Self-regulation of learning and preference for written versus audio-recorded feedback by distance education students

Abstract

Teacher feedback is critically related to student learning. This study attempts to determine the relationships between distance education (DE) student level of self-regulated learning (SRL) and personal preference for audio-recorded versus written feedback from tutors. DE students (n = 102) enrolled in a first-year university course completed an online questionnaire that assessed eight dimensions of SRL) as well as personal evaluation of written versus audio-recorded tutor feedback that was provided during the academic study period. In general, the participating DE students expressed preference for written over audio-recorded feedback. However, complex patterns of relationships emerged between dimensions of SRL and evaluation of written versus audio-recorded feedback. For example, DE students who were most likely to listen to audio-recorded feedback appreciated peer interaction and personal challenges more than students who preferred written feedback. In DE learning environments, a variety of feedback formats may best meet the needs of all students, although exposure to various technologies may facilitate SRL.

Key Words

Written feedback; audio feedback; recorded feedback; self-regulated learning; university students; distance education; open university

Distance Education Student Self-Regulated Learning and Preference for Written versus

Audio-Recorded Feedback from Tutors

Feedback, in education, is defined as "information about how successfully a task has been or is being fulfilled" and as "any information, process or activity which affords or accelerates learning, whether by enabling students to achieve higher-quality learning outcomes than they might have otherwise attained, or by enabling them to attain these outcomes sooner or more rapidly" (Tang & Harrison, 2011, p. 583). The essential function of feedback is to guide or scaffold student learning toward thinking or behaving that corresponds with learning objectives (Shute, 2008). Gibbs and Simpson (2004) argued that feedback is not only a significant motivating factor but the single most powerful influence on student learning and achievement. Coll, Rochera and de Gispert (2014) suggested that feedback takes many forms depending on the situation and the needs of students, "ranging from confirmation of a correct answer or achievement of a learning level (in the event that there is no gap between current learning and learning objectives) to (where such a gap exists) the provision of different kinds of information about concepts, procedures or task conditions" (p. 54).

Advances in audio-recording technology have provided teachers with increased capacity to provide students with voice-based feedback. Research has repeatedly established that students react positively to feedback provided in asynchronous audio form because, relative to written feedback, audio feedback is easy to understand and thorough (Ice, Curtis, Phillips, & Wells, 2007; Rodway-Dyer, Dunne, & Newcombe, 2009). To date, research has highlighted a number of key advantages of audio-recorded feedback: improved student access to teacher feedback (Gibbs & Simpson, 2004; Merry & Orsmond, 2008), increased sense of personalization between teacher and student (Morra & Asis, 2009; Rotheram, 2009), increased potential for student learning (Bird & Spiers, 2009), improved reflective practice by

students (Nortcliffe & Middleton, 2007), time savings for teachers (Macgregor, Spiers, & Taylor, 2011), and the opportunity for teachers to provide an increased quantity of feedback to students (Issa, Isaias, & Issa, 2014; Weld, 2014).

The impact of student characteristics on feedback preferences has been investigated (Rowe & Wood, 2009). Bourgault, Mundy and Joshua (2013) attempted to determine if student learning modality preference was related to preference for written or audio-recorded feedback. However, small sample size (n = 8) did not allow for meaningful statistical analysis. Based on student interviews concerning preference for written versus audio-recorded feedback, Cuthrell, Fogarty and Anderson (2009) reported that "while visual learners may still prefer … [written] feedback, many students benefited from hearing the professor's comments and that the tone and inflection gave greater meaning to the comments (p. 34). McCormack and Taylor (2006) argued that "the learning preferences of today's students (e.g. use of current technologies, expectation for flexibility and immediacy), when combined with the declining amount of time students spend on campus, may translate into particular expectations about the mode of delivery and time and place of receipt of assessment feedback" (p. 525). Zhu (2012) reported that university students with low levels of metacognition preferred more detailed written feedback from instructors than did students with high levels of metacognition. Evans and Waring (2011) concluded that university student learning style was associated with preferences for various types of feedback. For example, students who were highly analytical but not intuitive were "proactive in seeking feedback, valuing detailed feedback on drafts and target-setting" while students who were highly analytical and highly intuitive "were most self-reliant and less pro-active in seeking out information; were less concerned about the clarity of assessment criteria than the other styles and were most likely to rate personal feedback highly" (p. 277). Student characteristics

such as learning modality preference, metacognition, and learning style may be generally subsumed within the latent construct of *self-regulated learning* (SRL).

