work that problem for me?"	x		

Teacher- "Shane, would you work that problem for me?"	Shane ignores the teacher		x		
Teacher- "Nice work. Problem two. Shane?"	**Shane (in a very upset tone)**- "I don't even know what page we are on!"	**Teacher**- "We are on page 47. Why don't you have a seat in the back of the room?"	x		
Teacher- "We are on page 47. Why don't you have a seat in the back of the room?"	Shane loudly moves to the back of the room with just his doodle paper	**Teacher**- "With your math book."	x		
Teacher- "With your math book."	Shane loudly gets his math book and slams it on the desk		x		
Teacher- "Who would like to work problem two?"	Girl volunteers and goes to the board. Shane watches			x	
Teacher- "Is that correct, Shane?"	Shane immediately puts his head down and ignores the question	**Teacher**- "Shane, is that correct? HEY, we are not going to go on until you answer me! Is it correct?"	x		
Teacher- "Shane, is that correct? HEY, we are not going to go on until you answer me! Is it correct?"	Shane ignores him.	Teacher takes Shane's pencil	x		

Teacher takes Shane's pencil	**Shane**- "I'm not playing your stupid game!" Shane gets up and knocks the desk over	**Teacher**- "Excuse me! I need you to have a seat!" Teacher grabs Shane's arm.	x		
Teacher- "Excuse me! I need you to have a seat!" Teacher grabs Shane's arm.	Shane pulls away and goes towards the door		x		
Teacher- "SHANE! Don't walk away from me! Shane!"	Shane leaves		x		

5. Calculate an appropriate Interobserver Reliability (IOR) score. (0.5 point)
IOR=smaller number/larger number X 100
10/11 X 100 = 90.91%

6. Evaluate the adequacy of the IOR score based on your data. (0.5 point)
If the IOR >/= 80%, it is acceptable.

7. If the IOR score is inadequate then state why and redo. (0.5 point)
Poor definition; poor training, motivation; observer drift

8. State why Shane's non-compliance behavior is occurring and explain why you think so. (0.5 point)
Negative reinforcement or escape conditioning, since tasks are removed following demands
Also accept positive reinforcement if recognition of how the teacher provided immediate
reaction to his non-compliance.

Appendix B

Self-reflection Questions

Please review the answer keys, summarize your performance in a deliberate and thoughtful manner, and answer the following questions to self-reflect your performance in order to guide your future learning. Areas for future improvement need to be considered.

1. Based on the results of the assignment, what did you do well?

2. What skills do you still need to develop?

3. What have you learned during the process of this assignment which may contribute to your professional growth?

4. Based on what you know and can do, how will you apply this self-reflection to guide your improvement in the specific area(s)?