



# The Educational Impact of Recorded Audio Feedback Using the Mote App

John M. Weathers, Ph.D.

“

*There is no failure. Only feedback.*

— Robert Allen

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# Evidence-Based Research into Mote Usage Impact on Feedback

Feedback is central to the human project, hard-wired biologically and culturally. Progress and improvement depend upon it. So, it is logical that humans have been concerned with trying to understand how to maximize its effects. Extensive published research on the effects of feedback on performance goes so far back that in 1956, Ammons was able to write a review of the research literature that encompassed the 50 previous years. He concluded that “almost universally, where knowledge of performance is given to one group and knowledge is effectively withheld or reduced in the case of another group, the former group learns more rapidly, and reaches a higher level of proficiency” (as cited in Coe, 2002, p. 4).

**More recently, Coe (2002) argued that “there can be few statements in social science more likely to gain popular agreement than the claim that giving feedback can improve a person’s performance on a task...” (p. 4).**

Results from more recent research reviews and meta-analysis studies demonstrate a substantive positive effect for feedback on performance with effect sizes of at least .38, with some that have produced effect sizes of around .70. In the most widely cited and influential meta-analysis on the effects of feedback on performance, Kluger and DeNisi (1996) found an average effect size of .40 across 131 studies, which was even higher when certain criteria were met.

Feedback is pervasive in educational settings from report cards to middle school ostracism. The very nature of child rearing and socialization necessitates feedback. Nonetheless, some forms and methods of feedback to students are more effective than others and as in other fields, significant research has been conducted to understand these differences. The use of formative assessment has been celebrated as one of the most promising approaches to improving

student learning. At its core is feedback to students on a product for which there will be an additional opportunity to demonstrate proficiency in the knowledge or skill. Various studies and related research reviews have demonstrated some of the largest effect sizes of any practice on student achievement.

Black and Wiliam (1998) reviewed more than 250 studies of formative assessment and found that a student can gain half up to a full standard deviation when teachers use formative assessments, with low achievers making the largest growth. Meisels et al. (2003) reported gains of more than 1.5 standard deviations from their research on formative assessment, and Rodriguez (2004) found similar effects. Kulik et al.’s (1990) meta-analysis of an approach that mirrors formative assessment practices by mastery learning found a .52 effect size across all studies. In a meta-analysis of formative assessment, Fuchs and Fuchs (1986) found an average effect size of .70, which is almost twice the magnitude of other known effective interventions.

However, as Black and Wiliam (1998) found in their review, current formative assessment and feedback practices tend to be poor, often mismatching learning goals and assessment methods. Students themselves have a unique insider perspective and National Student Survey (NSS) results show that many are dissatisfied with the amount and quality of feedback they receive on their assignments (Black & Wiliam, 1998). Further, Black and Wiliam (1998) concluded that research on how to facilitate teachers’ use of formative assessment is limited. As Coe (2002) argued, “knowing under what conditions feedback can optimally enhance performance is far more valuable than simply aggregating results from a large number of different contexts and finding the total to be positive” (p. 17). One condition that holds considerable potential to improve outcomes for both students and teachers is the use of *recorded audio feedback*.

# Recorded Audio Feedback

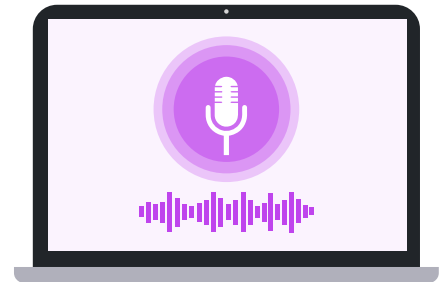
Recorded audio feedback (RAF) is formative or summative messages that are recorded and distributed by educators, or anyone interested in providing feedback, as digital audio files to individual or groups of learners in response to both on-going and submitted work (University of Jyväskylä, 2019).

Previous research has found that RAF has benefits for both the teacher providing the feedback and the students receiving it. Instructors in one study reported reduced workloads (with less cognitive load) enhanced participants' the ability to use more informal language, and they spent less time working to provide feedback (Heimbürger, 2018). A number of studies have found impacts on student learning (Merry & Orsmond, 2008; Gould & Day, 2012). Students appreciate and prefer it in many cases (e.g., Lefroy, 2019; Voelkel & Mello, 2014) and in at least one study, they reported feeling more valued by the professor and motivated to use the feedback (Ice et al., 2007).

