

Audio Technology Assessment Report

Spring 2019

Author: Joseph F. van Gaalen, Ph.D., Asst. VP of Institutional Research, Assessment & Effectiveness

1 INTRODUCTION

Florida SouthWestern State College's Music Department employs a pre/post-test disposition survey as a means of assessing learning within the Audio Technology Certificate Program. The courses encompassed in this study include: MUS 2360 *Introduction to Music Technology*, MUM 2600C *Basic Audio Recording Technique*, MUM 2601C *Recording Techniques (II)*, and MUM 2604C *Multi-track Mixdown Techniques*. The Audio Technology Program initiated AY 2017-2018 developed an assessment plan and piloted it in Spring 2018. For Fall 2018, this assessment expanded from MUM 2601C to the four courses mentioned above. This report provides analysis of both the results of the assessment for spring 2019, as well as the assessment tool, in an effort to fine-tune the piloted assessment package.






For additional detail or further analysis not provided in this report, please contact Dr. Joseph F. van Gaalen, Asst. VP of Institutional Research, Assessment, and Effectiveness (jfvangaalen@fsw.edu; x16965).

2 ASSESSMENT RESULTS & RECOMMENDATIONS

2.1 MUS 2360

2.1.1 Assessment Tool

The assessment method utilizes a disposition survey administered as a pre-test and post-test to gauge growth in varying topics associated with the course outcomes. The disposition survey consists of 20 questions, each intended to be rated on the same scale as shown below:

-  Strongly Agree
-  Moderately Agree
-  Agree
-  Somewhat Agree
-  Disagree

The questions used in the disposition survey are designed to ensure that by the end of term, students will have a strong knowledge of the core concepts of the course. The course outcomes for MUS 2360 applicable to this assessment are as follows:

1. Describe the historical interaction between technology and music.
2. Identify the properties of digital sound, and the technologies used to produce it.
3. Define the role of various computer hardware components used to create, produce, and distribute music.

4. Compare and contrast the functions and benefits of various computer software programs used to teach, create, or share music.
5. Describe the role of the internet in the creation and sharing of music.

The survey prompts of the disposition survey are shown below:

1. Can you describe what compression and rarefaction are as they relate to sound propagation?
2. Are you familiar with the mediums that allow sound to travel and their effect on sound waves?
3. Do you know all of the parts of the ear, and how sound is received by the brain?
4. Can you tell the difference between a rhythm transient and a ADSR wave?
5. Can you accurately explain the way that sound travels from the moment when a drum is struck until it reaches the listeners brain?
6. Do you know if there is a difference between Hz and CPS and what they stand for?
7. Are you familiar with the differences of the 5 perceptual properties of sound vs. the 5 physical properties of sound?
8. Are you familiar with the 3 main (most common) types of microphones?
9. Are you familiar with the process of creating a well produced podcast?
10. Rate your experience working with ProTools.
11. Rate your experience with basic audio editing.
12. Rate your experience with basic MIDI input.
13. Rate your knowledge of the following digital effects: Reverb, Delay, and Modulation FX.
14. Rate your experience with basic MIDI editing.
15. Do you understand basic music theory? (pitch, duration, note, and rest values)
16. Can you enter notes, lyrics and chords into a score with a music notation program (Sibelius)?
17. Rate your knowledge of the following dynamic effects: EQ, and Compression.
18. Can you record audio into a DAW?
19. Are you familiar with tempo and changing the tempo value in a DAW?
20. Do you know the difference between Hi-Z and Lo-Z impedance?

2.1.2 Assessment Results & Longitudinal Review

For the spring 2019 assessment, 11 artifacts were collected from the MUS 2360 pre-test and 10 from the post-test, accounting for 10 common artifacts between the pre-test and post-test. While two sections of the course were run, the pre/post-tests were only included in one of the two sections. Results of pre-test and post-test by ordinal response percentage is shown in Figure 1 below. Increases in positive response are visible for all questions and exhibit exceptional growth. Question 17, "Rate your knowledge of the following dynamic effects: EQ, and Compression.", exhibits the largest growth at 91% more positive. Questions 20, "Do you know the difference between Hi-Z and Lo-Z impedance?", exhibits the smallest growth at 22% more positive.

The results of pre-test and post-test for previous terms (Fall 2018) are shown in Figure 2 for comparison. The change in positive response for each question over the course of the two terms (Fall 2018 and Spring 2019) is compiled in Figure 3. A review of this figure shows that, over time, Question 9, "Are you familiar with the process of creating a well produced podcast?," is the area that consistently the strongest growth over time. The change in percent of students responding more positively from pre-test to post-test over the two terms of study is 89% for fall 2018 and 81% for spring 2019. By

comparison, question 20 exhibits the weakest change over time. In fall 2018, the change in percent of students responding more positively from pre-test to post-test is 56%, and just 22% in spring 2019.

	<u>PRE-TEST</u>					<u>POST-TEST</u>					<u>CHANGE</u>			Scale
	<i>More negative</i>		<i>More positive</i>			<i>More negative</i>		<i>More positive</i>			<i>Negative</i>	<i>Neutral</i>	<i>Positive</i>	
1	40%	50%	10%	0%	0%	0%	20%	20%	20%	40%	-70%	10%	60%	
2	40%	40%	10%	10%	0%	0%	10%	30%	40%	20%	-70%	20%	50%	90%
3	60%	40%	0%	0%	0%	0%	10%	40%	20%	30%	-90%	40%	50%	60%
4	90%	10%	0%	0%	0%	20%	0%	40%	20%	20%	-80%	40%	40%	30%
5	70%	20%	10%	0%	0%	0%	10%	30%	10%	50%	-80%	20%	60%	0%
6	80%	10%	10%	0%	0%	0%	10%	0%	20%	70%	-80%	-10%	90%	-30%
7	80%	10%	10%	0%	0%	0%	10%	30%	30%	30%	-80%	20%	60%	-60%
8	60%	20%	0%	10%	10%	0%	0%	30%	40%	30%	-80%	30%	50%	-90%
9	60%	20%	20%	0%	0%	0%	0%	20%	10%	70%	-80%	0%	80%	
10	60%	30%	0%	10%	0%	10%	0%	10%	10%	70%	-80%	10%	70%	
11	20%	40%	20%	0%	20%	0%	0%	20%	10%	70%	-60%	0%	60%	
12	45%	18%	27%	0%	9%	0%	0%	10%	50%	40%	-64%	-17%	81%	
13	45%	18%	18%	0%	18%	0%	0%	0%	30%	70%	-64%	-18%	82%	
14	55%	27%	9%	0%	9%	0%	0%	20%	20%	60%	-82%	11%	71%	
15	36%	18%	18%	0%	18%	0%	0%	30%	20%	50%	-55%	12%	52%	
16	64%	9%	9%	9%	9%	22%	0%	0%	22%	56%	-51%	-9%	60%	
17	27%	45%	18%	0%	9%	0%	0%	0%	40%	60%	-73%	-18%	91%	
18	55%	0%	18%	0%	27%	0%	0%	0%	40%	60%	-55%	-18%	73%	
19	36%	9%	18%	0%	36%	0%	0%	0%	50%	50%	-45%	-18%	64%	
20	73%	9%	0%	9%	9%	0%	20%	40%	10%	30%	-62%	40%	22%	

Scale 0% 20% 40% 60% 80% 100%

Figure 1. **SPRING 2019** Comparison of responses to disposition questions 1-10 based on survey prompt. Questions from left to right (More negative to More positive) reflects the ordinal options “Disagree”, “Somewhat Agree”, “Agree”, “Moderately Agree”, and “Strongly Agree.”

