

EFFECTS OF A MOTIVATIONAL INTERVENTION ON PRE-SERVICE TEACHERS'  
PROVISION OF FEEDBACK ON STUDENT WORK

by

Rachel Hintermeister

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Approved by:

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Lindsay Masland, PhD, Thesis Director

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Sarah Donovan, MSW, Second Reader

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Andrew Smith, PhD, Departmental Honors Director

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### Abstract

Research indicates that teacher feedback is one of the most important influences on student learning (Hattie, 2008). In contrast to feedback that focuses on the processes or productive effort utilized by students when completing an academic task, feedback that pertains to students' ability or to the accuracy of the work has been shown to be less effective and has led to less persistence and goal-setting in future academic assignments (Hattie & Timperley, 2007). If teachers are made aware of the effects of the feedback that they provide and if they are given opportunities to enhance their provision of feedback, students--especially at-risk students who could benefit most from supportive classrooms--could see improvements in their educational experience. In this study, researchers asked pre-service teachers to complete an intervention activity focused on the different types of feedback and their motivational attributes. Participants gave written feedback on an assignment to serve as both a pre-test and post-test, with researchers analyzing the quantity and quality of feedback provided. Results indicated that pre-service teachers in the intervention group provided more effective process and self-regulation-focused feedback when compared to those in the active control group, who gave more self-focused and positive, yet unconstructive feedback at post-test. The results provide evidence of the benefits of an intervention with pre-service teachers, which could have more sustainable effects on providing meaningful feedback on future student work.

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Effects of a Motivational Intervention  
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Given the pivotal role teachers play in child development, educational researchers have long been interested in studying the nature of this process. One way teachers can shape their students is through feedback. Productive feedback encourages affective processes such as encouragement and motivation to achieve (Hattie & Timperley, 2007). Extensive research has been conducted on current teachers' provision of feedback (Hattie & Timperley, 2007), but limited research has examined the feedback provision skills of those yet to enter the teaching field. It is important to study possible early intervention strategies that could be utilized with education students to enhance the quality of their understanding of feedback as it relates to student motivation and mindset.

**At-Risk Students**

Students with risk factors such as low socioeconomic status, growing up in a home where English is not spoken as a first language, and having minority status (Finn & Rock, 1997) would especially benefit from a supportive classroom and effective feedback. At an early age, small changes in achievement have a great role in later outcomes. These changes are impacted by the atmosphere of the classroom and the support the students receive from the teacher, administrators, and fellow students. For example, Hamre and Pianta (2005) examined the effects of classroom support on children who were at-risk for academic failure. Risk factors analyzed include functional risk factors such as sustained attention, externalizing behaviors, social skills and academic competence, and demographic risk factors such as maternal education level. Emotional support provided the strongest effect for the children with high functional risk for

classroom achievement. Students with demographic risk factors who were placed in a high-to-moderate instructionally supportive classroom showed similar achievement levels as their peers without that risk factor. However, it is extremely difficult, if not impossible, to control for every relevant variable for all children in all levels of education. There is so much variation in each classroom that even if a child shows improvement in one year, exposure to a less supportive classroom the following year would make the positive effects short-lived, especially considering students with demographic risk factors are more likely to be placed in less supportive classrooms in general.

### **Student-Teacher Relationships**

An important aspect of a student's educational experience is the relationship he or she holds with his or her teacher. Teachers who demonstrate positive goal orientation tend to have strong influences on their students' perceptions of learning and achievement motivation (Ames, 1992). Ames also notes that students who demonstrate low confidence and are met with ineffective feedback tend to develop maladaptive problem solving strategies and a sense of learned helplessness (1992). The relationship between a teacher and student is formed through a number of aspects of the learning experience, including teacher warmth and personality, teaching style, and the ways in which feedback is given and received. Skipper and Douglas (2015) discussed the importance of a strong student-teacher relationship, but noted that many interventions currently in place focus mainly on the difficult relationship between teachers and 'problem' students, and often involve additional time outside of the class to focus on this individual relationship, which is unrealistic for most teachers. Ideally, intervention strategies that require less time and easier to implement could produce similar results.

One of the main daily interactions between teachers and students is teacher feedback, which Hattie and Timperley (2007) define as “information given by an agent in regards to one’s performance or understanding” (p. 81). Researchers believe that if teachers provide feedback that is encouraging of setting difficult but achievable goals and working towards them, students will become more growth-oriented and hopefully that relationship will strengthen (Skipper & Douglas, 2015). Dweck (1999) found that feedback is typically given one of two ways. With person-focused feedback, the teacher evaluates characteristics of the student, such as when commenting, “You are good at Math.” In contrast, process-focused feedback reflects on a student’s productive effort (e.g., “Your hard work is evident--I can tell you double-checked each problem”). It has been noted that receiving process feedback instead of person feedback yields more effort in improving future work and more positive views of school in general (Dweck, 1999). To test this finding, Skipper and Douglas (2015) asked participants to read a scenario in which they wrote a story for a fictional teacher, “Ms. Billington,” and they received negative feedback from this fictional teacher in one of three ways: person, process, or no feedback. The person feedback was a statement like “You are not so good at maths,” while the process feedback was a statement like “You did not work really hard at this” (Skipper & Douglas, 2015). The students then read another scenario in which they received high grades on the next writing assignment with no additional feedback. The students were then asked on a five point Likert scale how much they liked Ms. Billington and how much they think Ms. Billington likes them. Results showed that when students succeeded on the task, they liked their teacher regardless of the type of feedback they received. When students failed at the task and received person feedback, they were more likely to feel personally criticized and less likely to seek help or work