SRL is a general term used to refer to a range of cognitive and study strategies including metacognition, time management, motivation, and help seeking (Roll, Aleven, McLaren, & Koedinger, 2011). The self-regulated student intentionally exerts effort toward managing and directing learning activities (Zhao & Johnson, 2012). SRL is critically related to learning effectiveness and high-achieving students are typically highly self-regulated in their approach to learning (Lee, Shen, & Tsai, 2010). According to Wang (2011), "the main advantage of e-Learning is that it overcomes the limits of time and space and provides learners opportunities to perform self-directed learning" (p. 1802). This is fortunate since, as a result of increased autonomy, "online learners must take greater responsibility for the management and control of their own academic progress" (Artino, 2008, p. 38). Johnson and Davies (2014) argued that online learning environments "have the capacity to promote the cyclical phases of SRL including task comprehension and then planning, strategizing and evaluating movement toward completion of the required task" (p. 5). Fully-online learning has become synonymous with distance education (DE).

Statement of the Research Issue

DE students are highly dependent upon technology and tutor feedback. Technology increasingly allows for audio-recorded tutor feedback to DE students. SRL is associated with student success and may be facilitated in DE learning environments. This study attempts to determine the relationships between DE student level of SRL and personal preference for audio-recorded versus written feedback from tutors.

Methods

For the current investigation, DE students were drawn from a course required of all students enrolled in a Bachelor of Early Childhood Education and Bachelor of Primary

Education at a university affiliated with Open Universities Australia (OUA; a consortium of Australian universities that offer fully-online courses). At the beginning of a 13-week study period, approximately 1000 students were enrolled in the required course; students were organised into 13 tutorial groups with approximately 75 students in each group. Throughout the study period, 11 tutors (i.e., two tutors had more than one tutorial group) provided written feedback to students which included track changes on written assignments, email, and completed marking rubrics. Tutors also provided audio-recorded feedback to tutorial groups on student activities that were well done, highlighting examples of student work that demonstrated task mastery including general statements of areas in need of improvement. Audacity software was recommended to tutors who received text- and image-based information on creating audio files and converting files using readily available software (e.g., Windows Media and iTunes). While participating DE students may have experienced written and audio-recorded feedback in other instructional contexts, the unit offered ample opportunity for students to experience both written and audio-recorded tutor feedback, thereby allowing for meaningful student evaluation of both formats. In this regard and due to an action research method, written and audio tutor feedback may have differed on more than only format. Unlike a laboratory experiment in which all variables are controlled, action research requires authentic tutor feedback and actual student learning experiences.

Toward the end of the study period, all students who remained enrolled in the unit Learning Management System (LMS; n = 852) were sent an invitation via their university email accounts to complete a brief online questionnaire (using Qualtics Survey Software) regarding their learning characteristics and preference for written or audio-recorded feedback from tutors.

Distance Education University Student Participants

Of the total pool of 852 first-year DE university students who were sent an email inviting research participation, 102 or 12.0% complete the online questionnaire. The sample of responding DE students included 11 males (10.8%) and 91 females (89.2%), a gender distribution approximately characteristic of the university programs from which the students were solicited. The majority of students responded that they intended to become primary school teachers (n = 88, 86.3%), 11 reported that they planned to become early childhood teachers (10.8%), and three respondents were undecided (2.9%). Seven DE students indicated that English was not their first language (6.9%); two reported that they did not live in Australia (2%). The mean age of participating DE university students was 34.4 years, with the youngest respondent indicating an age of 18 years and the oldest respondent indicating an age of 60 years. Where full-time enrolment is two units per study period, 40 students indicated that they were enrolled in one unit (39.2%), 54 students indicated that they were enrolled in two units (52.9%), five students indicated three units (4.9%), and one student indicated four units (1.0%). Where 32 units constitute a four-year bachelor degree, the mean number of units completed by the sample of participating DE university students was 7.5 (minimum = 0; maximum = 30).