	<u>PRE-TEST</u>					<u>POST-TEST</u>					<u>CHANGE</u>			Scale
	<i>More negative</i>		<i>More positive</i>			<i>More negative</i>		<i>More positive</i>			<i>Negative</i>	<i>Neutral</i>	<i>Positive</i>	
1	56%	44%	0%	0%	0%	0%	0%	11%	44%	44%	-100%	11%	89%	
2	33%	67%	0%	0%	0%	0%	11%	11%	56%	22%	-89%	11%	78%	90%
3	56%	44%	0%	0%	0%	0%	0%	33%	22%	44%	-100%	33%	67%	60%
4	67%	22%	11%	0%	0%	11%	22%	22%	11%	33%	-56%	11%	44%	30%
5	56%	44%	0%	0%	0%	0%	0%	22%	33%	44%	-100%	22%	78%	0%
6	78%	22%	0%	0%	0%	0%	11%	22%	33%	33%	-89%	22%	67%	-30%
7	78%	22%	0%	0%	0%	0%	0%	33%	33%	33%	-100%	33%	67%	-60%
8	67%	33%	0%	0%	0%	0%	11%	11%	22%	56%	-89%	11%	78%	-90%
9	100%	0%	0%	0%	0%	0%	0%	11%	33%	56%	-100%	11%	89%	
10	78%	11%	0%	11%	0%	0%	0%	0%	56%	44%	-89%	0%	89%	
11	22%	22%	44%	11%	0%	0%	0%	11%	33%	56%	-44%	-33%	78%	
12	33%	44%	22%	0%	0%	0%	0%	11%	33%	56%	-78%	-11%	89%	
13	33%	33%	33%	0%	0%	0%	0%	22%	11%	67%	-67%	-11%	78%	
14	56%	11%	33%	0%	0%	0%	0%	22%	22%	56%	-67%	-11%	78%	
15	33%	22%	0%	33%	11%	0%	0%	22%	11%	67%	-56%	22%	33%	
16	67%	11%	22%	0%	0%	0%	11%	0%	22%	67%	-67%	-22%	89%	
17	44%	56%	0%	0%	0%	0%	0%	22%	22%	44%	-100%	22%	67%	
18	11%	56%	33%	0%	0%	0%	0%	11%	11%	78%	-67%	-22%	89%	
19	22%	44%	33%	0%	0%	0%	11%	22%	11%	56%	-56%	-11%	67%	
20	89%	11%	0%	0%	0%	22%	0%	11%	22%	33%	-78%	11%	56%	

Scale 0% 20% 40% 60% 80% 100%

Figure 2. **FALL 2018** Comparison of responses to disposition questions 1-10 based on survey prompt. Questions from left to right (More negative to More positive) reflects the ordinal options “Disagree”, “Somewhat Agree”, “Agree”, “Moderately Agree”, and “Strongly Agree.”

	Fall 2018	Spring 2019
Q1	89%	60%
Q2	78%	50%
Q3	67%	50%
Q4	44%	40%
Q5	78%	60%
Q6	67%	90%
Q7	67%	60%
Q8	78%	50%
Q9	89%	80%
Q10	89%	70%
Q11	78%	60%
Q12	89%	81%
Q13	78%	82%
Q14	78%	71%
Q15	33%	52%
Q16	89%	60%
Q17	67%	91%
Q18	89%	73%
Q19	67%	64%
Q20	56%	22%

Figure 3. Comparison of % positive change over time.

Another way of looking at these results is by comparing growth from pre-test to post-test utilizing overall responses (Figure 4). In other words, instead of reviewing the percentage of those responding negatively or positively to a particular prompt, we can review growth based on the overall percentage of those questions answered “Disagree” versus those answered “Strongly Agree.” In short, nine respondents mean a comparison of 200 questions answered (20 questions per respondent). In this comparison, 55% of all pre-test questions answered were answered with “Disagree,” or the most negative response. In the post-test, that percentage is 3%. Similarly, 9% in the pre-test reported “Strongly Agree,” or the most positive response. In the post-test, that percentage is 49%.

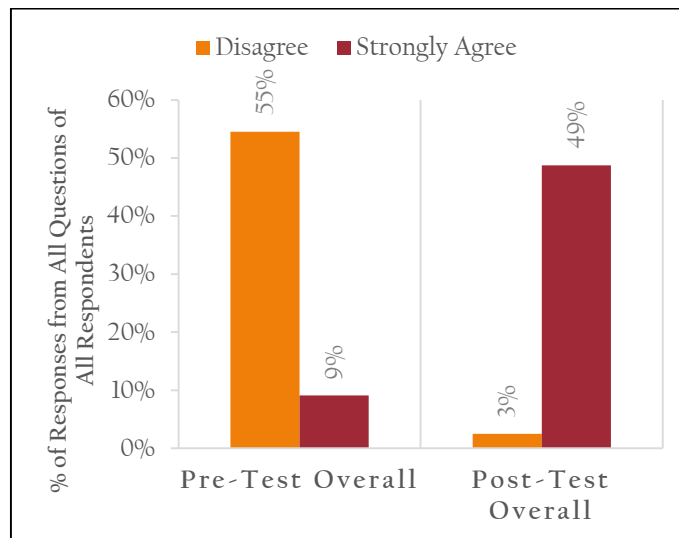


Figure 4. Comparison of percentage of responses from all questions by all respondents reporting "Disagree" or "Strongly Agree" in Pre-Test and Post-Test. For example, 55% reporting "Disagree" in Pre-Test is 55% of 200 responses (20 questions times 10 respondents).

2.1.3 Assessment Recommendations

While both the results and confirmation from the faculty administering the disposition survey that students reported a clear understanding when completing the survey support the validity of the results, it is important to note that the questions, in the manner currently devised, may lead to confusion in future studies. What follows are some suggestions (original in black, suggested in blue) based on standard survey writing techniques to ensure clarity over time (Kuh et al., 2015).

The survey prompts of the disposition survey are shown below:

1. Can you describe what compression and rarefaction are as they relate to sound propagation?
 - a. Change response options to:
 - i. Yes, very accurately
 - ii. Yes, accurately
 - iii. Yes, somewhat accurately
 - iv. No, not very accurately
 - v. No, not at all
2. Are you familiar with the mediums that allow sound to travel and their effect on sound waves?
 - a. Change response options to:
 - i. Very familiar
 - ii. Familiar
 - iii. Somewhat familiar
 - iv. Minimally familiar
 - v. Not at all familiar
3. Do you know all of the parts of the ear, and how sound is received by the brain?
 - a. Change response options to:
 - i. Yes, very accurately
 - ii. Yes, accurately
 - iii. Yes, somewhat accurately
 - iv. No, not very accurately
 - v. No, not at all
4. Can you tell the difference between a rhythm transient and a ADSR wave?
 - a. Change response options to:
 - i. Yes, very accurately
 - ii. Yes, accurately
 - iii. Yes, somewhat accurately
 - iv. No, not very accurately
 - v. No, not at all
5. Can you accurately explain the way that sound travels from the moment when a drum is struck until it reaches the listeners brain?
 - a. Change response options to:
 - i. Yes, very accurately
 - ii. Yes, accurately
 - iii. Yes, somewhat accurately
 - iv. No, not very accurately
 - v. No, not at all

6. Do you know if there is a difference between Hz and CPS and what they stand for?
 - a. Change response options to:
 - i. Yes, very accurately
 - ii. Yes, accurately
 - iii. Yes, somewhat accurately
 - iv. No, not very accurately
 - v. No, not at all
7. Are you familiar with the differences of the 5 perceptual properties of sound vs. the 5 physical properties of sound?
 - a. Change response options to:
 - i. Very familiar
 - ii. Familiar
 - iii. Somewhat familiar
 - iv. Minimally familiar
 - v. Not at all familiar
8. Are you familiar with the 3 main (most common) types of microphones?
 - a. Change response options to:
 - i. Very familiar
 - ii. Familiar
 - iii. Somewhat familiar
 - iv. Minimally familiar
 - v. Not at all familiar
9. Are you familiar with the process of creating a well produced podcast?
 - a. Change response options to:
 - i. Very familiar
 - ii. Familiar
 - iii. Somewhat familiar
 - iv. Minimally familiar
 - v. Not at all familiar
10. Rate your experience working with ProTools.
 - a. Change response options to:
 - i. Very experienced
 - ii. Experienced
 - iii. Somewhat experienced
 - iv. Minimally experienced
 - v. No experience
11. Rate your experience with basic audio editing.
 - a. Change response options to:
 - i. Very experienced
 - ii. Experienced
 - iii. Somewhat experienced
 - iv. Minimally experienced
 - v. No experience
12. Rate your experience with basic MIDI input.