However, it is too early to make general conclusions about RAF. There are mixed findings on all primary variables of interest. Research has captured both positive and negative teacher perceptions about RAF's usefulness and impact on their practice (e.g., Cavanaugh & Song, 2014). There are also mixed findings in terms of its impact on student learning with some studies reporting no statistically significant effects (Macgregor, Spiers, & Taylor, 2011; Voelkel & Mello, 2014). It is not clear whether audio feedback is efficient in terms of teachers' time. Some research has found that it takes less time to provide audio feedback as compared to written feedback (Lunt & Curran, 2010), whereas others found the opposite to be true (McFarlane & Wakeman, 2011).

Innovations in software have extended and improved the possible impact of RAF so it can be more easily created, embedded directly in electronic documents and products to address some of the concerns in previous research, which limited the facility and specificity of feedback. For instance, the use of a recording not directly connected to a document that must be sent via email may be more helpful and of higher quality than written comments. The new ability of apps to overcome this limitation shows great promise to increase the already promising research on RAF. Mote is one of the most promising of the apps that has been created.

The focus of this study is to explore the potential of Mote as a tool to amplify the effects of feedback on areas of importance for teachers and students. To accomplish this goal, we surveyed teachers in 13 schools in the United States, United Kingdom, and Australia who had both used and not used Mote and analyzed their responses.



## THE MOTE APP

As stated on the company's website ([www.justmote.me](http://www.justmote.me)), "Mote is a Chrome Extension that makes it easy for anyone to add voice notes and feedback to documents, assignments, and emails." They add, "with Mote, we've created the fastest, friendliest way to share voice notes and feedback." Mote is a Chrome browser extension that allows the user to provide embedded asynchronous audio feedback throughout a growing number of cloud-based apps in Google's suite, such as Google Classroom, Google Docs, Gmail, etc. A typical and illustrative example is a teacher providing precise voice feedback on a specific section of text in a Google Doc, where if printed, they may have circled or underlined a group of words/sentences and written a brief note in bright red ink, often limited in identifying an error.

# What We Know about Effective Feedback

The positive effects of feedback on student work, particularly through formative assessments where there is an opportunity for students to revise or apply the feedback, are highly variable and dependent on a number of factors. Bangert-Drowns et al. (1991) found in a meta-analysis of 58 studies that feedback generally improved student performance, but in moderator analyses, the type of feedback students received had the largest effect on performance. Feedback that specifically helped students reflect on learning goals, or their performance relative to a standard, and to correct errors had positive effects. Feedback that only provides a grade or praise seems to have little, or even a negative, effect on student achievement (Haughney et al., 2020).

Drawing on the moderator analyses they conducted for their meta-analysis of the effects of feedback on performance and other related research, Kluger and DeNisi (1996) have developed what they call a “feedback intervention theory” (FIT). In some ways, it can be thought of as a typology of what may influence task focus, rather than self or other-person focus, which turns out to be a central component to effective feedback.

Kluger and DeNisi’s (1996) FIT outlines how behavior, in response to feedback, is determined by comparisons of feedback to standards, with their four possible choices of action for eliminating the gap between one’s performance and the standard. The choice of changing or improving one’s behavior or performance, and the characteristics of the feedback which facilitate this positive outcome, is the field’s primary concern (Kluger & DeNisi, 1996). Alternately, people can exhibit learned helplessness and abandon the standard to which they are being compared when they believe there is a good chance that their actions will not lead to success. There is evidence to suggest that feedback will be rejected if it is negative. If the source of the feedback lacks credibility or status, it may also be rejected under these circumstances (Kluger & DeNisi, 1996).

Feedback systems can refocus attention, especially because of the serious implications of feedback for the (psychological) self. Attention is limited and only those gaps that capture attention affect behavior. Attention is typically focused somewhere between ultimate self-goals and lower level task outcomes, with familiar tasks assuming lower level goals, which become so routine, they receive little attention.