The Questionnaire: Self-Regulated Learning and Evaluation of Feedback Format

In addition to demographic items necessary to describe the sample of participating DE students, the online questionnaire included 22 items; 16 items assessed student characteristics associated with SRL; six items assessed student evaluation of written and audio-recorded feedback from tutors.

Self-regulated learning

The online questionnaire included 16 items adapted from the *Motivated Strategies for Learning Questionnaire* (MSLQ; Pintrich, Smith, Garcia, & McKeachie, 1991) which has been widely used to assess SRL in on-campus (Bjork, Dunlosky, & Kornell, 2013; Credé & Phillips, 2011; Pintrich, 2004) and DE university students (Artino & Stephens, 2009; Cho & Summers, 2012; Green, Moos, & Azevedo, 2011). The MSLQ has established reliability and validly (Pintrich, Smith, Garcia, & McKeachie, 1993). Presented in Table 1, the 16 items assessed eight aspects of SRL including metacognitive reading strategies, time-study management, learning control beliefs, self-efficacy, intrinsic motivation, extrinsic motivation, peer learning support, and seeking help for learning. Students rated each of the 16 questionnaire items on a 5-point scale ranging from *not at all like me* to *just like me*. To maintain consistency with the MSLQ, two items were reverse scored to allow for summation of student ratings of the two items to yield a single score for each dimensions of SRL.

Insert Table 1 about here

The online questionnaire also included six items that assessed student evaluation of written and audio-recorded feedback from tutors. Presented in Table 2, the items assessed perception of learning benefits, perception of enjoyment, and the extent to which students actually read or listened to the tutor feedback. Additionally, in four of the six items students were required to compare written to audio-recorded tutor feedback (or vice versa) thereby forcing comparison of one format in relation to the other.

Insert Table 2 about here

Data Analysis

Descriptive statistics were generated for student ratings of the eight dimensions of SRL and the six items that evaluated feedback format. Pearson product moment correlations determined the relationships between the eight dimensions of SRL and the six items that evaluated feedback format. Six stepwise regression analyses were conducted; one for each of

the items that evaluated feedback format (i.e., as the dependent variable) with the dimensions of SRL as the independent variables.

Results

Table 3 summarised the descriptive statistics for the eight dimensions of SRL. Since two items (rated on a 5-point scale) were summed (following reverse scoring in two cases), scores could potentially range from 2 (i.e., student rating of *not at all like me* on both items) to 10 (i.e., student rating of *just like me* on both items). Thus, the higher the score the more the dimension of SRL characterised the student. Indicated by minimum and maximum scores as well as by standard deviations, the group of participating DE students demonstrated variability; indicated by mean scores, the group also demonstrated similarity. For example, the Time-Study Management dimension of SRL had the largest standard deviation, almost 2 points on the 10-point rating scale (because two items were summed). With a mean of 6.9, approximately 67% of the sample of DE students rated Time-Study Management between 5 and 9 on the 10-point scale; the remaining one-third of students were further from the mean. The lowest mean (i.e., 4.8 / 10) was associated with the Peer Learning Support dimension of SRL which suggests that the sample of DE students did not unanimously value online peer interactions. In contrast, most students took responsibility for their learning as evidenced by a mean of 7.7 / 10 on the Learning Control Beliefs dimension of SRL.

Insert Table 3 about here

Table 4 presents the descriptive statistics for DE student ratings of the six online questionnaire items that evaluated tutor feedback format. Given rating scale options, scores could potentially range from 1 (*strongly disagree*) to 5 (*strongly agree*). Student differences (i.e., variability) and similarity to each other were apparent. For example, most, but not all, students reported reading the written feedback provided by their tutors (mean 4.7 / 5, SD 0.75). Some, but not all, students reported listening to the audio-recorded feedback provided

by their tutors (mean 3.3, SD 1.20). The lowest mean student rating (2.1 / 5) among the items that evaluated tutor feedback format was for the item *I learned more from audio-recorded feedback from my tutor than from written feedback*. The second lowest mean (2.3 / 5) was for the item *I enjoyed audio-recorded feedback from my tutor more than written feedback*.