- a. Change response options to:
 - i. Very experienced
 - ii. Experienced
 - iii. Somewhat experienced
 - iv. Minimally experienced
 - v. No experience
13. Rate your knowledge of the following digital effects: Reverb, Delay, and Modulation FX.
- a. Change response options to:
 - i. Very knowledgeable
 - ii. Knowledgeable
 - iii. Somewhat knowledgeable
 - iv. Minimal knowledge
 - v. None
14. Rate your experience with basic MIDI editing.
- a. Change response options to:
 - i. Very experienced
 - ii. Experienced
 - iii. Somewhat experienced
 - iv. Minimally experienced
 - v. No experience
15. Do you understand basic music theory? (pitch, duration, note, and rest values)
- a. Change response options to:
 - i. Yes, very accurately
 - ii. Yes, accurately
 - iii. Yes, somewhat accurately
 - iv. No, not very accurately
 - v. No, not at all
16. Can you enter notes, lyrics and chords into a score with a music notation program (Sibelius)?
- a. Change response options to:
 - i. Yes, very accurately
 - ii. Yes, accurately
 - iii. Yes, somewhat accurately
 - iv. No, not very accurately
 - v. No, not at all
17. Rate your knowledge of the following dynamic effects: EQ, and Compression.
- a. Change response options to:
 - i. Very knowledgeable
 - ii. Knowledgeable
 - iii. Somewhat knowledgeable
 - iv. Minimal knowledge
 - v. None
18. Can you record audio into a DAW?
- a. Change response options to:
 - i. Yes, very accurately

- ii. Yes, accurately
 - iii. Yes, somewhat accurately
 - iv. No, not very accurately
 - v. No, not at all
19. Are you familiar with tempo and changing the tempo value in a DAW?
- a. Change response options to:
 - i. Very familiar
 - ii. Familiar
 - iii. Somewhat familiar
 - iv. Minimally familiar
 - v. Not at all familiar
20. Do you know the difference between Hi-Z and Lo-Z impedance?
- a. Change response options to:
 - i. Yes, very accurately
 - ii. Yes, accurately
 - iii. Yes, somewhat accurately
 - iv. No, not very accurately
 - v. No, not at all

2.2 MUM 2600C

2.2.1 Assessment Tool

The assessment method utilizes a disposition survey administered as a pre-test and post-test to gauge growth in varying topics associated with the course outcomes. The disposition survey consists of 10 questions, each intended to be rated on the same scale as shown below:

-  Strongly Agree
-  Moderately Agree
-  Agree
-  Somewhat Agree
-  Disagree

The questions used in the disposition survey are designed to ensure that by the end of term, students will have a strong knowledge of the core concepts of the course. The course outcomes for MUM 2600C applicable to this assessment are as follows:

1. Recognition of various audio aesthetics and identification of various properties of sound.
2. Describe and practice fundamentals of audio and post-production techniques.
3. Identify components of a sound studio and the responsibilities of individuals (such as studio manager, recording engineer, etc.) with that environment.
4. Compare and contrast analog and digital audio production technology.

The survey prompts of the disposition survey are shown below:

1. Rate your knowledge of the Protools File Menu functions.
2. Rate your knowledge of the Protools Edit Menu functions.

3. Can you accurately explain what a buffer is and the effect it has on latency?
4. How familiar are you with the editing technique called vocal leveling?
5. Can you describe the roles of the tracking engineer, editing engineer, and mastering engineer?
6. How do you rate your knowledge of mixing for vocals?
7. How do you rate your knowledge of mixing for electric guitars?
8. How do you rate your knowledge of mixing for drums?
9. How do you rate your knowledge of mixing for bass guitar?
10. Are you familiar with the process of bouncing, rendering or mixing down your tracks?

2.2.2 Assessment Results & Longitudinal Review

For the spring 2019 assessment, 8 artifacts were collected from the MUM 2601C pre-test and 7 from the post-test, accounting for 7 common artifacts between the pre-test and post-test. Results of pre-test and post-test by ordinal response percentage is shown in Figure 5 below. Increases in positive response are visible for all questions and exhibit exceptional growth. Question 10, “Are you familiar with the process of bouncing, rendering or mixing down your tracks?”, is the only question which exhibit growth less than 60%, at 48%.

The results of pre-test and post-test for previous terms (Fall 2018) are shown in Figure 6 for comparison. The change in positive response for each question over the course of the two terms (Fall 2018 and Spring 2019) is compiled in Figure 7. A review of this figure shows that, over time, Question 4, “How familiar are you with the editing technique called vocal leveling?” is the area that consistently the strongest growth over time. The change in percent of students responding more positively from pre-test to post-test over the two terms of study is 88% for fall 2018 and 86% for spring 2019. By comparison, question 10 exhibits the largest difference between terms. In fall 2018, the change in percent of students responding more positively from pre-test to post-test is 88%, but only 57% in spring 2019.

	<u>PRE-TEST</u>					<u>POST-TEST</u>					<u>CHANGE</u>			Scale
	<i>More negative</i>		<i>More positive</i>			<i>More negative</i>		<i>More positive</i>			<i>Negative</i>	<i>Neutral</i>	<i>Positive</i>	
1	29%	14%	43%	0%	14%	0%	0%	0%	14%	86%	-43%	-43%	86%	90%
2	29%	29%	29%	14%	0%	0%	0%	0%	0%	100%	-57%	-29%	86%	60%
3	14%	14%	43%	14%	14%	0%	0%	0%	43%	57%	-29%	-43%	71%	30%
4	14%	29%	43%	14%	0%	0%	0%	0%	14%	86%	-43%	-43%	86%	0%
5	43%	14%	14%	29%	0%	0%	14%	0%	14%	71%	-43%	-14%	57%	-30%
6	14%	14%	57%	14%	0%	0%	0%	14%	29%	57%	-29%	-43%	71%	-60%
7	29%	14%	43%	14%	0%	0%	0%	14%	29%	57%	-43%	-29%	71%	-90%
8	14%	14%	29%	43%	0%	0%	0%	0%	29%	71%	-29%	-29%	57%	
9	14%	14%	43%	29%	0%	0%	0%	14%	0%	86%	-29%	-29%	57%	
10	14%	14%	43%	14%	14%	0%	0%	14%	0%	86%	-29%	-29%	57%	

Scale: 0% 20% 40% 60% 80% 100%

Figure 5. **Spring 2019** Comparison of responses to disposition questions 1-10 based on survey prompt. Questions from left to right (More negative to More positive) reflects the ordinal options “Disagree”, “Somewhat Agree”, “Agree”, “Moderately Agree”, and “Strongly Agree.”

	<u>PRE-TEST</u>					<u>POST-TEST</u>					<u>CHANGE</u>			Scale
	More negative		More positive			More negative		More positive			Negative	Neutral	Positive	
1	50%	25%	0%	25%	0%	0%	0%	0%	25%	75%	-75%	0%	75%	90%
2	50%	25%	0%	25%	0%	0%	0%	0%	13%	88%	-75%	0%	75%	60%
3	63%	13%	13%	0%	13%	0%	13%	0%	50%	38%	-63%	-13%	75%	30%
4	50%	25%	13%	13%	0%	0%	0%	0%	13%	88%	-75%	-13%	88%	0%
5	25%	38%	25%	0%	13%	0%	14%	0%	29%	57%	-48%	-25%	73%	-30%
6	63%	0%	25%	0%	13%	0%	0%	0%	50%	50%	-63%	-25%	88%	-60%
7	50%	25%	13%	13%	0%	0%	0%	13%	38%	50%	-75%	0%	75%	-90%
8	50%	25%	13%	13%	0%	0%	0%	0%	63%	38%	-75%	-13%	88%	
9	50%	25%	0%	25%	0%	0%	0%	0%	50%	50%	-75%	0%	75%	
10	50%	13%	25%	0%	13%	0%	0%	0%	13%	88%	-63%	-25%	88%	

Scale	0%	20%	40%	60%	80%	100%
-------	----	-----	-----	-----	-----	------

Figure 6. **FALL 2018** Comparison of responses to disposition questions 1-10 based on survey prompt. Questions from left to right (More negative to More positive) reflects the ordinal options “Disagree”, “Somewhat Agree”, “Agree”, “Moderately Agree”, and “Strongly Agree.”

	Fall 2018	Spring 2019
Q1	75%	86%
Q2	75%	86%
Q3	75%	71%
Q4	88%	86%
Q5	73%	57%
Q6	88%	71%
Q7	75%	71%
Q8	88%	57%
Q9	75%	57%
Q10	88%	57%

Figure 7. Comparison of % positive change over time.

Another way of looking at these results is by comparing growth from pre-test to post-test utilizing overall responses (Figure 8). In other words, instead of reviewing the percentage of those responding negatively or positively to a particular prompt, we can review growth based on the overall percentage of those questions answered “Disagree” versus those answered “Strongly Agree.” In short, seven respondents mean a comparison of 70 questions answered (10 questions per respondent). In this comparison, 21% of all pre-test questions answered were answered with “Disagree,” or the most negative response. In the post-test, that percentage is 0%. Similarly, 4% in the pre-test reported “Strongly Agree,” or the most positive response. In the post-test, that percentage is 76%.