towards fixing mistakes than if they were to receive process feedback. Additionally, students who were not successful in the writing task rated liking their teacher less. Even after success on a second attempt at the assignment, students who had received person feedback in the first attempt had a more negative opinion of the teacher. It is important for teachers to note that their feedback has lasting effects on their students and could result in a strained student-teacher relationship if they give feedback based primarily in ability rather than effort.

Additionally, it has been found that students praised for ability rather than effort have less task persistence, less task enjoyment, and worse task performance after failure (Mueller & Dweck, 1998). Students who received ability-focused praise assess their own ability as a fixed trait with no room for improvement, while those who are praised for effort believed that ability can improve with time and hard work. These findings are quite notable in considering methods of praise given by teachers and their implications in the assessment of future student work.

### **Growth Mindset**

Growth mindset, a concept introduced by Dweck (2006), is the belief that abilities can be developed through hard work. Compared to fixed mindset, in which an individual believes he or she is born with a certain set of abilities, growth mindset can be used to motivate students to work toward difficult yet achievable goals. Those with a growth mindset practice skills such as resilience to setbacks, task persistence, and tend to spend more time and effort working towards long-term goals (Dweck, Walton, & Cohen, 2014). This concept has been applied to a number of settings, including classrooms, offices, the arts, and sports, and has been researched in recent years on its connection to outcomes in adulthood.

The development of mindset begins from a young age, as research has demonstrated. Schroder, Fisher, Lin, Lo, Danovitch, and Moser (2017) analyzed mindset in younger school-aged children between five and eight years old to see if there was a connection between growth mindset in a child's early years and ease of transitions into further education in terms of resilience to setbacks. The participants answered eight questions regarding mindset on a five point Likert scale, and then were seated in front of a computer with electrodes applied to complete an error-monitoring task. Regarding mindset, results found that older children had higher growth mindset than younger students, probably due to the fact that they would have had to show more resilience to more failure in an academic setting. Growth-minded children performed better after mistakes were made. These results were consistent with previous research (Dweck, 2006; Dweck et al., 2014), indicating that growth mindset is important in overcoming obstacles, but not necessarily a predictor of academic success. The results are helpful for parents and teachers to inform the way in which children are given praise or comfort when mistakes are made. Focusing on effort rather than ability is essential in giving feedback to students.

For marginalized students, mindset can have major implications in overcoming systemic setbacks outside of student control. When implemented correctly, academic mindsets can make the difference to overcome gender, race, economic, and other societal disparities (Rattan, Savani, Chugh, & Dweck, 2015). Belief that one can overcome difficulty through effort and hard work could mean the difference between academic success and school failure. Resilience in the face of setbacks could prompt a student to continue working towards a higher education even if more desirable resources like smaller class sizes are not attainable. Additionally, classrooms that foster a growth mindset often spark a sense of belonging, in that students are more likely to feel

that they have a place in the class and can succeed even if challenges arise (Dweck et al., 2014).

This sense of belonging could motivate the student to engage more during class, collaborate with other students, and understand the purpose of their education.

Overall, it has been found that mindset is not necessarily a predictor of academic success, but rather an important indicator of personal goal setting and goal reaching. Those with higher growth mindsets will have an easier time coping after setbacks and are more willing to give difficult tasks more time and effort than those showing a fixed mindset.

### **Feedback**

Feedback plays a crucial role in the dynamics of student-teacher relationships and whether a student develops effective motivation and mindset. As such, it is important for researchers to understand the types of feedback that teachers typically provide on student work. For example, in a study by Hyland and Hyland (2001), two teachers were tasked with providing written feedback on an assignment completed by students learning English as a second language (ESL). An assessment of the provided feedback indicated that teachers often used praise and/or suggestion to balance the criticism they provided, or used softer word choices like hedges (e.g. using phrases like “perhaps,” “sort of,” and “probably,” which make the feedback seem more like a suggestion than instruction), question formats, or personal attribution in an attempt to make the criticism less harsh. For example, a teacher made the following suggestion on a student’s work: “Some of the material seemed a little long-winded and I wonder if it could have been compressed a little.” (Hyland & Hyland, 2001, p. 197). This wording of this statement was used to soften the criticism, rather than simply providing feedback for what should be changed. The study also found that teachers were more likely to give criticism to grammatical or structural

issues, while praise and suggestions were more likely for issues of content. The researchers found that there was some misunderstanding and misinterpretations that the students experienced when hedges were used to address issues such as plagiarism, as the teachers were unwilling to directly address the problem (Hyland & Hyland, 2001). Feedback is essential for students to grow as learners, but there is also great harm that could come from insufficient feedback.