Insert Table 4 about here

Table 5 presents significant correlations between the eight dimensions of SRL and the six items that evaluated feedback format. Correlational strength and thus significance is influenced by, among other things, the extent to which differences exist in the distribution of scores. The Peer Learning Support dimension of SRL correlated negatively with the three items that evaluated written tutor feedback. That is, as perceived value of peers increased, perceived value of written tutor feedback tended to decrease. Alternatively and because correlation does not imply causation, as perceived value of peers decreased, perceived value of written tutor feedback tended to increase. In contrast, the Peer Learning Support dimension of SRL correlated positively with two of the three items that evaluated audio-recorded tutor feedback. That is, as perceived value of peers increased, perceived value of audio-recorded tutor feedback tended to increase. Alternatively, as perceived value of peers decreased, perceived value of audio-recorded tutor feedback tended to decrease. Other dimensions of SRL also tended to increase as student rating of the item *I listened to all audio-recorded feedback from my tutor* increased.

Insert Table 5 about here

Table 6 presents results of the regression analyses. With one exception (i.e., *I enjoyed audio-recorded feedback from my tutor more than written feedback*), variation in student ratings of the items that evaluated tutor feedback format could be explained by student ratings of SRL characteristics. For example, Peer Learning Support explained 3% of the differences in student ratings of the item *I learned more from written feedback from my tutor than from*

audio-recorded feedback. Devaluing peer support coupled with seeking help from teachers accounted for 16% of the differences in student ratings of the item *I read all written feedback from my tutor*. Valuing peer support and being extrinsically motivated accounted for 11% of differences in student rating of the *item I listened to all audio-recorded feedback from my tutor*.

Insert Table 6 about here

Discussion of Results

Results of the current investigation (Table 4) suggest that the participating DE students preferred written to audio-recorded tutor feedback. Characteristically, as one student responded to an open ended questionnaire item:"I prefer written comments as I am able to easily refer to these comments if required, audio comments generally require being online to listen to and am not sure if these can be downloaded." With few exceptions, students reported reading all the written feedback provided by their tutors. In contrast, with regard to the online questionnaire item *I listened to audio-recorded feedback from my tutor*, 22.6% of participating DE student disagreed or strongly disagreed; 27.4% neither agreed nor disagreed. With respect to the four questionnaire items that directly contrasted written and audio-recorded feedback, students selected the *neither agree nor disagree* response-option in approximately 25% of the cases. Apparently, while all written feedback was generally read, students did not unanimously believe that such feedback supported their learning more than audio-recorded feedback. There are a number of explanations for the disparity in student evaluations of and ambivalence toward written and audio-recorded tutor feedback. The tutors that provided the feedback may not have been as skilled and comfortable with audio-recorded, as opposed to written, forms of feedback to students. Further, students likely have a set of expectation with regard to tutor feedback format; any variation from those expectations

may not be readily embraced. As students become familiar and accustomed to audio-recorded feedback, their evaluation of the two formats may correspondingly change. Alternatively, it is possible that students actually and will always prefer written over audio-recorded feedback. The popularity of email and text messages, despite voice mail, could be interpreted as suggesting a general and enduring text-based preference for asynchronous communication (Johnson & Oliver, 2014). This seems to contract the notion that social presence is an important variable in online learning (Garrison, 2011). Swan and Shih (2005) reported that student perception of tutor social presence "was a more influential factor in determining student satisfaction than the perceived presence of peers" (p. 115). A tutor's voice would appear to demonstrate social present more than written comments. Tutor social presence in online learning environments may be more obvious in written than audio feedback, at least to some DE students. However, as one student claimed, "It's nice to hear an expressive voice of the tutor, its comforting to know the voice behind the person we are being mentored by as sometimes just messages on the DB [discussion board] can be a little cold. It makes it a little more personable and a more engaging learning experience."

Relationships between assessed variables (Table 5) suggest complex patterns of interaction between dimensions of SRL and evaluation of tutor feedback format. Peer Learning Support was significantly correlated with five of the six feedback evaluation questionnaire items. In general, as students tended to report that they enjoyed and sought peer interaction in learning, their evaluation of written feedback tended to decrease. Alternatively, as students tended to evaluate written feedback positively, they tended to report that they did not enjoy and seek peer interaction in learning. In contrast, as students tended to report that they enjoyed and sought peer interaction in learning, their positive evaluation of audio-recorded feedback tended to increase. In online, as in all, learning environments, students who are less connected with peers are different than students who are more connected with

peers. Connection with peers may be a function of age, experience in online environments, and comfort with innovation. Although peer interaction is emphasised and assumed prerequisite to authentic online learning, variation is sociability is an individual difference variable apparent in online learning environments (Johnson & Kupla, 2007). In this regard, a range of tutor feedback options may be presented to students to satisfy all types of learners while encouraging adoption of emerging technologies in online learning environments. That is, the pedagogical value of written versus audio feedback may not be absolute but, rather, relative to a wide range of individual student characteristics such as age, learning style and language skills. Nonetheless, as one student noted, "I would be happy if I could receive both forms."

