Level 6 – New Zealand Curriculum
DIGITAL TECHNOLOGIES & HANGARAU MATIHIKO

Teaching and learning programme

Music and digital technologies –
Composing in the digital age

MINISTRY OF EDUCATION
TE TĀHUHU O TE MĀTAURANGA

External links to websites

The Ministry of Education does not accept any liability for the accuracy of information on external websites, nor for the accuracy or content of any third-party website accessed via a hyperlink from this resource. Links to other websites should not be taken as endorsement of those sites or of products offered on those sites. Some websites have dynamic content, and we cannot accept liability for the content that is displayed.

Summary of the teaching and learning programme

In this programme, students will learn to use a digital audio workstation (DAW) and virtual instruments to compose an original piece of music in response to a design brief. Students will create a design for their composition, considering the constraints of the brief, and then develop their composition using digital music production techniques.

By the end of this teaching and learning programme, students will be able to:

- consider a composition task and develop a design to achieve it

- consult with end-users to refine a design and outcome that is fit-for-purpose

- reflect on iterations of a project in development

- set up and operate a 'session' in a DAW (Logic Pro, Pro Tools, Ableton Live, Reaper or similar)

- load virtual instruments and play them using a MIDI controller

- record and edit MIDI information

- understand the control functions of a virtual instrument and make changes to the parameters to achieve a desired sound

- understand the Record and Arrange windows of a DAW

- set up and record audio using an analogue to digital converter, and microphones or instruments

- create and use Loops and Samples in a composition

- use the Mix window of a DAW to balance sound levels and add digital effects

- use compositional devices to create an effective composition

- bounce and save a completed project as an MP3 or .Wav file

- name and manage files coherently.

Duration

This programme should take approximately one term (9-10 weeks; 36-40 teaching periods). However, the timeline for this task allows for the teaching, learning and completion of a single original composition. A second composition will take longer, extending the duration of this task to allow for the completion of Achievement Standard 91092.

Key teaching and learning concepts – the big ideas

Sound design, audio production and studio engineering, including composition, arranging and sound effects.

- Development of an appropriate brief, which could include:
  - a recorded soundtrack for a video or theatre production
  - a composition of original music
  - a live performance of electronic music using MIDI instruments and hardware controllers

- Use of MIDI recording and editing techniques, as well as audio capture using microphones and instruments, to develop and structure their ideas to best fit the purpose.

- Use of common compositional devices when developing and structuring their composition.

- Consideration of the effectiveness of their composition for the given purpose and make any adjustments that are necessary.

Alignment to DTHM progress outcomes and progressions

Designing and Developing Digital Outcomes – Progress outcome 4

Students will:

- investigate and consider possible solutions for a given context or issue

- with support, use an iterative process to design, develop, store and test digital outcomes, identifying and evaluating relevant social, ethical and end-user considerations.

- use information from testing and apply appropriate tools, techniques, procedures and protocols to improve the quality of the outcomes and to ensure they are fit-for-purpose and meet end-user requirements.

Links to other learning areas

This programme links to the arts curriculum, specifically music – sound arts, level 6, DI strand, and could be used in conjunction with AS91092: Compose two original pieces of music. Some additional teaching around compositional techniques and devices may be required.

Students could work with students of dance or drama to develop their design, consulting with the end-users. They could give their final outcome a real-world application, for example, as a soundtrack for a devised theatre or theatre performance piece for a level 1 drama class or a piece of music for a dance choreography.

Teaching and learning pedagogy

- Project-based and inquiry learning
- Creative processes

Prior knowledge and place in learning journey

Having some knowledge of Level 5 music – sound arts would benefit students attempting this programme.

Resources required

- All resources for this programme can be found here
- A suite of computers capable of handling the software requirements
- DAW software – there are many options available
- MIDI controller keyboards for each computer
- MIDI guitar would be useful for any guitarists
- An audio–digital converter or interface for recording audio – many options available
- Microphones, cables and stands
- A variety of musical instruments.

How you might adapt this in your classroom

- This programme would particularly suit students of music who have some prior knowledge of music theory, composition and some instrumental skills. However, it could also be used in a drama or dance context.

- The task could also be used in a media studies context, especially AS90993: Produce a design and plan for a media product using a specified range of conventions and and AS90994: Complete a media product using a specified range of conventions, from a design and plan.

- For students who do not have a music or performing arts background, the task could focus less on the compositional element and more on the production of a digital outcome. For example, they could create foley effects and do a voiceover for a radio commercial or a film excerpt, where the focus is on the technical production rather than the artistic merit of the final product.

Assessment

DT AS 91878 (1.2): Develop a design for a digital outcome

DT AS 91880 (1.4): Develop a digital media outcome

Music AS 91092 (1.3): Compose two original pieces of music.