Similar to person and process feedback described by Dweck (1999), Hattie and Timperley discuss a number of types and effects of teacher feedback, and in their 2007 paper, they developed a framework for categorizing and evaluating feedback quality. Feedback must address information that fills the gap between what is understood and what is yet to be understood. This feedback must provide something that the learner knows, can assimilate or accommodate to the current knowledge base, and provide something for the learner to improve upon. Feedback is most powerful when it brings the learner's attention to a faulty interpretation rather than a total misunderstanding. In a meta-analysis of feedback strategies, results showed that the most effective were strategies that involved feedback about a task and how to do it more effectively, while the least effective strategies were praise, rewards, and punishments (Hattie & Timperley, 2007). The article also analyzed four levels of feedback: about the task and how well the task is being performed (FT) (e.g. "The instructions asked for 15 sentences, but you only wrote 12."), about the information processing of the task (FP) (e.g. "Next time, using an outline before writing the story could help your ideas stay more organized."), about self-regulation and the way students monitor their behaviors (FR) (e.g. "Can you think of another strategy to use to stay on the right track next time?), and about the self as a person (FS) (e.g. "Good effort!"). FS, comparable to Dweck's person feedback (1999), was found to be the least effective, while FR

and FP, akin to process feedback (Dweck, 1999) were powerful for mastery of tasks and deep processing. FT was powerful when the task involves improving strategy processing or self-regulation (Hattie & Timperley, 2007).

### **Teacher Intervention**

Because feedback is so critical to student development, researchers have taken an interest in developing interventions that enhance feedback quality. For example, Brouwer, Besselink, and Oosterheert (2017) developed a video intervention strategy in an attempt to improve the instructional competence of both pre-service and in-service teachers. In this study, teachers were filmed while giving lessons and were then analyzed, specifically focusing on the ways in which they taught a lesson and gave feedback to writing assignments. There was a specific set of viewing points regarding teaching behaviors and student reactions that were taken into account. In-service teachers were asked to give writing instruction and writing feedback to students. The results showed significant, positive intervention outcomes, in that the teachers in the experimental groups displayed the specific viewing point behaviors to a greater extent than the control groups. Particularly in the writing feedback intervention, the experimental group asked more questions prompting the writing process than their control counterparts. The results of this study indicate that the quality of teacher feedback is a malleable target worthy of intervention (Brouwer et al. 2017).

Another intervention conducted with teachers examined how teacher feedback could be improved during active learning (Van den Bergh, Ros, and Beijaard, 2014). This was examined with a Professional Development Program (PDP) in which weekly activities were held over the course of four months and included information meetings, video interaction training meetings,

videotaping in the classroom, and selecting parts of the videos to discuss with the researchers and fellow teachers. The aim was to focus participants' beliefs on the roles of feedback, goal-directedness, the nature of feedback, and the ways in which feedback could be given (Van den Bergh, Ros, & Beijaard, 2014). Results indicated that more focus was paid to student metacognition and social learning after experiencing the intervention. Teachers also tended to set clearer learning goals to their students after PDP. The results of this study show that when focused on the importance of feedback, teachers tend to produce more effective feedback and to believe that their feedback should be more carefully delivered.

### **The Current Study**

If feedback is important because it leads to improved mindset and enhanced academics, and if this academic improvement is particularly necessary for at-risk kids, then researchers should examine ways to improve the quality of feedback that teachers provide. The earlier we can enhance teacher provision of feedback, the better, so interventions that target the feedback provision skills of pre-service teachers might be particularly impactful. As such, it was hypothesized that after receiving a motivational intervention activity focused on improved feedback, pre-service teachers would provide more effective and growth-oriented feedback on a hypothetical student writing sample. The current study also hopes to explore possible ways of improving the education of future teachers and to provide more effective opportunities to enhance pre-service teachers' understanding of feedback as it relates to motivation and mindset.

## **Method**

### **Participants**

Eighty-five undergraduate students from an educational psychology course participated in this study. Students enrolled in this course were Education majors, and the sample was 2% freshman, 31% sophomore, 60% junior, and 7% senior class. One section of the course served as the experimental group and was given the intervention activity, while the other section served as the active control group and received an activity that was traditionally assigned during the course.

### **Procedure**

All participants were given the task of grading a writing assignment by a fictional student in a fourth grade class (see Appendix A). Students were instructed to pretend that one of their future students had responded to the writing prompt, and they were asked to assess the student's work using a rubric. The rubric was adapted from a Writing Workshop rubric for assessing third through fifth grade reading. This grading procedure asked the participants to rate the writing sample as "Weak," "Average," or "Strong" in seven areas. The participant was then given the opportunity to provide additional written feedback as well as to edit the writing sample, if they so desired. The professor emphasized that any feedback provided to the hypothetical student should be "motivating." The term "motivating" was not defined for the participants. This activity served as a pre-test.