Three of the eight dimensions of SRL evidenced significant relationships to the item *I listened to all audio-recorded feedback from my tutor*. As student tended to report that they engaged in metacognitive reading strategies, they tended to report that they listened to all the audio-recorded feedback provided by their tutors. Such metacognitive strategies include monitoring reading comprehension and selecting and implementing strategies when understanding is determined to be inadequate. Students who are metcognitively strategic readers may be particularly motivated to benefit from all forms of tutor feedback. Alternatively, students who are less metcognitively strategic may not value unfamiliar forms of tutor feedback. Additionally, as student tended to report that they were intrinsically motivated, they tended to report that they listened to all the audio-recorded feedback provided by their tutor. Intrinsic motivation was assessed by two online questionnaire items: 1) *I prefer course material that really challenges me so I can learn new things*; 2) *I prefer course material that arouses my curiosity, even if it is difficult to learn*. Such items reflect student attitude toward learning. It may be that students who enjoy challenge are motivated to embrace new technologies and feedback formats. In general, correlational data suggested that

students who listened to audio-recorded feedback from tutors tended to be more metcognitively, motivationally and socially adept than students who were less likely to listened to audio-recorded feedback.

Student ratings of dimensions of SRL explained a significant amount of the differences in the ratings students assigned to five of the six questionnaire items that evaluated written versus audio-recorded tutor feedback. No dimension of SRL (i.e., independent variables) entered the regression equation for the questionnaire item *I enjoyed audio-recorded feedback from my tutor more than written feedback* as dependent or outcome variable. This may be an artefact of limited variability in student ratings (i.e., few students agreed or strongly agreed). It may also be that SRL is a poor predictor of student enjoyment in online learning environments. Indeed, only 3% of the differences in the ratings students assigned to the questionnaire item *I enjoyed written feedback from my tutor more than audio-recorded feedback* was explained by Peer Learning Support. Nonetheless, Peer Learning Support, a dimension of SRL, was implicated in student evaluation of written versus audio-recorded feedback; it entered the regression equations for five questionnaire items that evaluated written versus audio-recorded tutor feedback. In the case of preference for written tutor feedback, the relationship was inverse; in the case of preference for audio-recorded tutor feedback, the relationship was direct. DE students who preferred audio-recorded feedback also preferred peer interaction in learning environments. DE students who preferred written feedback were less likely to prefer peer interaction in learning environments. Audio-recorded feedback is closer to real human exchange than is written feedback. It may be that DE students who gravitate toward human interaction appreciate the intimacy of voice-based as opposed to text-based tutor feedback. In this regard, a variety of feedback formats may best meet the needs of all DE students.

In addition to Peer Learning Support, other dimensions of SRL entered the regression equations for two dependent variables. Approximately11% of the differences in the ratings students assigned to the dependent variable *I listened to all audio-recorded feedback from my tutor* was accounted for by two dimensions of SRL, Peer Learning Support and Intrinsic Motivation. Students who were most likely to listened to all audio-recorded tutor feedback appreciated peer interaction and personal challenges. It could be argued that students who most actively engaged with tutor audio-recorded feedback were more likely to possess educationally-valued learning characteristics relative to students less actively engaged with audio-recorded feedback. Approximately16% of the differences in the ratings students assigned to the dependent variable *I read all written feedback from my tutor* was accounted for by two dimensions of SRL, Peer Learning Support (i.e., inverse relationship) and Seeking Help for Learning (i.e., direct relationship). Students who do not gravitate toward peers in learning environments but who frequently seek help, particularly from teachers, were more engaged in written feedback than students not thus described. Perhaps even more in DE than in traditional learning environments, students who embrace challenge, innovation, and independence may be at an instructional advantage, although the current investigation did not assess the relationship between student achievement and preference for tutor feedback format.