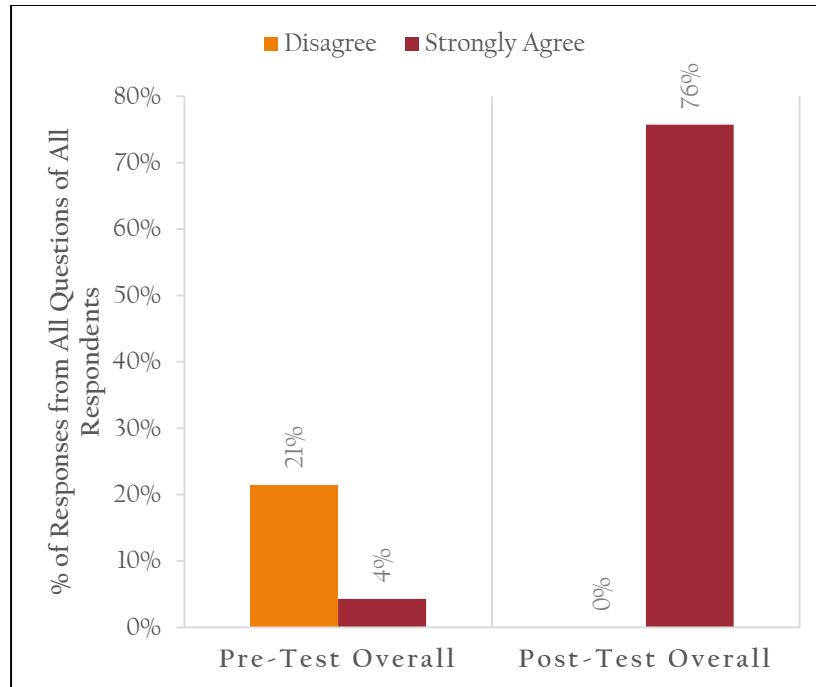


Figure 8. Comparison of percentage of responses from all questions by all respondents reporting "Disagree" or "Strongly Agree" in Pre-Test and Post-Test. For example, 21% reporting "Disagree" in Pre-Test is 21% of 70 responses (10 questions times 7 respondents).

2.2.3 Assessment Recommendations

While both the results and confirmation from the faculty administering the disposition survey that students reported a clear understanding when completing the survey support the validity of the results, it is important to note that the questions, in the manner currently devised, may lead to confusion in future studies. What follows are some suggestions (original in black, suggested in blue) based on standard survey writing techniques to ensure clarity over time (Kuh et al., 2015).

The survey prompts of the disposition survey are shown below:

1. Rate your knowledge of the Protocols File Menu functions.
 - a. Change response options to:
 - i. Very experienced
 - ii. Experienced
 - iii. Somewhat experienced
 - iv. Minimally experienced
 - v. No experience
2. Rate your knowledge of the Protocols Edit Menu functions.
 - a. Change response options to:
 - vi. Very experienced
 - vii. Experienced
 - viii. Somewhat experienced
 - ix. Minimally experienced
 - x. No experience
3. Can you accurately explain what a buffer is and the effect it has on latency?

- a. Change response options to:
 - i. Yes, very accurately
 - ii. Yes, accurately
 - iii. Yes, somewhat accurately
 - iv. No, not very accurately
 - v. No, not at all
4. How familiar are you with the editing technique called vocal leveling?
 - a. Change response options to:
 - i. Very familiar
 - ii. Familiar
 - iii. Somewhat familiar
 - iv. Minimally familiar
 - v. Not at all familiar
5. Can you describe the roles of the tracking engineer, editing engineer, and mastering engineer?
 - a. Change response options to:
 - i. Yes, very accurately
 - ii. Yes, accurately
 - iii. Yes, somewhat accurately
 - iv. No, not very accurately
 - v. No, not at all
6. How do you rate your knowledge of mixing for vocals?
 - a. Change response options to:
 - i. Very knowledgeable
 - ii. Knowledgeable
 - iii. Somewhat knowledgeable
 - iv. Minimal knowledge
 - v. None
7. How do you rate your knowledge of mixing for electric guitars?
 - a. Change response options to:
 - i. Very knowledgeable
 - ii. Knowledgeable
 - iii. Somewhat knowledgeable
 - iv. Minimal knowledge
 - v. None
8. How do you rate your knowledge of mixing for drums?
 - a. Change response options to:
 - i. Very knowledgeable
 - ii. Knowledgeable
 - iii. Somewhat knowledgeable
 - iv. Minimal knowledge
 - v. None
9. How do you rate your knowledge of mixing for bass guitar?
 - a. Change response options to:
 - i. Very knowledgeable

- ii. Knowledgeable
- iii. Somewhat knowledgeable
- iv. Minimal knowledge
- v. None

10. Are you familiar with the process of bouncing, rendering or mixing down your tracks?






a. Change response options to:

- i. Very familiar
- ii. Familiar
- iii. Somewhat familiar
- iv. Minimally familiar
- v. Not at all familiar

2.3 MUM 2601C

2.3.1 Assessment Tool

The assessment method utilizes a disposition survey administered as a pre-test and post-test to gauge growth in varying topics associated with the course outcomes. The disposition survey consists of 10 questions, each intended to be rated on the same scale as shown below:

-  Strongly Agree
-  Moderately Agree
-  Agree
-  Somewhat Agree
-  Disagree

The questions used in the disposition survey are designed to ensure that by the end of term, students will have a strong knowledge of the core concepts of the course. The course outcomes for MUM 2601C applicable to this assessment are as follows:

1. Apply knowledge of microphone, monitor, amplifier design through appropriate setup.
2. Describe and apply knowledge of signal flow and processing.
3. Demonstrate recording, mix down and mastering processes.
4. Describe aspects of digital and physical music recording production, manufacture, and distribution.

The survey prompts of the disposition survey are shown below:

1. Rate your experience with a mixing console.
2. Rate your experience with recording equipment direct to hard drive and direct to DAW.
3. Knowledge of recording room acoustics, diffusion vs. absorption and what frequencies are affected.
4. General differences in tonal quality as it relates to microphone proximity (placement).
5. Recording vocal tracks, miking techniques, and track capturing.
6. Recording Acoustic Guitar tracks, miking techniques, DI, and track capturing.
7. Recording Bass Guitar tracks, miking techniques, DI, and track capturing.

8. Recording drum / percussion tracks, close and far miking techniques, multiple vs. zone miking, and track capturing levels.
9. Recording electric guitar tracks, close and far miking techniques, multiple mics vs. DI, software modeling, and track capturing levels.
10. Rate your knowledge of microphone types, and the instruments that they should be used on.

2.3.2 Assessment Results & Longitudinal Review

For the spring 2019 assessment, 10 artifacts were collected from the MUM 2601C pre-test and 10 from the post-test, accounting for 10 common artifacts between the pre-test and post-test. Results of pre-test and post-test by ordinal response percentage is shown in Figure 9 below. Increases in positive response are visible for all questions and exhibit exceptional growth. Questions 1 and 5, “Rate your experience with a mixing console” and “Recording vocal tracks, miking techniques, and track capturing”, are the only questions which exhibit growth less than 60%.

The results of pre-test and post-test for previous terms (Fall 2018 and Spring 2018) are shown in Figures 10 and 11 for comparison. The change in positive response for each question over the course of the three terms (Spring 2018 through Spring 2019) is compiled in Figure 12. A review of this figure shows that, over time, Question 1, “Rate your experience with a mixing console,” is the area that shows the weakest growth over time. The change in percent of students responding more positively from pre-test to post-test over the three terms of study is 65%, 83%, and 50%, in spring 2018, fall 2018, and spring 2019, respectively. By comparison, questions 3, 6, 7, 8, and 9 never exhibit a term with less than 80%.

	<u>PRE-TEST</u>					<u>POST-TEST</u>					<u>CHANGE</u>			Scale
	<i>More negative</i>			<i>More positive</i>		<i>More negative</i>			<i>More positive</i>		<i>Negative</i>	<i>Neutral</i>	<i>Positive</i>	
1	20%	20%	20%	30%	10%	0%	0%	10%	70%	20%	-40%	-10%	50%	90%
2	30%	20%	20%	10%	20%	0%	0%	10%	30%	60%	-50%	-10%	60%	60%
3	40%	40%	10%	10%	0%	0%	0%	10%	40%	50%	-80%	0%	80%	30%
4	10%	50%	10%	30%	0%	0%	0%	10%	30%	60%	-60%	0%	60%	0%
5	20%	30%	10%	30%	10%	0%	0%	10%	30%	60%	-50%	0%	50%	-30%
6	40%	30%	20%	0%	10%	0%	0%	0%	20%	80%	-70%	-20%	90%	-60%
7	40%	30%	10%	10%	10%	0%	0%	0%	50%	50%	-70%	-10%	80%	-90%
8	50%	20%	10%	10%	10%	0%	0%	0%	10%	90%	-70%	-10%	80%	
9	40%	30%	20%	0%	10%	0%	0%	0%	40%	60%	-70%	-20%	90%	
10	0%	10%	70%	20%	0%	0%	0%	20%	40%	40%	-10%	-50%	60%	

Scale: 0% 20% 40% 60% 80% 100%

Figure 9. **SPRING 2019** Comparison of responses to disposition questions 1-10 based on survey prompt. Questions from left to right (More negative to More positive) reflects the ordinal options “Disagree”, “Somewhat Agree”, “Agree”, “Moderately Agree”, and “Strongly Agree.”