These elements of how feedback works and what makes it more/less effective underlie and overlap with many of the recommendations present in the literature around teacher feedback in the context of formative assessment. For instance, Gibbs and Simpson (2005) suggested that teachers giving feedback consider the frequency, timeliness, relevance, and detail, while focusing on student performance, an understandable and actionable quality. Similarly, Brookhart (2017) outlined the following features of effective feedback: timing, amount, and mode, in addition to the function, valence, clarity, specificity, and tone.

These recommendations for effective feedback are useful, but it is necessary to explore the degree to which asynchronous embedded audio feedback, and specifically Mote’s technology, makes them more or less possible. The sections below build on the highly influential FIT of Kluger and DeNisi (1996), along with some of the more recent research and theory (Haughney et al., 2020) as applied to practices often discussed and listed as normative. Each also establishes the foundation for the hypotheses we explore and set up the specific questions we raise that guide this research study.



### Time Dependent Factors – Frequency and Quantity

Bangert-Drowns et al. (1991) conducted a meta-analysis of 40 studies that demonstrated improvements in student performance by increasing the frequency of assessments and thus feedback. Regardless of these positive effects, teachers have limited time. Previous research on less facile technologies than Mote (e.g., single digital audio recording file meant as a final summary/collection of comments) found that teachers were able to provide more feedback (quantity) in shorter amounts of time, and thus making teachers more (Lunt & Curran, 2010). On its website, Mote (2021) makes the claim that using the app to provide feedback is “3x faster than typing.”

Although we are interested in whether teachers are more efficient and save time, we suspect that rather than using that time to relax or pursue other activities, most teachers would likely use that time to provide more frequent feedback or feedback on more assignments, in addition to a giving a greater quantity or amount of feedback per assignment. It is also very likely that the size constraints of available space on a typical student assignment like an essay prohibit extensive feedback, whereas embedded asynchronous audio feedback does not suffer this limitation. Therefore, in this study, we seek to answer the following questions:

- 1 Do teachers who use Mote provide more feedback more often than teachers who do not use Mote?
- 2 Are teachers who use Mote more satisfied with the quantity and frequency of the feedback on student assignments than teachers not using Mote?



# Feedback Quality

One way to define feedback quality is empirically, tied to results of high-quality research which attempts to uncover its characteristics. There have been several foundational meta-analyses which have used moderator analyses to uncover the components or characteristics of feedback associated with improvement generally and specifically for areas of student learning.

For instance, Bangert-Drowns et al. (1991) found in their highly influential meta-analysis on feedback's effects on students that 18 of the studies had negative effect sizes, with four of these being statistically significant. They explained these negative effects through moderator analyses that examined the type and delivery of feedback. They found that simply giving a right or wrong response resulted in a small, but negative, outcome ( $ES = -.08$ ), and telling a student they had a correct answer ( $ES = .22$ ), having the student repeat the question until he or she got the answer correct ( $ES = .53$ ), and explaining the process for obtaining the correct answer ( $ES = .53$ ) resulted in positive outcomes (Bangert-Drowns et al., 1991).

The findings in Table 1 are from a meta-analysis of experimental and quasi-experimental studies of feedback in higher education settings (Nyquist, 2003).

This meta-analysis summarizes and clearly demonstrates the role of high quality feedback on student learning. One connection to Mote and feedback quality is that Mote allows for greater detail and specificity (e.g., "explanation"), central to Nyquist's (2003) findings on what makes effective feedback via formative assessments. In comparison to similar apps built into software (such as Canvas) and like earlier tech approaches of creating independent audio files distributed via email, Mote provides a very high degree of specificity down to the character or absence of one, in line with Nyquist's (2003) findings.

**Some researchers have argued that audio facilitates greater detail, specificity, and ultimately, understanding in comparison to written feedback even of the exact same words (Pearson, 2018).**

The human voice has the capacity to convey multiple dimensions of meaning beyond the symbols themselves, particularly as words can have multiple and contested meanings, the specifics of which are lost in two dimensions.