Limitations and Implications for Practice

As with all questionnaire research, the current investigation is limited by virtue of the nature of data collection. Specifically, to maximise student response rate, the online questionnaire included, in addition to demographic items, 16 items that assessed eight dimensions of SRL and six items that assessed student evaluation of tutor feedback format. All MSLQ items were not used but, rather, selected judiciously. Subsequent research may attempt to assess SRL with more items, with different items, and with an

alternate approach. For example, following completion of a more comprehensive measure of SRL, student could be invited to participate in an online interview that allowed for in-depth exploration of individual evaluation of tutor feedback formats. Indeed, as measured in the current investigation, SRL explained a relatively small amount of the variation in DE student evaluation of forms of tutor feedback. A more comprehensive set of student characteristics (e.g., attitude and personality) and tutor competencies may be required to more fully explain student differences in perception of the value of written versus audio-recorded feedback. Perhaps most importantly, the current investigation did not determine the impact of tutor feedback format on actual student achievement. Subsequent research may identify the complex patterns of interaction between student characteristics, tutor feedback format, and student learning outcomes (e.g., marks and grades). For example, the length, style and frequency of the written and feedback are likely important variables in explaining relationships between DE student SRL and feedback preferences. In some cases, written feedback can be skim read more quickly than audio feedback. On the other hand, students can listen to feedback while re-reading their written assignment. Text may seem cold and impersonal but tutor tone of voice (and gender) may change the impact of feedback, even when the same words are used.

Generalization of the results of the current investigation is limited because the sample of DE students was drawn for one unit, in one program, in one university. The relationships between dimensions of SRL and student evaluation of written versus audio-recorded feedback may be an artefact of the specific ways in which the two forms of feedback were provided to students in this particular online instructional context. Technical support for students and professional development for tutors likely influenced student evaluation of and tutor skill with audio-recorded feedback. For example, students may have experienced difficulty downloading required audio software or internet connectivity may have

compromised access to audio files. Limited tutor training may have resulted in audio-recorded feedback of a low quality. Such limitations would be overcome by including DE research participants from a range of programs, years of study, and distance and Open University structures.

Despite limitations, four implications for instructional practice emerge from analysis of the data. First, because it is likely that tutors were more familiar with written than audio-recorded feedback, it is also likely that the quality of written and audio-recorded feedback provided to students was not equivalent. In the context of DE, appropriate tutor training on new approaches to student feedback is required. Given that DE tutors differ from traditional university lectures (e.g., geographically distributed and unavailable during regular business hours), such training may include mentorship and online professional development modules. Second, metacognitive reading strategies were relatively low for the sample of participating first-year DE university students. Given the established benefits of reading and cognitive strategies (Afflerbach, Pearson, & Paris, 2008), DE students would benefit from opportunities to learn and practice metacognitive strategies. Third, results of the current investigation suggest a complex relationship between DE student levels of SRL and evaluation of tutor feedback format. Such a pattern of relationships may be unique to mature DE students as opposed to traditional first-year university students. Nonetheless, receiving feedback in a variety of formats may be in the best interest of DE students. Students may be allowed to select their preferred feedback format or may be provided with different feedback formats for different activities within the same unit. Finally, the sample of participating DE students differed from each other in terms of their orientation to peers, to seeking teacher support, and to intrinsic motivation. It may be worth noting that DE students, as with all students, are individuals who differ from each other. Such psychoeducational variation differentially

affects student interactions in online learning environments. Although DE is often focused on pedagogy, the student is the single most important variable in any learning environment.

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Table 1. Questionnaire items assessing student self-regulated learning characteristics

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Self-Regulated Learning Characteristics and Items

    Two items assessed each characteristic

Metacognitive Reading Strategies

1. When reading for my university course, I make up questions to help focus my reading.
2. If course readings are difficult to understand, I change the way I read the material.

Time-Study Management

1. I find it difficult to stick to a study schedule. (reverse scored)
2. I make sure that I keep up with my weekly readings and assignments for my university course

Learning Control Beliefs

1. It is my own fault if I don't learn the material in each of my classes.
2. If I try hard enough, then I will understand the course material.

