Course:	High School Advanced Music Studio
Unit:	Setting Poetry to Music
Lesson:	Microphone techniques for recording spoken word. (Days 5 & 6 of Unit)
Lesson Goals:	Given instruction in microphone techniques for recording vocals, and a fully equipped music-recording lab, the learner will be able to capture and edit vocals for a clean finished product as measured by a recording checklist.
Instructional Standards:	New Jersey Core Curriculum Content Standards

1. Visual and Performing Arts

1.3.12.B.4 Arrange simple pieces for voice or instrument using a variety of traditional and nontraditional sound sources or electronic media, and/or analyze prepared scores using music composition software.

1.4.12.B.2 Evaluate how an artist's technical proficiency may affect the creation or presentation of a work of art, as well as how the context in which a work is performed or shown may impact perceptions of its significance/meaning.

8. Technological Literacy

8.1.8.A.5 Select and use appropriate tools and digital resources to accomplish a variety of tasks and to solve problems.

9. 21st-Century Life & Career Skills

9.1.12.A.1 Apply critical thinking and problem-solving strategies during structured learning experiences.

9.1.12.F.2 Demonstrate a positive work ethic in various settings, including the classroom and during structured learning experiences.

9.4.12.A.16 Employ critical thinking skills (e.g., analyze, synthesize, and evaluate) independently and in teams to solve problems and make decisions.

Learning Objectives:

1. The learner will be able to select and correctly configure a digital audio interface, microphone, and computer music workstation with appropriate software (i.e. GarageBand or Mixcraft) to record spoken word.

2. The learner will be able to place the microphone appropriately (and make any necessary adjustments) to record at an appropriate input

level with a minimum of background noise.

3. The learner will be able to edit the recorded vocal track for a clean playback: free from errors and background noise, and with a pleasing use of reverb.

Learner Characteristics:	The 16-20 learners in the Advanced Music Technology class range in age from 16-18 years old, and are 11th and 12th graders. Each learner, through the prerequisite course, has demonstrated intermediate or advanced skill in using music software to create music using pre-recorded loops. All have at least rudimentary knowledge of audio editing and mixing. As this is an elective course, it is anticipated that learners will be highly motivated. Typical class climate is collegial, in which learners frequently ask one another for feedback and advice.
Instructional Materials:	Reference copies of: audio recording rating scale project evaluation rubrics
Methods:	Direct, whole group instruction Small group interaction, experimentation Individual review and coaching Peer critique and coaching
Technology:	Computers with DAW software (e.g. GarageBand or Mixcraft) Headphones for each learner USB interfaces and cables to connect microphones to each computer Microphones with acceptable frequency response (Shure SM 58, equivalent or better) Microphone stands XLR cables for microphones
Classroom Management & Organization:	Learners in this class will be responsible for maintaining their individual workstations and equipment as part of their grade for the course. This classroom management strategy was set forth on the first day of the class and is part of the class routine. Students have received, and continue to receive, instruction in workstation and equipment handling. They are reminded that, not only are these behaviors reflected in a grade, but that they are subject to the school's technology Acceptable Use Policy. In addition, students are familiar with the cooperative, collegial environment necessary in the Music Lab, and that they may be subject to disciplinary action for violation of the class and school codes of conduct.
Activities: (Use of Materials,	DAY 5 1. Introduction: i.e. "Today we will be learning techniques for using

Methods and
Technologies)

microphones to record our poems."

Ask learners about: Prior experiences with microphones
                                    **Anxiety about recording own voice
Establish protocol for 'safe space.' Everyone hates the sound of their own voice! But everyone is ready to record, because everyone gave a convincing rendition of the poem already (connect to prior success to mitigate anxiety).

2. Direct instruction: dynamic microphone vs. condenser microphone
                                microphone pickup patterns
                                microphone sensitivity/pickup range
3. Guided exploration with guiding questions, narrative of observations as learners problem solve hands-on:
   Two sets of volunteers - one pair of learners each for dynamic and condenser mics
   Microphone set up (interface, mic stands, cables)
   Computer software configuration (input devices)
   Test recording & evaluating results
   Brainstorming ways to make corrections
   How can we add reverb?
4. Direct instruction: Key vocabulary for microphone techniques used
                                Refer to recording checklist
5. Elicit from learners a protocol for taking turns while recording to minimize background noise and interference
6. Permission for learners to work independently or in pairs.
7. Project work time, with teacher circulating to observe and guide where needed.
8. Direct instruction: clean up procedures, including correct methods for cable wrapping and storage

DAY 6
1. Today's objectives: finish recording poems,
                                edit the vocal track
                                have a classmate verify your work
                                    against the Checklist
2. Learner-driven review of microphone techniques and procedures through teacher use of guiding questions
3. Direct instruction: mixing techniques including
   Adjusting levels to balance tracks
   Fades to create dynamics
   Use of pan for interest and sense of three dimensions
   Use of reverb for natural sound as in an auditorium
4. Project work time, with teacher circulating to observe and guide where needed.