**TABLE 1 Effects of Types of Feedback**

Type of Feedback	Number of Studies	Effect Size
<b>Weaker Feedback Only</b> Knowledge of results only	31	0.16
<b>Feedback Only</b> Knowledge of results + clear goals or knowledge of correct results	48	0.23
<b>Weak Formative Assessment</b> Knowledge of results + clear goals or knowledge of correct results + explanation	49	0.30
<b>Moderate Formative Assessment</b> Knowledge of results + clear goals or knowledge of correct results + explanation + specific actions for gap reduction	41	0.33
<b>Strong Formative Assessment</b> Knowledge of results + clear goals or knowledge of correct results + explanation + specific actions for gap reduction + activity	16	0.51

*This table is cited in Nyquist (2003).*

The specificity of Nyquist (2003) is valuable, but it takes a primarily technical perspective. In contrast, Kluger and DeNisi (1996) make it clear that to ensure positive impact from feedback, a teacher needs to consider the feedback’s potential threat to the ego. One persuasive argument as to why RAF may have a greater effect than written feedback is that the nuance and subtleties which can be communicated with the human voice help mitigate potential threats. The depth

and detailed allowed for (in the greater quantity of feedback typically occurring when RAF is possible) may also help mitigate this threat. Kluger and DeNisi’s (1996) FIT provide some additional details about the characteristics of feedback that help promote improved performance by avoiding ego threat, thereby informing our expectations of the quality of feedback. Mote-using teachers believe they are able to provide via the possibility for more detail and nuance.



# Cues in the Feedback Message

## — *Ego Activation and Emotional Triggers*



### Task Focus.

A central finding of Kluger and DeNisi's (1996) highly influential meta-analysis is that feedback cues which help to focus recipients on task performance, rather than issues of the self, lead to issues of self-efficacy and concern over self-perception. Task-involving versus ego-involving feedback produces positive effects on performance, as it can encourage focus on the self rather than on the task. Further, they found that feedback which directs attention to past performance or learning processes (corrective feedback) has been shown to positively impact performance. The feedback should also avoid directing attention to performance comparisons with others.



### Emotion and Other Factors Influencing Motivation and Cognition.

Individual differences in self-esteem, locus of control, and achievement orientation (high performance is due to ability versus effort) moderate the effect of feedback on performance. In studies where self-esteem threat was lowest, the effect of feedback was much higher (.47 versus .08) (Kluger & DeNisi, 1996). Formative assessment or performance feedback that reinforces achievement orientation, or the idea that success is due to ability, has a lower or more negative effect on student achievement than feedback that focuses on student effort (Black & Wiliam, 1998). Based on this and related research, we ask the following questions:

- 1 Do teachers using Mote provide higher quality feedback than teachers not using Mote?

Based on previous research on feedback outlined here, we would expect that teachers would report more impact of their feedback practices on students. Therefore, we ask the following question to guide our analysis:

- 2 Do teachers using Mote report having a greater impact on student achievement than teachers not using Mote?



### Teacher Efficacy.

We draw on the body of teacher efficacy research and theory (Bandura, 1997; Tschannen-Moran & Hoy, 2001) and employ items from the Ohio State Teacher Efficacy Scale (Tschannen-Moran & Hoy, 2001). We propose that by using an embedded recorded audio feedback application such as Mote, which will allow for higher quality and more (quantity and frequency) feedback, teachers will feel more effective and be able to see the widely established positive impact on student achievement. Therefore, we ask the following question to guide our research:

- 1 Do teachers using Mote have a higher sense of efficacy around their ability to promote student learning through feedback than teachers who do not use Mote?

# Data and Methods

Data were collected from a sample of 187 k-12 teachers working in schools or school districts that had purchased Mote site-based licenses to enable any teacher to use the app. The participating teachers worked at one of thirteen schools in the United States, England, or Australia where their principal/director agreed to participate in the study.

A baseline and follow-up survey were developed and shared with teachers electronically with the assistance of the school principal. Teachers participated voluntarily on their own time. When possible for both surveys, such as with measuring efficacy, we drew upon validated scales (e.g., the Ohio State Teacher Efficacy Scale [Tschannen-Moran & Hoy, 2001]) or standard or widely-used items in expertly developed surveys such as the National Center for Education Statistic's Schools and Staffing Survey. Responses to most items of interest, other than whether they used Mote to provide student feedback, were standard Likert scales of frequency, satisfaction, and agreement.