Then, all students enrolled in the educational psychology course received a 40-minute lecture on enhancing motivation in K-12 students. Powerpoint slides were projected at the front of the room and covered topics included the Expectancy x Value Theory of Motivation (Wingfield & Eccles, 2000), mindset (Dweck, 2006), and locus of control (Phares, 1976). For each motivation concept introduced, a definition and real-world example was provided. Tips for

how to enhance the various facets of student motivation were also shared. For example, to enhance growth mindset, the pre-service teachers were told that they should draw their students' attention to the effects of productive classroom effort and that they should avoid statements such as, "You're so smart!"

Participants in the experimental group received an extra slide explaining the different types of feedback as described by Hattie and Timperley (2007). This slide came directly after a slide presented to both experimental and control participants that explained the importance of a growth mindset, and the feedback slide was intended to extend the growth mindset messaging by providing students with a specific method of enhancing mindset in their own students. The experimental condition slide explained the four feedback types: feedback about the self (FS), feedback about the task (FT), feedback about the processing of the task (FP), and feedback about self-regulation (FR). The instructor discussed that, as Hattie and Timperley explained, FP and FR are typically more effective in fostering student learning than FS and FT, though the latter are typically used more frequently by teachers (Hattie & Timperley, 2007). At the start of the next class period, the control group was given 15 minutes to work in pairs to complete an activity that asked them to match vocabulary words from the previous lecture to real-world exemplars of the terms. For example, the sentence, "Tommy thinks that his math teacher writes impossible tests, so there's no point in studying for them" was matched to the term "external locus of control." In contrast, the experimental group was provided a list of sixteen examples of common teacher feedback and were asked to determine to which type of feedback each corresponded. Then, the participants in the experimental group chose five of the examples that were FT or FS and were

asked to re-write them contain FR or FP messaging (see Appendix B). The experimental activity was also completed in pairs over a 15-minute period.

Participants were then asked to give feedback to the same writing assignment they had previously graded. The hypothesis was that feedback would improve for the intervention group and would include more examples of FR and FP rather than FT and FS. The second grading activity served as a post-test.

## Results

### Data Preparation

Participant responses were coded by researchers based on Hattie and Timperley's descriptions of the different types of feedback as described in *The Power of Feedback* (2007). Three coders were involved in the data preparation. Inter-rater reliability was calculated and achieved to a satisfactory level such that multiple coders were involved and produced homogeneous results in all of the measures. Consensus was reached by first comparing the same small set of participant responses. For the data that were not scored the same way during the first round, coders discussed and came to an agreement on how to score the data. After several rounds using the small sample, an acceptable level of consensus was reached, at least 75% agreement. Once consensus was reached, the complete set of data was separated amongst the coders to score.

Both in the pre-test and post-test, each statement provided in the additional written feedback section of the fictional assignment was examined and the type of feedback was determined. The number of examples of the different types of feedback were noted, though feedback about self-regulation (FR) and feedback about the processing of the task (FP) were

combined into a category of “feedback that feeds forward.” During coding, it was difficult to achieve consensus among raters on how to score these two categories separately. Because both of these feedback types are shown to improve learning and because both seem to feed forward, researchers felt justified in combining them. The number of positive and negative statements were noted as well. Positive statements were considered to be complementary of the student’s work, such as “Nice job using descriptive adjectives!” Negative statements were more constructive in nature, such as “Spelling and grammar need some improvement” or “Try to use different transition words.” Coders also added the scores on the grading rubric provided to the participants, with ‘Strong’ scoring three points, ‘Average’ earning two points, and ‘Weak’ receiving one point.

## **Results**

Of the 85 pre-service teachers in the study, 71 participants completed both the pre- and post-tests, with 33 in the control condition and 38 in the intervention condition. To examine the effects of the intervention on the experimental group, a repeated measures ANOVA was conducted.

When looking at how participants scored on the grading rubric with “Strong” equating to 3 points, “Average” equating to 2 points, and “Weak” equating to 1 point, both groups became slightly more strict from the pre-test (sample mean=16.56) to post-test (sample mean=16.13), although the intervention group had a stronger effect. The control group became slightly more stringent in the rubric grading from the pre-test (mean=16.85) to post-test (mean=16.71). Although the intervention group became descriptively more rigorous in their rubric grading over

time (pre-test mean=16.32; post-test mean=15.63), this effect was not statistically significant ( $F(1,69) = .985$ , partial eta squared = .014) (see Graph 1).

Results indicated that the control group increased the amount of positive feedback from pre-test (mean=2.12) to post-test (mean=2.97) while the intervention group decreased the number of positive statements (pre-test mean=3.08; post-test mean=2.32). The effect of the intervention on the number of positive statements was statistically significant ( $F(1,69) = 23.086$ ,  $p < .001$ , partial eta squared = .251) (see Graph 2). The control group increased the number of negative statements from the pre-test (mean=1.70) to the post-test (mean=2.06), while the intervention group decreased the negative feedback (mean=1.97; mean=1.89), though this change was not statistically significant. Quantity of negative statements provided remained relatively stable across time and condition ( $F(1,69) = 1.831$ ,  $p = .180$ , partial eta squared = .026) (see Graph 3).