Learning Self-Efficacy

1. I'm certain I can understand the most difficult material presented in the readings for my classes.
2. I'm confident I can do an excellent job on the assignments in my university classes.

Intrinsic Motivation

1. I prefer course material that really challenges me so I can learn new things.
2. I prefer course material that arouses my curiosity, even if it is difficult to learn.

Extrinsic Motivation

1. Getting a good grade in my classes is the most satisfying thing for me right now.
2. I want to do well in my classes because it is important to show my ability to my family, friends, employer, or others.

Peer Learning Support

1. I prefer to work with other students to complete class assignments.
2. I like to discuss course material with other students from the class.

Seeking Help for Learning

1. Even if I have trouble learning the material in a class, I try to do the work on my own, without help from anyone. (reverse scored)
2. I ask the lecturer or teacher to clarify concepts I don't understand well.

Table 2. Questionnaire items assessing student perception of audio and written feedback

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I learned more from written feedback from my tutor than from audio-recorded feedback.

I learned more from audio-recorded feedback from my tutor than from written feedback.

I enjoyed written feedback from my tutor more than audio-recorded feedback.

I enjoyed audio-recorded feedback from my tutor more than written feedback.

I read all written feedback from my tutor.

I listened to all audio-recorded feedback from my tutor.

Table 3. Description of student ratings of student self-regulated learning characteristics

Self-Regulated Learning Characteristic	Min	Max	Mean	Std Deviation
Metacognition Reading Strategies	2	8	5.2	1.56
Time-Study Management	2	10	6.9	1.93
Learning Control Beliefs	2	10	7.7	1.60
Learning Self-Efficacy	3	10	6.9	1.60
Intrinsic Motivation	3	10	7.2	1.51
Extrinsic Motivation	3	10	7.6	1.80
Peer Learning Support	2	10	4.8	1.84
Seeking Help for Learning	3	10	5.8	1.51

Note. 2 = *not at all like me* on both items; 10 = *just like me* on both items

Table 4. Description of student ratings of feedback formats

Items evaluating feedback format	Min	Max	Mean	Std Deviation
I learned more from written feedback from my tutor than from audio-recorded feedback.	1	5	4.0	1.07
I learned more from audio-recorded feedback from my tutor than from written feedback.	1	5	2.1	1.03
I enjoyed written feedback from my tutor more than audio-recorded feedback.	1	5	4.2	0.94
I enjoyed audio-recorded feedback from my tutor more than written feedback.	1	5	2.3	1.13
I read all written feedback from my tutor.	1	5	4.7	0.75
I listened to all audio-recorded feedback from my tutor.	1	5	3.3	1.20

Note. 1 = *strongly disagree*; 5 = *strongly agree*

Table 5. Correlations between student self-regulated learning and evaluation of feedback format

Self-Regulated Learning	Written Feedback			Audio Feedback		
	Learned	Enjoyed	Read	Learned	Enjoyed	Listened
Metacognition Reading Strategies						.22*
Time-Study Management						
Learning Control Beliefs						
Learning Self-Efficacy						
Intrinsic Motivation						.24*
Extrinsic Motivation						
Peer Learning Support	-.20*	-.20*	-.33**	.27**		.27**
Seeking Help for Learning						

Table 6. Stepwise Regression Analysis: Student self-regulated learning predicting evaluation of feedback format

Evaluation of Feedback Format (items abbreviated)	Predictor/s	Beta	t value	R^2(adj)	F value
I learned more from written than audio-recorded feedback.	Peer Learning Support	-.21	-2.1*	.03	(1, 98) = 4.41*
I learned more from audio-recorded than written feedback.	Peer Learning Support	.28	2.9**	.07	(1, 97) = 8.24**
I enjoyed written feedback more than audio-recorded feedback.	Peer Learning Support	-.20	-2.0*	.03	(1, 98) = 4.01*
I enjoyed audio-recorded feedback more than written feedback.					
I read all written feedback from my tutor.	Peer Learning Support	-.41	-4.2***		
	Seeking Help for Learning	.27	2.7**	.16	(2, 97) = 10.11***
I listened to all audio-recorded feedback from my tutor.	Peer Learning Support	.26	2.7**		
	Intrinsic Motivation	.24	2.5*	.11	(2, 97) = 7.27**

* $p < .05$; ** $p < .01$; *** $p < .001$