We designed the initial baseline survey to understand teachers' experience using Mote, especially in unsettled areas of the research such as (a) time/efficiency, (b) perceptions of its impact on their practice, (c) sense of efficacy generally and specifically in relation to relevant practice, (d) classroom characteristics and general perceptions of students in areas that might be impacted by a change in feedback practices, and (e) assessment of its effects on students. It was administered in September 2020, near the beginning of the school year.

Although we do not report on the data gathered in the follow-up survey in this study, we developed and administered a follow-up survey with the intention of trying to capture changes in teachers' feedback practices and possible effects on student outcomes and teacher efficacy and satisfaction. As it turned out, there was variation in the initial survey in terms of teachers' previous use of Mote, with 54 having had

sufficient experience with providing audio feedback via Mote compared to the other 133 who may have heard of the app, but had not yet made it part of their feedback practice. So, on its own, the baseline survey data enabled an initial opportunity to answer the questions for this study.

To analyze the data toward this end, we cleaned and prepared the data, and conducted initial exploratory analyses, most notably to determine the distribution of responses in the primary variables of interest. As responses were not normally distributed, we used the Mann-Whitney test to compare differences in teachers' practices and perceptions between Mote and non-Mote users. All statistical tests were two-sided, and a p-value <0.05 was considered statistically significant. For one analysis to assess differences in actual time spent per week providing feedback, we used a t-test for mean differences.



# Findings

In this study of 187 teachers in schools piloting the use of Mote to provide feedback to students, we were able to compare teachers who had used Mote (n=54) and those who had not (n=133) on several important practices, attitudes, and perceptions about their instruction and students. There were substantive and statistically significant differences in a number of key areas. Teachers using Mote reported greater quality, quantity, and frequency of detailed feedback to students on both graded and non-graded assignments than teachers not using Mote. As a result, Mote-using teachers felt that students learned more and were more motivated to learn in their classrooms than students in classrooms with teachers who were not using Mote. Consequently, Mote-using teachers expressed more of a sense of efficacy than their traditional peers.



## Frequency of Feedback

We asked the following questions of teachers in the study, which they responded to (on a 5-point Likert scale) from “never” to “always:”

① How often do you give detailed feedback on graded assignments?

② How often do you give detailed feedback on non-graded assignments?

As is evident from Table 2, Mote teachers report providing detailed feedback much more frequently on both graded and non-graded assignments to their students than the teacher who do not use Mote. The greater than 30% difference for non-graded assignments is particularly noteworthy, as the workload of most teachers makes providing detailed feedback on graded assignments challenging. Therefore, this finding suggests that the teachers using Mote may be saving themselves enough time with the app’s efficiency that they are able to provide detailed feedback on non-graded assignments, too.

**TABLE 2** Percentage of Teachers who Reported Giving Detailed Feedback “Always” or “Often”

	Use Mote (n=54)	Not Use Mote (n=133)
Detailed feedback on graded assignments*	85.2%	74.4%
Detailed feedback on non-graded assignments**	72.3%	39.1%

Mann-Whitney test \*  $p < 0.05$ . \*\*  $p < 0.01$ .

## FINDINGS

To further assess the role of Mote in saving teachers time, we asked the following survey question: How many hours on average do you spend reviewing student work each week? Mote teachers reported spending 11.45 hours per week on average reviewing student work, three full hours more than their non-Mote using fellow teachers (see Table 3). This finding is counterintuitive, although previous research is somewhat mixed on whether RAF takes more/less time. When it does take more time, there is significantly more feedback produced. As Voelkel and Mello (2014) concluded:

Generating audio feedback proved to be significantly more time consuming (by five minutes per script) than written feedback, but was more efficient in the sense that it produced nearly 10 times as much and higher quality feedback per unit of time. (p. 16)

It might be less taxing to produce feedback via Mote and related technology, leading to teachers willing to invest more time, which is certainly a positive outcome.

**TABLE 3 Mean Hours Spent Reviewing Student Work Each Week**

	N	Mean	Std. Deviation	Std. Error Mean
Mote Teacher*	54	11.45	6.93	.952
Non-Mote Teacher	133	8.45	6.15	.533

*Independent samples T-test \*  $p < 0.05$ .*





## Satisfaction with the Amount of Feedback

To better understand Mote’s potential effect on teacher satisfaction with the feedback they provide their students, we asked the following questions in the teacher survey:

- 1 How satisfied are you with the *\*amount\** of feedback you are able to provide students on their assignments?
- 2 How satisfied are with the *\*number\** of assignments on which you are able to provide students feedback?