Those in the control group increased their use of feedback about the self from pre-test (mean=1.82) to post-test (mean=2.64), while those in the intervention group decreased over time (pre-test mean=2.71; post-test mean=1.84) ( $F(1,69) = 23.867$ ,  $p < .011$ , partial eta squared = .257) (see Graph 4). Also, the feedback intervention had a significant effect on task-related feedback for the intervention group which decreased the amount of task feedback from pre-test (mean=1.58) to post-test (mean=0.79). Participants in the control condition maintained their use of task feedback (pre-test mean=1.33) on the post-test (mean=1.21) ( $F(1,32) = .290$ ,  $p = .594$ , partial eta squared = .009), whereas students who received the feedback intervention significantly decreased the amount of task-focused feedback that they provided ( $F(1,69) = 3.448$ ,  $p = .068$ , partial eta squared = .048) (see Graph 5). Students in the control group provided

relatively stable levels of effective feedback from pre-test (mean=0.85) to post-test (mean=0.94), ( $F(1,32) = .267, p = .609$  partial eta squared = .008), whereas students in the feedback intervention increased their use of processing and/or self regulation feedback over time (pre-test mean=1.00; post-test mean=1.72), ( $F(1,69) = 4.600, p = .036$ , partial eta squared = .064) (see Graph 6).

## Discussion

### Summary of Findings

The purpose of the study was to determine if an intervention activity for pre-service teachers focusing on the importance of feedback would improve their giving of growth-oriented and effective feedback from pre- to post-test. The results support this hypothesis in that the intervention group provided more feedback that feeds forward, including feedback about self-regulation and feedback about the processing of the task, rather than self or task feedback, which has shown to be less effective (Hattie & Timperley, 2007).

Additionally, the number of positive statements decreased significantly from pre- to post-test for the intervention group yet increased for the control group. The intervention activity itself focused on making feedback more constructive and effective in nature, rather than more positive, so these results also support the hypothesis. According to Hyland and Hyland (2001), positive feedback is most often given in the form of hedges or blanket statements, but is insufficient in regards to actual student learning and improvement. It is interesting to note that the control group increased their use of positive statements, even though nothing in the lecture or control activity explicitly mentioned that more feedback or more positive feedback led to increased learning. The lecture did discuss the importance of enhancing student self-efficacy, as

well as discussed research indicating that students are more motivated by teachers that they perceive to be supportive, and by activities that they perceive to be fun. It is possible that students interpreted the lecture on Expectancy x Value Theory, in which pre-service teachers are taught that students are motivated when they both expect to succeed and value success, as meaning that more positive feedback is the way to be more motivating, which is actually the opposite of what research says (Wingfield & Eccles, 2000).

Conversely, though not statistically significant, the scores on the grading rubric lowered from pre- to post-test for both the control and intervention group, with the intervention group having a stronger effect. It was not hypothesized that this change would occur. However, it could be possible that participants in the feedback intervention became more aware of the importance of *constructive* feedback and that the scores on the grading rubric reflected that.

### **General Discussion**

The results of this study are consistent with the previous literature and are promising in the impact of an intervention on pre-service teachers in improving their feedback on their future students' work. It has been noted in previous research that receiving process feedback instead of person feedback yields more effort in improving future work and more positive views of school in general (Skipper & Douglas, 2015). When applied in the context of this study, examples of FP and FR used rather than FT and FS could lead to more positive and growth-oriented thinking in the classroom. When students are guided toward thinking about how they produced a response rather than whether or not the response was correct, they are more likely to generalize the feedback to other assignments.

In the classroom, a variety of risk factors are present for all students, and those with the most severe are perhaps in most need of appropriate and effective feedback. Hamre and Pianta (2005) found that more supportive classroom instruction led to better academic success for the high-risk students. While demographic and risk factor variables were not tested in this study, it would be interesting to examine whether at-risk students of teachers who receive this feedback intervention perceive classroom support from their teacher to be more positive. In the previous research, the intervention effects of the results were short-lived (Van den Bergh, Ros & Beijaard, 2014), but if an intervention activity took place during teacher education, perhaps the effects would be more sustainable and effective for at-risk students.

Previous research has found positive effects for teacher interventions. In a study conducted by Brouwer, Besselink, and Oosterheert (2017), in-service teachers were asked to give writing instruction and writing feedback to students. The results showed significant, positive intervention outcomes, in that the experimental group asked more questions concerning the writing process than their control counterparts. If applied at an earlier point in teaching careers and utilized to a greater extent throughout training, perhaps teachers would develop these skills more thoroughly and successfully.

The language used in the classroom and in written feedback is critical to the development of student learning and attitudes about learning. A supportive classroom with effective forms of feedback is especially important when considering students at-risk of school failure. Students receiving process feedback instead of person feedback tend to display more effort in improving future work and more positive views of school in general (Dweck, 1999). While growth mindset may not necessarily attribute to higher test scores, it has been shown that it correlates with

stronger persistence and resilience to setbacks (Schroder et al., 2017). This is perhaps more valuable in education than the actual grades students receive. Having a mindset that focuses on setting difficult yet achievable goals and working towards them can have profound impacts throughout adult life. The inspiration of a teacher to develop that mindset through feedback would be critical in this process.