5. Peer critique and coaching (10 minutes before end of class), comparing current state of recording to Vocal Recording Checklist
6. Learner-driven review of clean up procedures.

Learner Activities: Computer software manipulation
Microphone set-up/break-down
Recording spoken word
Editing
Peer critique and coaching

Differentiation of Instruction: Due to the individualized nature of the end product of this lesson, differentiation will be achieved through:
Learner self-pacing
Optional individual or partner work
Individualized instruction and reinforcement to achieve sub-objectives at each stage of instructional process
Additional checklists and reference guides as specified by IEP for any learner enrolled in the course.

Critical Thinking: Learners will engage in critical thinking in this unit of instruction through:
Editing and mixing the music to create a cohesive whole *(analysis, evaluation)*
Engaging in peer critique and coaching *(evaluation)*.

Assessment: Formative assessments will occur on an informal basis during each teacher progress check and coaching session. Peer-critique and coaching will occur on an informal basis. Learners will be encouraged to use the Project Rubric for their own formative assessment since this lesson contributes greatly to the final product.

A summative assessment will occur at the end of this lesson using the Vocal Recording Checklist.

Assessment tool: Vocal Recording Checklist
(Project Rubric - advisory for students at this phase of project)

Extension: Areas of exploration for learners who may finish early:
Web resources on microphones and techniques
Propellerhead
Shure
Basic Home Recording

Advanced Music Studio: **Vocal Recording Checklist**

CRITERIA TO BE MET	not at all (0)	partially (1)	fully (2)	POINTS
Teacher observations				
Microphone, stand, cables, and interface set up correctly with no teacher assistance				
Class protocol followed for taking turns recording to avoid background noise and interference with classmates' work				
Microphone, stands, cables and interface stored correctly, including proper wrapping of cables				
Recorded product				
Volume levels are appropriate - no clipping or distortion due to excessive loudness or proximity effect; wave form on screen viewed as filling the track frame (loud enough)				
Audio quality indicates correct microphone placement relative to sound source (mic was pointed correctly and an appropriate distance from mouth)				
Clean recording free of background noise and interference				
Clean rendering of spoken word (poem); No mispronunciations, missing words or syllables				
Logical use of dynamics or volume fades relative to content of spoken word				
Use of reverb to simulate a live performance venue or auditorium				
TOTAL (18 possible)				

Grades:
A: 16-18
B: 14-15
C: 12-13
>12: Re-recording required

Advanced Music Studio: **Project Rubric - Setting Poetry to Music**

	4	3	2	1
Tempo and meter fit rhythm and pacing of spoken text	Excellent fit of tempo and meter, including changes as dictated by content of text	Good fit with few or no changes in tempo	Some sections of music fit text, with some clear areas for modification or improvement	Poor fit. Extensive changes and modifications needed.
Scale & key (tonality) fit overall emotive elements of poem	Clear fit, including shifts of tonality (i.e. minor to major) with shifts in emotional inflection of poem	Clear fit with few or no shifts in tonality	Some sections aligned tonally with emotive elements in text; One or two noticeable areas needing modification for better fit	Few or no instances where choice of tonality are aligned with text. (i.e. consistent use of minor key for celebratory text)
Use of pre-made loops to provide musical content	Excellent choices of loops based on tonality & mood of text; Loops modified and varied to provide a constant feeling of forward motion.	Good choices of loops based on tonality & mood of text; One or two areas in which loops need to be modified and varied to maintain forward motion	Some good loop choices. Noticeable areas with poor fit, and need for different loop choices or loop modification to create forward motion	Many choices overly repetitive or inconsistent with meaning of poetry
Original 8-bar melody and harmonization	Excellent melodic motive and development with interesting harmonization	Good melodic motive with appropriate harmonization	Melodic motive lacks distinction which will make it memorable OR harmonization is incorrect/illogical	Lack of clear melodic motive; Harmonic changes may be present but lack meaning without melody
Vocal track	Excellent expression in vocals; clear effective recording including use of reverb or pan	Good expression in vocals; technically correct recording but somewhat lacking in technical finish such as reverb or pan	Some expression in vocals; one or two technical recording issues noticeable	Vocals are present but reflect lack of expression and/or several technical recording issues
Overall Mix	Tracks are balanced so that text and musical elements are clearly audible. Interest is added with fades and pan changes and accentuate the meaning of the poetry.	Tracks are mostly balanced though elements are obscured in one or two instances; Some use of fades and pan, but more editing is needed to maintain alignment with meaning of poetry.	Several instances where elements are out of balance and poetry or music is lost. Some attempt made at technical editing, but fades and pan changes are not aligned to poetry.	Poor balance, with one or more tracks obscuring the poetry. Few or no instances of fades or pan changes.