Participants could select from seven possible response options from “extremely satisfied” to “extremely dissatisfied.”

**TABLE 4** Percentage of Teachers Satisfied with the Amount of Feedback They are Able to Provide

	Use Mote (n=54)	Not Use Mote (n=133)
Satisfaction with the amount of feedback**	44.5%	15.5%
Satisfaction with the frequency of feedback**	48.8%	9.8%

Mann–Whitney test \*  $p < 0.05$ . \*\*  $p < 0.01$ .



As is clear from Table 4, Mote teachers are much more satisfied with the amount of feedback they are able to provide their students and the number of assignments on which they are able to provide their students with feedback. In terms of satisfaction with the amount of feedback, 29% more teachers who use Mote report being either extremely or very satisfied than those who do not use Mote to provide feedback.





## Quality of Feedback

Although we did not attempt an independent analysis of the quality of teachers’ feedback, we believe it reasonable to assume that teachers are a good and reasonably fair judge of their own feedback quality. The details of what types of feedback are more effective are widespread, with popular education publications like Edutopia regularly running articles on the topic. Teachers, of course, have a unique window into the effects of any feedback they provide, which is also likely a means of judging quality. In the survey, we ask the following question of teachers:

- 1 How satisfied are you with the *quality* of the feedback you are able to provide students on their assignments?

Again, they had seven response options from “extremely satisfied” to “extremely dissatisfied.”

**TABLE 5** Percentage of Teachers Satisfied with the Quality of Feedback They are Able to Provide

	Use Mote (n=54)	Not Use Mote (n=133)
Satisfaction with the quality of feedback**	46.3%	10.5%

Mann-Whitney test \*  $p < 0.05$ . \*\*  $p < 0.01$ .

Similar to their satisfaction with the amount of feedback, Mote teachers are much more satisfied with the quality of the feedback that they are able to provide their students on assignments than those teachers who do not use Mote (see Table 5). The percentage difference is also very substantial; 33.8% more Mote teachers report being extremely or very satisfied with the quality of their feedback than those who do not use Mote.





## Impact on Students

In this study, we relied on teachers to provide insights about the impact of their feedback practices on student learning and the important socio-emotional conditions for learning, such as the focus on growth rather than attainment (e.g., growth mindset). Two survey items provided insight into the potential effect of using Mote in the classroom context:

- 1 When I give an assignment back to students, they seem only interested in their grade or score. (Note: the direction of expected responses is reversed – disagreement with this statement is what we are expecting with Mote use)
- 2 When I give an assignment back to students, they are eager to do better next time.

Responses are limited to a standard Likert 5-point agreement scale with options from “strongly agree” to “strongly disagree” with a neutral mid-point.

Our analysis captured in Table 6 reveals that Mote teachers are much more likely (by 23.9%) to report that their students are less interested in grades/scores following feedback on assignments than students of teachers not using Mote. Here we report the percentage of disagreement (strongly disagree and disagree), as the expected effect of using Mote is that it would promote higher quality detailed feedback, in line with research-based guidance, and thus lead to students being able to understand and focus on improvement and see there is a possibility for growth. Put another way, the non-Mote group thinks their students are more interested in grades than the Mote group.

Relatedly, Mote teachers report that their students are much more eager to do better following feedback on an assignment. The difference here is smaller than in other comparisons, but statistically significant at the .05 level nonetheless with only a 6.9% difference.

**TABLE 6 Percentage of Teachers Reporting Students are Interested in Improving Following Feedback**

	Use Mote (n=54)	Not Use Mote (n=133)
Students only interested in grade/score*	47.2%	23.3%
Students eager to do better next time*	44.8%	37.9%

*Mann-Whitney test \* p < 0.05. \*\* p < 0.01.*



## Teacher Efficacy

A teacher's sense of efficacy is important in a number of ways, and we argue that previous research suggests using an embedded asynchronous recorded audio approach (which Mote allows) will allow for higher quality feedback, in turn improving student outcomes, and consequently leading to higher levels of teacher efficacy. To assess if Mote use is associated with higher levels of teacher efficacy, we asked the following survey questions:

- 1 How much can you do to improve student achievement through individualized feedback?
- 2 How much can you do to provide individualized learning in your classroom / with your class?
- 3 How much can you do to make students care more about improving areas of weakness than about grades?
- 4 How much can you do to help students know how to improve their performance on their next assignments?