This study also had notable findings in regards to teaching pre-service teachers. It was surprising that the participants in the control conditions incorporated more positive statements and more self statements at post-test. This is not what is desired, but this is apparently what the students got out of the motivation lecture delivered to many previous cohorts. This shows that perhaps simply lecturing about something, even when the lecture is structured according to best practices, is not as good as active practice in the exact skill one hopes pre-service teachers will use in the future (Prince, 2004). Instructors of pre-service teachers should continue to develop their own practice by collecting data to see if their methods are having the desired effects, and they should be willing to change their methods when they realize that the results are counter to what they anticipated.

### **Future Directions and Limitations**

Several limitations of this study should be noted. First, the sample was relatively small and homogeneous in nature. All participants were students enrolled in the same course at the same university and from relatively similar backgrounds. It also must be noted that the two classes were not equivalent on some of the variables at pre-test. There was no way to equate the variables because one entire class needed to receive the intervention. For example, the intervention class seemed to give more feedback and were also more positive in their feedback at

pre-test. Was the control group abnormally low in their level of positive feedback provision, and the lecture and control activity helped bring them up to normative levels of positive feedback, or would all cohorts who get the control treatment, regardless of their initial levels of feedback, show the positive feedback increase? Although the population from which the samples were drawn was relatively homogeneous, there were significant differences between classes at pre-test. Future research should attempt to apply this or a similar intervention to more diverse samples to possibly achieve broader, more generalizable results.

Second, further research would need to be conducted to determine whether the intervention activity could be changed or improved to find more practically significant results. Although statistically significant, much of the difference could be explained by the fact that teachers said one more piece of feedback on post-test than on pre-test. The question is whether one additional piece of constructive feedback would be enough to result in meaningful learning for a student. This question would need to be tested empirically.

Third, students were asked to complete the post-test directly after engaging in the intervention. It is unknown whether the effects of the intervention would persist into the future and whether or not real students would actually be affected by this. A longitudinal follow-up would be necessary to make such conclusions.

Overall, the results of this study are promising regarding the effects of an intervention on pre-service teachers' provision of feedback. The experimental group produced desirable effects in their use of more effective feedback, and while further research would need to be done in order to conclude if the intervention would produce long-term effects, the results are encouraging. Specifically when considering at-risk students, a supportive classroom and

effective feedback is especially beneficial in overcoming systemic barriers to achieving an adequate education. Feedback is a critical component of daily interactions between teachers and students, and improving feedback could have a lasting impact on a student's education experience as a whole. Finding methods of improving teacher feedback at earlier stages could have even more sustainable and productive impacts for both teachers and students.

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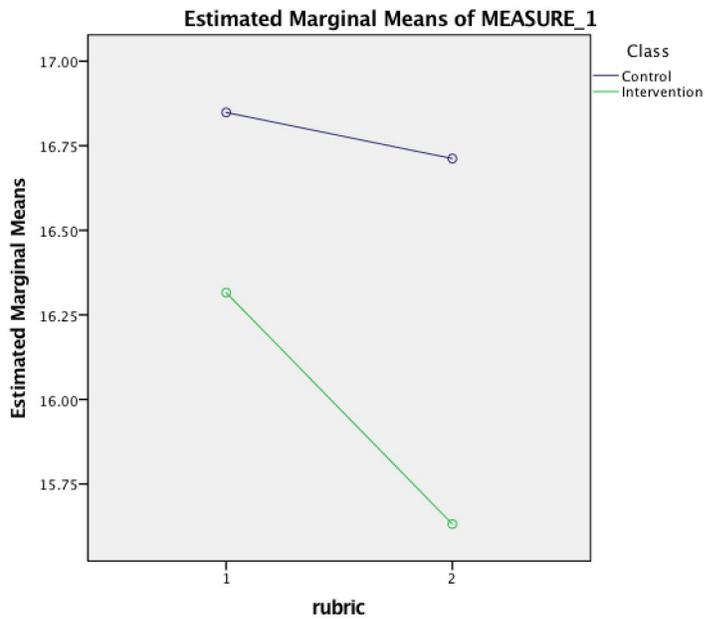
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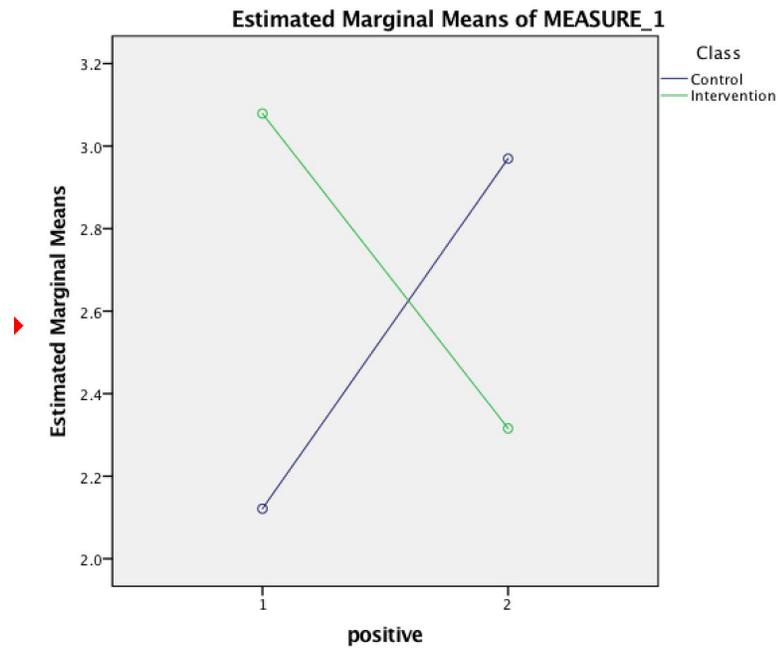
Graph 1