Grades:
A: 21-24   A-: 20
B: 17-19   B-: 16
C: 12-15   F: 11 or less (revise project and resubmit)

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Lesson Plan Supplement

Adaptations for Primary and Intermediate Grade Students

This lesson was designed for students in Grades 9-12, ages 14-19. To adapt this lesson for primary grade students, a narrower set of objectives and less complex hardware would be more appropriate. The focus is this segment of the larger unit of study should be on capturing clean audio with a simple device such as a USB microphone, field recorder, cell phone, or tablet, rather than using external microphones which require audio interfaces. Similarly, the software that student use should require less technical expertise. Digital Audio Workstation (DAW) software like GarageBand or Mixcraft require more learning time than would be appropriate for this age group. Audacity, and the online twistedwave.com, have simple visual audio editing tools which allow students to record, clean up, and mix the music and voice recordings.

Intermediate and middle school students would benefit from using dynamic USB microphones and simple DAWs like GarageBand or Mixcraft. Use of quality USB microphones with these types of software will allow for instruction in microphone pick-up pattern and placement, without the complication of and additional audio interface hardware. Students in Grades 4-8 should have little difficulty with the equipment or recording task given appropriate instruction. Instruction using external dynamic and more costly condenser microphones with hardware audio interfaces may be appropriate for students in Grades 7 and 8.

Evaluation of Varied Instructional Strategies

This lesson was originally structured with great care and consideration of class climate. Students need to have a sense of safety when recording and listening to their own voices.

Primary grade students may be encouraged to work in pairs for this project, providing physical, emotional, and intellectual support to accomplish the performance task. Two sets of smaller hands may be better able to manipulate the microphone or recording device. Having a partner can help reinforce correct information and procedures. Intermediate grade students may benefit from having a recording coach. By partnering students where each takes turns handling equipment and controls while the partner reads/recites aloud, students are afforded emotional and intellectual support. In addition, this method gives each student ownership of their own project, with verification and validation from the partner who assists with technical elements.

Comparison of Subject Matter Acquisition by Different Age Groups

Primary grade students would be expected to understand the principle of proximity to the microphone and volume (wave amplitude). The specifics of microphone pickup patterns should not be of great concern with this developmental level. The concept that the microphone is like an ear, and that the sound needs to be directed toward it, is sufficient for primary grade students. Within the audio editing software, students may be expected to be as adept as their older counterparts in trimming waveform for clean splices, and making fundamental adjustments in track volume for balance.

Intermediate grade students should receive instruction in and be expected to understand basic microphone pickup patterns. Given the physical activity level among students of this age, use of more durable dynamic microphones is preferable over more sensitive, costly condenser microphones. Many USB microphones offer adjustable pickup patterns (cardiod/directional, omnidirectional, and bipolar/figure-8). Students of this age should be expected to understand this

terminology and be able to apply it to capture a good recording. Their audio editing ability should include making balance corrections within tracks as well as balancing tracks against one another.

Accommodations for Students with Special Needs

Learners with special needs can be accommodated through adaptive and assistive technologies. Students with hearing loss can benefit from instruction on observing sound meters and waveforms, and by using voice-to-text applications to check recorded audio for accuracy. Learners with speech deficiencies can use text-to-voice synthesis to generate the sound to be recorded. Students with visual needs can benefit from screen viewers and the type of voice controls now available many computer operating systems. Learners with physical limitations may require adaptive computer keyboards or the assistance of a personal aide.

Instructional Strategies to Meet Different Learning Styles

This lesson is focused on an auditory product, but includes hands-on applications with microphones. This provides a kinesthetic connection to the intellectual knowledge of microphone choice and placement. Students will be visually engaged in correct equipment configuration in the physical space, and in the software. Students will need to manipulate the visual rendering of audio waveforms in the software. Furthermore, this lesson is completely differentiated in the content of the final project. All students are selecting and recording their own poems. In other lessons of the unit, students are composing and arranging their own music to accompany the music.