	<u>PRE-TEST</u>					<u>POST-TEST</u>					<u>CHANGE</u>			Scale
	<i>More negative</i>		<i>More positive</i>			<i>More negative</i>		<i>More positive</i>			<i>Negative</i>	<i>Neutral</i>	<i>Positive</i>	
1	50%	17%	17%	17%	0%	0%	0%	0%	50%	50%	-67%	-17%	83%	<div style="display: flex; justify-content: space-between; width: 100%;"> Scale <div style="display: flex; gap: 5px;"> <div style="width: 20px; height: 10px; background-color: #f0f0f0;"></div> <div style="width: 20px; height: 10px; background-color: #e0e0e0;"></div> <div style="width: 20px; height: 10px; background-color: #d0d0d0;"></div> <div style="width: 20px; height: 10px; background-color: #c0c0c0;"></div> <div style="width: 20px; height: 10px; background-color: #b0b0b0;"></div> <div style="width: 20px; height: 10px; background-color: #a0a0a0;"></div> <div style="width: 20px; height: 10px; background-color: #909090;"></div> <div style="width: 20px; height: 10px; background-color: #808080;"></div> <div style="width: 20px; height: 10px; background-color: #707070;"></div> <div style="width: 20px; height: 10px; background-color: #606060;"></div> <div style="width: 20px; height: 10px; background-color: #505050;"></div> <div style="width: 20px; height: 10px; background-color: #404040;"></div> <div style="width: 20px; height: 10px; background-color: #303030;"></div> <div style="width: 20px; height: 10px; background-color: #202020;"></div> <div style="width: 20px; height: 10px; background-color: #101010;"></div> <div style="width: 20px; height: 10px; background-color: #000000;"></div> </div> </div>
2	17%	33%	17%	17%	17%	0%	0%	0%	33%	67%	-50%	-17%	67%	
3	67%	17%	17%	0%	0%	0%	0%	0%	50%	50%	-83%	-17%	100%	
4	50%	17%	17%	17%	0%	0%	0%	17%	17%	67%	-67%	0%	67%	
5	17%	67%	17%	0%	0%	0%	0%	0%	50%	50%	-83%	-17%	100%	
6	33%	50%	0%	17%	0%	0%	0%	0%	33%	67%	-83%	0%	83%	
7	33%	50%	0%	17%	0%	0%	0%	0%	17%	83%	-83%	0%	83%	
8	33%	50%	17%	0%	0%	0%	0%	0%	33%	67%	-83%	-17%	100%	
9	33%	67%	0%	0%	0%	0%	0%	0%	33%	67%	-100%	0%	100%	
10	33%	50%	17%	0%	0%	0%	0%	17%	67%	17%	-83%	0%	83%	

Figure 10. **FALL 2018** Comparison of responses to disposition questions 1-10 based on survey prompt. Questions from left to right (More negative to More positive) reflects the ordinal options “Disagree”, “Somewhat Agree”, “Agree”, “Moderately Agree”, and “Strongly Agree.”

	<u>PRE-TEST</u>					<u>POST-TEST</u>					<u>CHANGE</u>			Scale
	<i>More negative</i>		<i>More positive</i>			<i>More negative</i>		<i>More positive</i>			<i>Negative</i>	<i>Neutral</i>	<i>Positive</i>	
1	75%	0%	0%	25%	0%	0%	10%	0%	30%	60%	-65%	0%	65%	<div style="display: flex; justify-content: space-between; width: 100%;"> Scale <div style="display: flex; gap: 5px;"> <div style="width: 20px; height: 10px; background-color: #f0f0f0;"></div> <div style="width: 20px; height: 10px; background-color: #e0e0e0;"></div> <div style="width: 20px; height: 10px; background-color: #d0d0d0;"></div> <div style="width: 20px; height: 10px; background-color: #c0c0c0;"></div> <div style="width: 20px; height: 10px; background-color: #b0b0b0;"></div> <div style="width: 20px; height: 10px; background-color: #a0a0a0;"></div> <div style="width: 20px; height: 10px; background-color: #909090;"></div> <div style="width: 20px; height: 10px; background-color: #808080;"></div> <div style="width: 20px; height: 10px; background-color: #707070;"></div> <div style="width: 20px; height: 10px; background-color: #606060;"></div> <div style="width: 20px; height: 10px; background-color: #505050;"></div> <div style="width: 20px; height: 10px; background-color: #404040;"></div> <div style="width: 20px; height: 10px; background-color: #303030;"></div> <div style="width: 20px; height: 10px; background-color: #202020;"></div> <div style="width: 20px; height: 10px; background-color: #101010;"></div> <div style="width: 20px; height: 10px; background-color: #000000;"></div> </div> </div>
2	17%	8%	67%	8%	0%	0%	0%	0%	50%	50%	-25%	-67%	92%	
3	50%	42%	8%	0%	0%	0%	0%	10%	30%	60%	-92%	2%	90%	
4	50%	17%	33%	0%	0%	0%	0%	0%	20%	80%	-67%	-33%	100%	
5	50%	8%	33%	0%	8%	0%	0%	10%	20%	70%	-58%	-23%	82%	
6	42%	42%	8%	8%	0%	0%	0%	10%	40%	50%	-83%	2%	82%	
7	42%	33%	17%	8%	0%	0%	0%	10%	20%	70%	-75%	-7%	82%	
8	58%	25%	0%	17%	0%	0%	0%	0%	40%	60%	-83%	0%	83%	
9	45%	27%	9%	0%	0%	0%	0%	0%	40%	60%	-73%	-9%	100%	
10	33%	25%	42%	0%	0%	0%	0%	0%	70%	30%	-58%	-42%	100%	

Figure 11. **SPRING 2018** Comparison of responses to disposition questions 1-10 based on survey prompt. Questions from left to right (More negative to More positive) reflects the ordinal options “Disagree”, “Somewhat Agree”, “Agree”, “Moderately Agree”, and “Strongly Agree.”

	Spring 2018	Fall 2018	Spring 2019
Q1	65%	83%	50%
Q2	92%	67%	60%
Q3	90%	100%	80%
Q4	100%	67%	60%
Q5	82%	100%	50%
Q6	82%	83%	90%
Q7	82%	83%	80%
Q8	83%	100%	80%
Q9	100%	100%	90%
Q10	100%	83%	60%

Figure 12. Comparison of % positive change over time.

Another way of looking at these results is by comparing growth from pre-test to post-test utilizing overall responses (Figure 13). In other words, instead of reviewing the percentage of those responding negatively or positively to a particular prompt, we can review growth based on the overall percentage of those questions answered “Disagree” versus those answered “Strongly Agree.” In short, 10 respondents mean a comparison of 100 questions answered (10 questions per respondent). In this comparison, 29% of all pre-test questions answered were answered with “Disagree,” or the most negative response. In the post-test, that percentage is 0%. Similarly, 8% in the pre-test reported “Strongly Agree,” or the most positive response. In the post-test, that percentage is 57%.

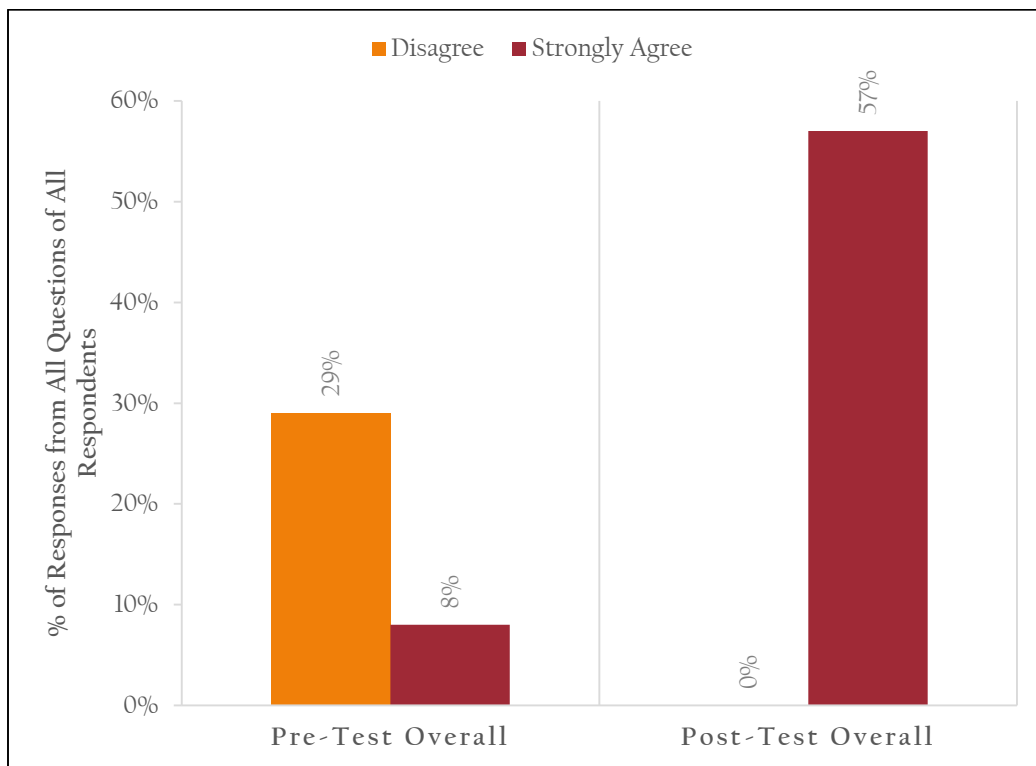


Figure 13. Comparison of percentage of responses from all questions by all respondents reporting “Disagree” or “Strongly Agree” in Pre-Test and Post-Test. For example, 29% reporting “Disagree” in Pre-Test is 29% of 100 responses (10 questions times 10 respondents).