*Results for the scores on the grading rubric for pre- and post-tests.*



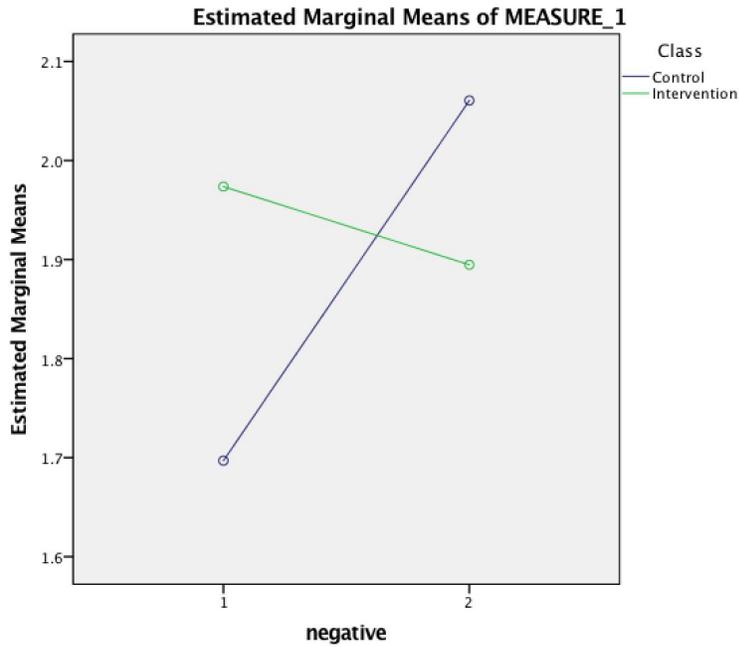
Graph 2

*Results of the number of positive statements on pre- and post-tests.*



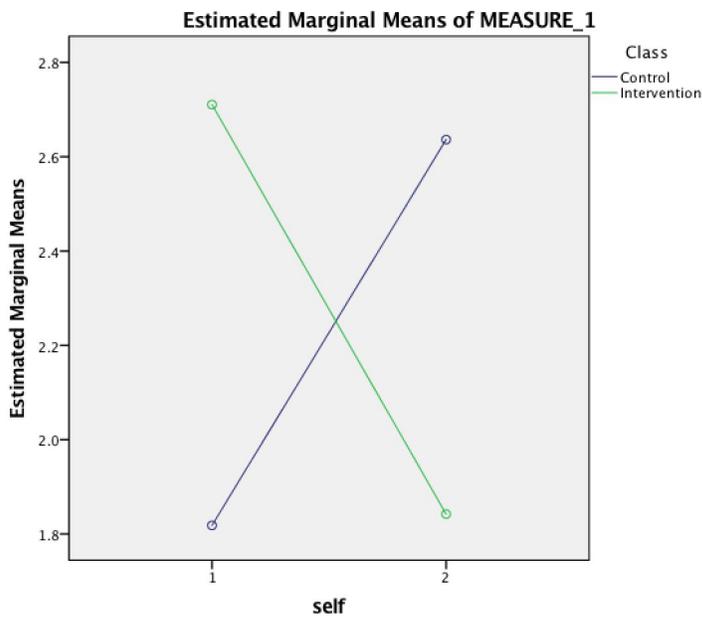
Graph 3

*Results for the number of negative statements on pre- and post-tests.*



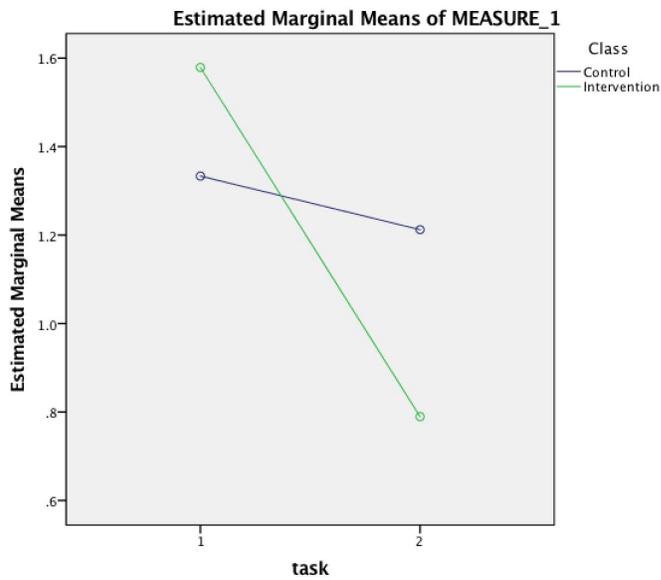
Graph 4

*Results for the number self-feedback statements made on pre- and post-tests.*



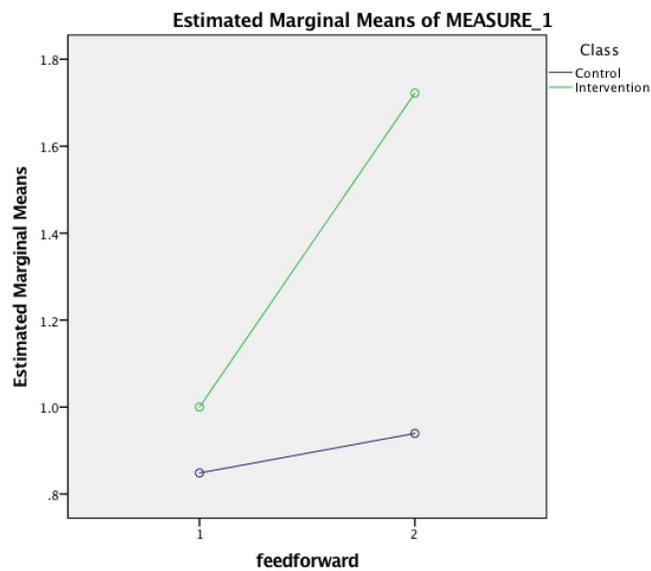
Graph 5

*Results for the number of task-related feedback made on pre- and post-tests.*



Graph 6

*Results for the number of feedback about self-regulation and feedback about the processing of the task on pre- and post-tests.*





Name: \_\_\_\_\_

**Grading Activity**

Pretend that a student submits the story on the back of this page as an assignment in your 4th grade class. Please assess the student's work using the rubric below. You may write on the student's work, as well. Make sure to give feedback that will motivate this student when he sits down to write his next story.

<b><i>Ideas and Content</i></b>	Weak	Average	Strong
1. Focuses on one experience and why it is important to the writer			
2. Grabs the reader's attention at the beginning			
3. Provides background information as needed			
4. Makes the order of events clear			
5. Has a strong conclusion that summarizes the importance of the incident			
<b><i>Structure and Form</i></b>			
6. Uses transitions to make the order of events clear			
7. Uses a variety of sentence structures			

***Additional feedback for the student:***


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*Appendix B*

Intervention activity completed by the experimental group.

### Examples of Teacher Feedback

Below is a list of examples of feedback commonly given by a teacher. Match those examples to the type of feedback you believe best corresponds with the example.

The feedback types are:

- **FS:** feedback about the self → *focuses on the student, not the task*