Likert-style response options include five choices from "not at all" to "a great deal."

In Table 7, we report the percentage of teachers who report that they are able to positively impact students "a great deal" or "quite a bit," the highest two options on this 5-point scale, comparing teachers who use Mote and those who do not. A general finding is that compared to other areas we report in this study, teachers overall have a relatively high sense of efficacy. In terms of the specific comparisons, first, Mote teachers believe they are more able to improve student achievement through feedback than non-Mote-using teachers with a substantial 27.8% difference.



**TABLE 7** Percentage of Teachers Reporting High Levels of Efficacy by Mote Use

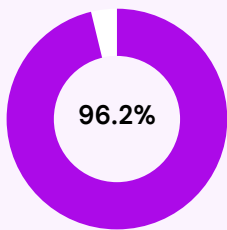
	Use Mote (n=54)	Not Use Mote (n=133)
Improve achievement via feedback**	96.2%	68.4%
Provide individualized learning*	83.0%	52.3%
Make students care more about improving vs grades*	71.7%	51.4%
Know how to improve performance on next assignments*	88.6%	75.9%

Mann-Whitney test \*  $p < 0.05$ . \*\*  $p < 0.01$ .

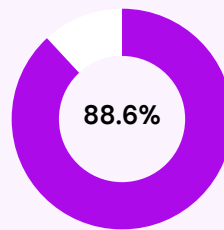
This general sense of efficacy is likely driven by a set of underlying, or related and more specific, efficacy-related beliefs held more by teachers using Mote. Thirty one percent more teachers who use Mote, compared to teachers not using Mote, believe they can provide individualized learning, a very complex instructional practice to manage, “a great deal” or “quite a bit.”

Twenty percent of Mote teachers report they are able to make students care about improving areas of weakness rather than grades versus teachers not using Mote. Finally, 12.7% more Mote teachers report they can help students know how to improve their performance on their next assignments, which is the narrowest of margins in these efficacy-related indicators.

**Efficacy reported by teachers who use Mote:**



*Improve achievement via feedback*



*Know how to improve performance on next assignments*

# Conclusions

The results of this study provide strong support for the use of Mote as a means of providing embedded asynchronous recorded audio feedback by educators wanting to have a greater impact on their students and a sense of accomplishment and efficacy in their work. School leaders and policy makers should also take note of these findings, as Mote provides a very inexpensive means of facilitating the conditions for teacher retention via increased levels of efficacy and burden reduction. Mote also likely increases notable student growth, particularly in more complex areas of learning where teachers can provide detailed and specific feedback.

**Mote-using teachers reported greater quality, quantity, and frequency of detailed feedback to students on both graded and non-graded assignments than teachers not using Mote. As a result, Mote-using teachers felt that students learned more and were more motivated to learn in their classrooms than teachers not using Mote. Consequently, Mote-using teachers expressed more of a sense of efficacy than their traditional peers.**

Efficacy and motivation operate in a virtuous upward spiral, so it is not surprising that Mote teachers report spending significantly more time on average giving their students detailed feedback, primarily using Mote. Findings from the study also support that Mote helps to shift the focus of students to improvement and growth rather than attainment and an immutable sense of their ability.

Mote teachers report having a greater sense of efficacy when it comes to several important areas of instruction that have been consistently shown in the research to have outside influence on student growth. Generally, Mote-using teachers believe they are more able to improve student achievement than non-Mote-using teachers.

**This general sense of efficacy is likely linked or driven by their more specific sense of efficacy around their capability to:**

- A** provide individualized learning,
- B** help students improve their performance on subsequent and related assignments, clearly based upon their feedback, and importantly,
- C** help students shift their mindset to one focused more on improving areas of weakness than concern about grades, suggesting an orientation that will facilitate both achievement growth and a growth mindset.

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