2.3.3 Assessment Recommendations

While both the results and confirmation from the faculty administering the disposition survey that students reported a clear understanding when completing the survey support the validity of the results, it is important to note that the questions, in the manner currently devised, may lead to confusion in future studies. What follows are some suggestions (original in black, suggested in blue) based on standard survey writing techniques to ensure clarity over time (Kuh et al., 2015).

The survey prompts of the disposition survey are shown below:

1. Rate your experience with a mixing console.
 - a. Change response options to:
 - i. Very experienced
 - ii. Experienced
 - iii. Somewhat experienced
 - iv. Minimally experienced
 - v. No experience
2. Rate your experience with recording equipment direct to hard drive and direct to DAW.
 - a. Change response options to:
 - i. Very experienced
 - ii. Experienced
 - iii. Somewhat experienced
 - iv. Minimally experienced
 - v. No experience
3. Rate your knowledge of recording room acoustics, diffusion vs. absorption, and what frequencies are affected.
 - a. Change response options to:
 - i. Very knowledgeable
 - ii. Knowledgeable
 - iii. Somewhat knowledgeable
 - iv. Minimal knowledge
 - v. None
4. Rate your knowledge of general differences in tonal quality as it relates to microphone proximity (placement).
 - a. Change response options to:
 - i. Very knowledgeable
 - ii. Knowledgeable
 - iii. Somewhat knowledgeable
 - iv. Minimal knowledge
 - v. None
5. Rate your knowledge of recording vocal tracks, miking techniques, and track capturing.
 - a. Change response options to:
 - i. Very knowledgeable
 - ii. Knowledgeable
 - iii. Somewhat knowledgeable
 - iv. Minimal knowledge

- v. None
- 6. Rate your knowledge of recording Acoustic Guitar tracks, miking techniques, DI, and track capturing.
 - a. Change response options to:
 - i. Very knowledgeable
 - ii. Knowledgeable
 - iii. Somewhat knowledgeable
 - iv. Minimal knowledge
 - v. None
- 7. Rate your knowledge of recording Bass Guitar tracks, miking techniques, DI, and track capturing.
 - a. Change response options to:
 - i. Very knowledgeable
 - ii. Knowledgeable
 - iii. Somewhat knowledgeable
 - iv. Minimal knowledge
 - v. None
- 8. Rate your knowledge of recording drum / percussion tracks, close and far miking techniques, multiple vs. zone miking, and track capturing levels.
 - a. Change response options to:
 - i. Very knowledgeable
 - ii. Knowledgeable
 - iii. Somewhat knowledgeable
 - iv. Minimal knowledge
 - v. None
- 9. Rate your knowledge of recording electric guitar tracks, close and far miking techniques, multiple mics vs. DI, software modeling, and track capturing levels.
 - a. Change response options to:
 - i. Very knowledgeable
 - ii. Knowledgeable
 - iii. Somewhat knowledgeable
 - iv. Minimal knowledge
 - v. None
- 10. Rate your knowledge of rate your knowledge of microphone types, and the instruments that they should be used on.
 - a. Change response options to:
 - i. Very knowledgeable
 - ii. Knowledgeable
 - iii. Somewhat knowledgeable
 - iv. Minimal knowledge
 - v. None

2.4 MUM 2604C

2.4.1 Assessment Tool

The assessment method utilizes a disposition survey administered as a pre-test and post-test to gauge growth in varying topics associated with the course outcomes. The disposition survey consists of 10 questions, each intended to be rated on the same scale as shown below:

- ✚ Strongly Agree
- ✚ Moderately Agree
- ✚ Agree
- ✚ Somewhat Agree
- ✚ Disagree

The questions used in the disposition survey are designed to ensure that by the end of term, students will have a strong knowledge of the core concepts of the course. The course outcomes for MUM 2601C applicable to this assessment are as follows:

1. Describe effective sound and mix design.
2. Demonstrate equalization and dynamics processing.
3. Compare and contrast techniques for mixing vocal, drum, and instrumental tracks.
4. Demonstrate multi-track mixdown, editing, and final cut tracks on digital and analog masters.

The survey prompts of the disposition survey are shown below:

1. Rate your knowledge of the Side Chain Compression technique
2. Rate your knowledge of the sample replacement / sample enhancement technique.
3. Rate your knowledge of the Mastering process.
4. Do you understand how to EQ a mixing room monitor system?
5. Do you know the process to find standing waves and signal cancellation in a monitoring room?
6. Do you understand the difference between imaging and panning?
7. Do you understand the difference between Analog and Digital mastering?
8. Can you tell the difference between mixing styles: East coast, West coast, Southern, and European?
9. Rate your knowledge of what a RTA is and how it is used.
10. Rate your understanding of post mixdown or mastering automation.

2.4.2 Assessment Results & Longitudinal Review

For the spring 2019 assessment, 10 artifacts were collected from the MUM 2604C pre-test and 10 from the post-test, accounting for 10 common artifacts between the pre-test and post-test. Results of pre-test and post-test by ordinal response percentage is shown in Figure 14 below. Increases in positive response are visible for all questions and exhibit exceptional growth. Questions 3, 8, and 10 exhibit the greatest positive growth at 90%. Question 6 exhibits the least growth at just 40%.

The results of pre-test and post-test for previous terms (Fall 2018) is shown in Figure 15 for comparison. The change in positive response for each question over the course of the two terms (Fall 2018 through Spring 2019) is compiled in Figure 16. A review of this figure shows that, over time, Question 5, “Do you know the process to find standing waves and signal cancellation in a monitoring room?” is the area that

shows the weakest growth over time. The change in percent of students responding more positively from pre-test to post-test over the two terms is 50% and 60% for fall 2018 and spring 2019, respectively. While Question 7 exhibits similarly weak change in spring 2019 at just 40%, it was at 83% in the previous term.

	<u>PRE-TEST</u>					<u>POST-TEST</u>					<u>CHANGE</u>			Scale
	<i>More negative</i>		<i>More positive</i>			<i>More negative</i>		<i>More positive</i>			<i>Negative</i>	<i>Neutral</i>	<i>Positive</i>	
1	70%	30%	0%	0%	0%	0%	10%	10%	40%	40%	-90%	10%	80%	90%
2	50%	40%	0%	0%	10%	0%	0%	10%	60%	30%	-90%	10%	80%	60%
3	30%	50%	10%	10%	0%	0%	0%	0%	20%	80%	-80%	-10%	90%	30%
4	30%	40%	10%	0%	20%	0%	0%	0%	50%	50%	-70%	-10%	80%	0%
5	20%	20%	30%	10%	20%	0%	0%	10%	30%	60%	-40%	-20%	60%	-30%
6	0%	20%	30%	20%	30%	0%	0%	10%	40%	50%	-20%	-20%	40%	-60%
7	40%	20%	0%	20%	20%	0%	0%	0%	40%	60%	-60%	0%	60%	-90%
8	70%	30%	0%	0%	0%	0%	0%	10%	40%	50%	-100%	10%	90%	
9	70%	10%	10%	10%	0%	0%	0%	10%	60%	30%	-80%	0%	80%	
10	10%	50%	30%	10%	0%	0%	0%	0%	60%	40%	-60%	-30%	90%	

Scale: 0% 20% 40% 60% 80% 100%

Figure 14. **SPRING 2019** Comparison of responses to disposition questions 1-10 based on survey prompt. Questions from left to right (More negative to More positive) reflects the ordinal options “Disagree”, “Somewhat Agree”, “Agree”, “Moderately Agree”, and “Strongly Agree.”