- **FT:** feedback about the task → *focuses on right/wrong, sufficient/insufficient*
- **FP:** feedback about the processing of the task → *focuses on the strategies the student used*
- **FR:** feedback about self-regulation → *focuses on how the student is self-evaluating*

Feedback Example	Feedback Type
1. What are your next steps in working on your paper?	
2. You have used complex sentences in your writing but many of them are not punctuated correctly.	
3. Can you work out where you might have gone wrong and try another strategy?	
4. Great effort!	
5. Did you make an outline before turning in your work?	
6. I can tell that you've spent a lot of time on this. Your hard work is evident.	
7. How can you elaborate on your response to number 4?	
8. I like that you have used a lot of adjectives. This shows that you know how to make your stories engaging for your reader.	
9. Your use of perspective was successful in this painting. What other techniques do artists use to hook their audience? How can you use them in your next piece?	
10. To make this better, you could have brainstormed your ideas before you started working.	
11. What other information is needed to meet the criteria on the rubric?	
12. Good job--I'm so happy to have you in my class!	
13. This is an interesting solution to the engineering problem. How do you <i>know</i> that it will work? How confident are you and why?	

14. You're a good student.	
15. You have aligned your feet well. How else can you improve your stance?	
16. The Magna Carta was signed in 1215, not 1210.	

Next, choose 5 of the examples of feedback about the self (FS) or feedback about the task (FT) listed on page one and change them to feedback about the process (FP) or feedback about self-regulation (FR).

1. \_\_\_\_\_ ----->  
\_\_\_\_\_  
\_\_\_\_\_
2. \_\_\_\_\_ ----->  
\_\_\_\_\_  
\_\_\_\_\_
3. \_\_\_\_\_ ----->  
\_\_\_\_\_  
\_\_\_\_\_
4. \_\_\_\_\_ ----->  
\_\_\_\_\_  
\_\_\_\_\_
5. \_\_\_\_\_ ----->  
\_\_\_\_\_  
\_\_\_\_\_