	<u>PRE-TEST</u>					<u>POST-TEST</u>					<u>CHANGE</u>			Scale
	<i>More negative</i>		<i>More positive</i>			<i>More negative</i>		<i>More positive</i>			<i>Negative</i>	<i>Neutral</i>	<i>Positive</i>	
1	50%	33%	0%	17%	0%	0%	0%	0%	67%	33%	-83%	0%	83%	90%
2	33%	50%	17%	0%	0%	0%	0%	0%	83%	17%	-83%	-17%	100%	60%
3	33%	50%	0%	17%	0%	0%	0%	0%	17%	83%	-83%	0%	83%	30%
4	17%	33%	50%	0%	0%	0%	0%	17%	17%	67%	-50%	-33%	83%	0%
5	17%	33%	17%	33%	0%	0%	17%	0%	33%	50%	-33%	-17%	50%	-30%
6	17%	33%	33%	0%	17%	0%	0%	0%	17%	83%	-50%	-33%	83%	-60%
7	17%	33%	50%	0%	0%	0%	0%	0%	50%	50%	-50%	-50%	100%	-90%
8	40%	40%	0%	20%	0%	0%	17%	0%	50%	33%	-63%	0%	63%	
9	50%	17%	17%	17%	0%	0%	17%	0%	33%	50%	-50%	-17%	67%	
10	33%	50%	0%	17%	0%	0%	0%	17%	33%	50%	-83%	17%	67%	

Scale: 0% 20% 40% 60% 80% 100%

Figure 15. **FALL 2018** Comparison of responses to disposition questions 1-10 based on survey prompt. Questions from left to right (More negative to More positive) reflects the ordinal options “Disagree”, “Somewhat Agree”, “Agree”, “Moderately Agree”, and “Strongly Agree.”

	Fall 2018	Spring 2019
Q1	83%	80%
Q2	100%	80%
Q3	83%	90%
Q4	83%	80%
Q5	50%	60%
Q6	83%	40%
Q7	100%	60%
Q8	63%	90%
Q9	67%	80%
Q10	67%	90%

Figure 16. Comparison of % positive change over time.

Another way of looking at these results is by comparing growth from pre-test to post-test utilizing overall responses (Figure 17). In other words, instead of reviewing the percentage of those responding negatively or positively to a particular prompt, we can review growth based on the overall percentage of those questions answered “Disagree” versus those answered “Strongly Agree.” In short, 10 respondents mean a comparison of 100 questions answered (10 questions per respondent). In this comparison, 39% of all pre-test questions answered were answered with “Disagree,” or the most negative response. In the post-test, that percentage is 0%. Similarly, 10% in the pre-test reported “Strongly Agree,” or the most positive response. In the post-test, that percentage is 49%.

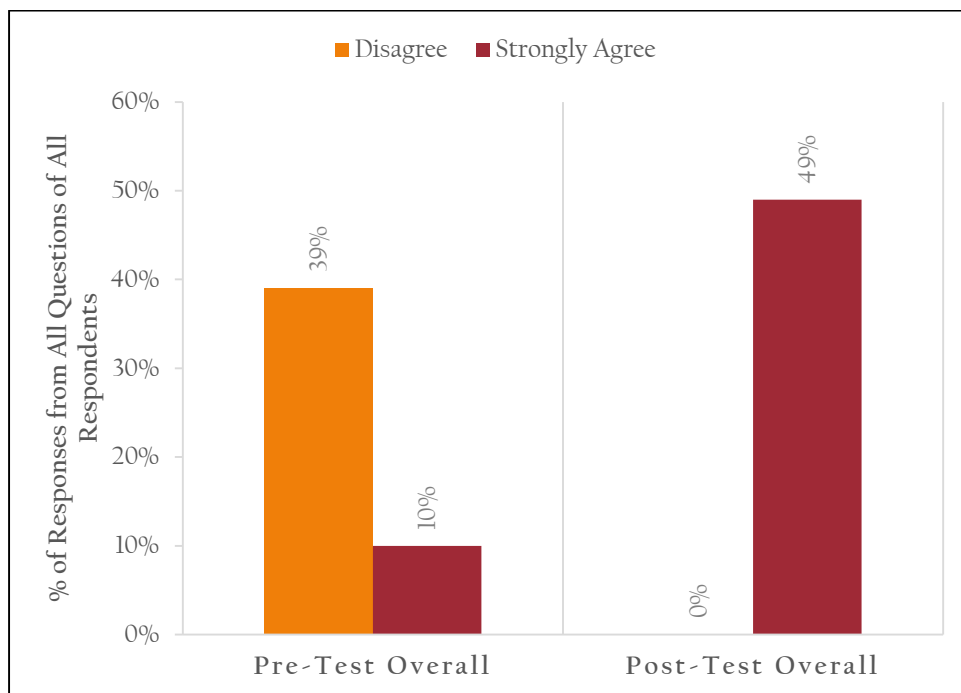


Figure 17. Comparison of percentage of responses from all questions by all respondents reporting “Disagree” or “Strongly Agree” in Pre-Test and Post-Test. For example, 39% reporting “Disagree” in Pre-Test is 39% of 100 responses (10 questions times 10 respondents).

2.4.3 Assessment Recommendations

While both the results and confirmation from the faculty administering the disposition survey that students reported a clear understanding when completing the survey support the validity of the results, it is important to note that the questions, in the manner currently devised, may lead to confusion in future studies. What follows are some suggestions (original in black, suggested in blue) based on standard survey writing techniques to ensure clarity over time (Kuh et al., 2015).

The survey prompts of the disposition survey are shown below:

1. Rate your knowledge of the Side Chain Compression technique.
 - a. Change response options to:
 - i. Very knowledgeable
 - ii. Knowledgeable
 - iii. Somewhat knowledgeable
 - iv. Minimal knowledge
 - v. None
2. Rate your knowledge of the sample replacement / sample enhancement technique.
 - a. Change response options to:
 - i. Very knowledgeable
 - ii. Knowledgeable
 - iii. Somewhat knowledgeable
 - iv. Minimal knowledge
 - v. None
3. Rate your knowledge of the Mastering process.
 - a. Change response options to:
 - i. Very knowledgeable
 - ii. Knowledgeable
 - iii. Somewhat knowledgeable
 - iv. Minimal knowledge
 - v. None
4. Do you understand how to EQ a mixing room monitor system?
 - a. Change response options to:
 - i. Yes, very accurately
 - ii. Yes, accurately
 - iii. Yes, somewhat accurately
 - iv. No, not very accurately
 - v. No, not at all
5. Do you know the process to find standing waves and signal cancellation in a monitoring room?
 - a. Change response options to:
 - i. Yes, very accurately
 - ii. Yes, accurately
 - iii. Yes, somewhat accurately
 - iv. No, not very accurately
 - v. No, not at all
6. Do you understand the difference between imaging and panning?

- a. Change response options to:
 - i. Yes, very accurately
 - ii. Yes, accurately
 - iii. Yes, somewhat accurately
 - iv. No, not very accurately
 - v. No, not at all
7. Do you understand the difference between Analog and Digital mastering?
- a. Change response options to:
 - i. Yes, very accurately
 - ii. Yes, accurately
 - iii. Yes, somewhat accurately
 - iv. No, not very accurately
 - v. No, not at all
8. Can you tell the difference between mixing styles: East coast, West coast, Southern, and European?
- a. Change response options to:
 - i. Yes, very accurately
 - ii. Yes, accurately
 - iii. Yes, somewhat accurately
 - iv. No, not very accurately
 - v. No, not at all
9. Rate your knowledge of what a RTA is and how it is used.
- a. Change response options to:
 - i. Very knowledgeable
 - ii. Knowledgeable
 - iii. Somewhat knowledgeable
 - iv. Minimal knowledge
 - v. None
10. Rate your understanding of post mixdown or mastering automation.
- a. Change response options to:
 - i. Very knowledgeable
 - ii. Knowledgeable
 - iii. Somewhat knowledgeable
 - iv. Minimal knowledge
 - v. None

3 PROGRAM-WIDE COMPARISON

As survey prompts are most often unique to each course, a global comparison by looking at these results by comparing growth from pre-test to post-test utilizing overall responses may be helpful (Figure 18). In other words, instead of reviewing the percentage of those responding negatively or positively to a particular prompt, we can review growth based on the overall percentage of those questions answered “Disagree” versus those answered “Strongly Agree.” In short, 38 respondents mean a comparison of 480 questions answered (10 questions per respondent or 20 questions for MUS 2360). In this

comparison, 41% of all pre-test questions answered were answered with “Disagree,” or the most negative response. In the post-test, that percentage is 1%. Similarly, 8% in the pre-test reported “Strongly Agree,” or the most positive response. In the post-test, that percentage is 55%.

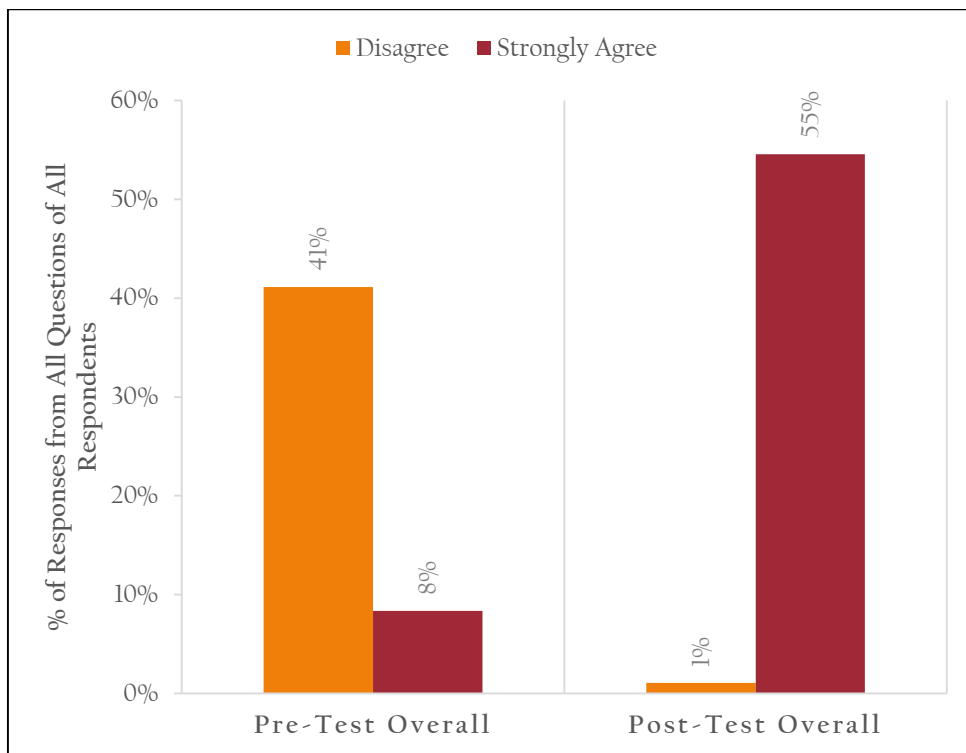


Figure 18. Comparison of percentage of responses from all questions by all respondents across all Audio Technology courses in the assessment plan reporting “Disagree” or “Strongly Agree” in Pre-Test and Post-Test. For example, 41% reporting “Disagree” in Pre-Test is 41% of 480 responses.

4 COHORT COMPARISONS

4.1 DUAL ENROLLMENT (CONCURRENT) TO TRADITIONAL COMPARISON

No dual enrollment (concurrent) sections are offered for this course and so no comparison could be completed.

4.2 ONLINE TO TRADITIONAL COMPARISON

No online sections are offered for this course and so no comparison could be completed.

4.3 COMPARISON BY CAMPUS/SITE

The course is only taught at one location (Thomas Edison) and so no cross-campus comparison can be completed.

5 CONCLUSIONS

The Audio Technology Program initiated AY 2017-2018 developed an assessment plan and piloted it in Spring 2018. For Fall 2018, this assessment has expanded from MUM 2601C to the four courses mentioned above. The courses encompassed in this study include: MUS 2360 *Introduction to Music Technology*, MUM 2600C *Basic Audio Recording Technique*, MUM 2601C *Recording Techniques (II)*, and MUM 2604C *Multi-track Mixdown Techniques*. This report provides analysis of both the results of the assessment, as well as the assessment tool, in an effort to fine-tune the piloted assessment package.

5.1 MUS 2360

A drilldown of results are as follows:

1. For the spring 2019 assessment, 11 artifacts were collected from the MUS 2360 pre-test and 10 from the post-test, accounting for 10 common artifacts between the pre-test and post-test. While two sections of the course were run, the pre/post-tests were only included in one of the two sections.
2. In a comparison of pre-test to post-test changes in survey responses by question, increases in positive response are visible for all questions and exhibit exceptional growth. Question 17, "Rate your knowledge of the following dynamic effects: EQ, and Compression.", exhibits the largest growth at 91% more positive. Questions 20, "Do you know the difference between Hi-Z and Lo-Z impedance?", exhibits the smallest growth at 22% more positive. A review of this figure shows that, over time, Question 9, "Are you familiar with the process of creating a well produced podcast?," is the area that consistently the strongest growth over time. The change in percent of students responding more positively from pre-test to post-test over the two terms of study is 89% for fall 2018 and 81% for spring 2019. By comparison, question 20 exhibits the weakest change over time. In fall 2018, the change in percent of students responding more positively from pre-test to post-test is 56%, and just 22% in spring 2019.
3. In a comparison of pre-test to post-test changes in survey responses by overall responses, 55% of all pre-test questions answered were answered with "Disagree," or the most negative response. In the post-test, that percentage is 3%. Similarly, 9% in the pre-test reported "Strongly Agree," or the most positive response. In the post-test, that percentage is 49%.
4. Some slight re-wording of survey prompts and response options is recommended to ensure clarity of the results going forward.

5.2 MUM 2600C

A drilldown of results are as follows:

1. For the spring 2019 assessment, 8 artifacts were collected from the MUM 2601C pre-test and 7 from the post-test, accounting for 7 common artifacts between the pre-test and post-test.
2. In a comparison of pre-test to post-test changes in survey responses by question, increases in positive response are visible for all questions and exhibit exceptional growth. Question 10, "Are you familiar with the process of bouncing, rendering or mixing down your tracks?," is the only question which exhibit growth less than 60%, at 48%. Question 4, "How familiar are you with the editing technique called vocal leveling?," is the area that consistently the strongest growth over time. The change in percent of students responding more positively from pre-test to post-test over the two terms of study is 88% for fall 2018 and 86% for spring 2019. By comparison, question 10 exhibits the largest difference between terms. In fall 2018, the change in percent of

students responding more positively from pre-test to post-test is 88%, but only 57% in spring 2019.

3. In a comparison of pre-test to post-test changes in survey responses by overall responses, 21% of all pre-test questions answered were answered with “Disagree,” or the most negative response. In the post-test, that percentage is 0%. Similarly, 4% in the pre-test reported “Strongly Agree,” or the most positive response. In the post-test, that percentage is 76%.
4. Some slight re-wording of survey prompts and response options is recommended to ensure clarity of the results going forward.

5.3 MUM 2601C

A drilldown of results are as follows:

1. For the spring 2019 assessment, 10 artifacts were collected from the MUM 2601C pre-test and 10 from the post-test, accounting for 10 common artifacts between the pre-test and post-test.
2. In a comparison of pre-test to post-test changes in survey responses by question, increases in positive response are visible for all questions and exhibit exceptional growth. Questions 1 and 5, “Rate your experience with a mixing console” and “Recording vocal tracks, miking techniques, and track capturing”, are the only questions which exhibit growth less than 60%. Question 1, “Rate your experience with a mixing console,” is the area that shows the weakest growth over time. The change in percent of students responding more positively from pre-test to post-test over the three terms of study is 65%, 83%, and 50%, in spring 2018, fall 2018, and spring 2019, respectively. By comparison, questions 3, 6, 7, 8, and 9 never exhibit a term with less than 80%.
3. In a comparison of pre-test to post-test changes in survey responses by overall responses, 29% of all pre-test questions answered were answered with “Disagree,” or the most negative response. In the post-test, that percentage is 0%. Similarly, 8% in the pre-test reported “Strongly Agree,” or the most positive response. In the post-test, that percentage is 57%.
4. Some slight re-wording of survey prompts and response options is recommended to ensure clarity of the results going forward.

5.4 MUM 2604C

A drilldown of results are as follows:

1. For the spring 2019 assessment, 10 artifacts were collected from the MUM 2604C pre-test and 10 from the post-test, accounting for 10 common artifacts between the pre-test and post-test.
2. In a comparison of pre-test to post-test changes in survey responses by question, increases in positive response are visible for all questions and exhibit exceptional growth. Questions 3, 8, and 10 exhibit the greatest positive growth at 90%. Question 6 exhibits the least growth at just 40%. Question 5, “Do you know the process to find standing waves and signal cancellation in a monitoring room?” is the area that shows the weakest growth over time. The change in percent of students responding more positively from pre-test to post-test over the two terms is 50% and 60% for fall 2018 and spring 2019, respectively. While Question 7 exhibits similarly weak change in spring 2019 at just 40%, it was at 83% in the previous term.
3. In a comparison of pre-test to post-test changes in survey responses by overall responses, 39% of all pre-test questions answered were answered with “Disagree,” or the most negative response. In the post-test, that percentage is 0%. Similarly, 10% in the pre-test reported “Strongly Agree,” or the most positive response. In the post-test, that percentage is 49%.

4. Some slight re-wording of survey prompts and response options is recommended to ensure clarity of the results going forward.

6 REFERENCES

Kuh, G.D., Ikenberry, S.O., Jankowski, N.A., Cain, T.R., Ewell, P.T., Hutchings, P., and Kinzie, J. 2015. Using Evidence of Student Learning to Improve Higher Education. Jossey-Bass. San Francisco, CA. 275pp.