Teaching and learning programme

	Duration	Specific learning outcomes *Students will be able to:*	Learning activities	Resources *Access all resources* here
What is digital audio production? Planning a digital media outcome Introduction to a DAW What is MIDI? Basic MIDI recording	Weeks 1–3	• identify an end-user for a digital audio production • identify musical elements that contribute to the effectiveness of a composition • describe the basic functions of a DAW • understand the Arrange, Mix and Edit windows in DAW • understand and describe the difference between audio and MIDI tracks. • understand and describe the function of a MIDI or virtual instrument • select and manipulate musical elements for a desired outcome.	Listen to and/or view a range of digital audio productions: hip-hop recordings, electronic dance music and ambient music, film scores, theatre productions. Discuss the purpose of each and elements that contribute to its success. Discuss potential projects; choices could be given at this point: Students who are also studying drama or dance may see possibilities for incorporating their composition into a L1 devised drama piece or dance performance Decide on a project. Consider or discuss the parameters of the project. Use a template to begin planning Explore the basic functions of Logic Pro X: Arrange, Mix, Edit windows, Transport, Inspector. **Task:** Ka Mate puzzle Import audio clips of a performance of the Ka Mate haka. Clips are misnumbered so they will need to be reassembled and renumbered. **Extension:** Apply a reverb effect to make it sound as though the performance is in a cave. Set up a recording session: tracks, input and output a poem or text, it could be played back while reading the text aloud.	**Examples:** *The Dead Lands* battle scene https://www.youtube.com/watch?v=uSCzIy-1kTg Tom Scrase, Footnote Dance: *The Rebel Pink*

What is being covered	Duration	Specific learning outcomes *Students will be able to:*	Learning activities	Resources *Access all resources here*
			Select and set up a MIDI instrument on a MIDI track.	
			Use a MIDI controller (eg, a keyboard) to experiment with the available sounds in the DAW. Use MIDI instrument sounds on a minimum of 3 separate tracks to create a 'soundscape'.	
			Activity: Give students a scenario as a stimulus. This could be a photograph, a poem or written scene, and ask them to use MIDI sounds to create a short soundscape to express the mood of the image, scene or scenario.	
			Encourage them to think about timbre, pitch or range, rhythm and tonal centres. Record the sounds to MIDI track in the DAW. If using a poem or text, it could be played back while reading the text aloud.	
Virtual instruments Digital synthesisers, synth concepts	Week 4	• understand and experiment with modifying the 'timbre' of sound.	Listen to a range of music that uses synthesiser sounds, both historical and current.	Mini Moog short doco: https://www.youtube.com/watch?v=sLx_x5Fuzp4 Synth tutorials https://www.youtube.com/watch?v=179InHT8NZw&t=521s
			Create a unique sound using a software synth. Learn about waveforms, oscillators, ADSR, glide/portamento and filters, and experiment with adjustments to create and save a sound.	
			Consider the implications and aesthetic of the design brief and begin to create a range of synth sounds that are appropriate to the project. Save sounds as presets in a folder.	

What is being covered	Duration	Specific learning outcomes *Students will be able to:*	Learning activities	Resources *Access all resources* here
Samplers and sampling Quantising rhythms Using tempo and grid functions in a DAW	Week 5	• create a 'loop' • quantise rhythms in a DAW • find and use a sample • understand the legal and ethical implications of sampling others' work.	Listen to a range of sample-based music (For example, early hip-hop) and compare with the original music that the samples were taken from. Discuss the manipulations and the differences. There is a great example in Cyprus Hill's "Insane in the Membrane", which uses a horse neighing taken from a 1960s Western TV show as an integral part of the music. Discuss recent copyright cases, eg, Sam Smith vs Tom Petty for "Stay with Me" The process for 'clearing' a sample for use Find a piece of music or other sound to sample – or create one using instruments or found sound. Encourage creativity! Use either a stand-alone sampler such as a Roland SPD-SX, or sample directly to the DAW. Use the tempo grid to align the sample to create a loop.	Website compares new tracks with the originals they sampled from: https://www.whosampled.com/

What is being covered	Duration	Specific learning outcomes *Students will be able to:*	Learning activities	Resources *Access all resources* here
Developing motifs Writing and recording beats and rhythms Composing chord sequences Arranging musical materials Creating a structure	Weeks 6–7	• use the functions of a DAW to develop a composition • keep a record of iterations, manage files effectively • reflect on the development of a composition and suggest changes.	Using the samples and synthesiser sounds created earlier, experiment with arranging the samples and recording using MIDI to develop and refine a musical motif, either a groove or beat, a bassline, a chord sequence or a melodic idea. Take care to align musical ideas to tempo grids, selecting the right time signature and quantising where necessary. Continue developing ideas and begin to structure them, using the Arrange window of the DAW. Bear in mind musical conventions such as even bar numbers and compositional devices such as syncopation, call and response, augmentation or diminution, etc.	
Refining a structure Refining musical materials Using "plugin" effects to enhance audio Automation in a DAW Mixing	Weeks 8–9	• make final decisions to bring a composition to completion • understand the purpose of a range of plug-in effects • select and use appropriate plug-ins for mixing • balance a mix, using plug-in effects, EQ, pan and automation for an effective outcome • 'Bounce' a final mix and save as an MP3 or .Wav file.	If composing in response to a film excerpt, it may be more appropriate to import the video into Logic Pro X and synchronise the music to the film. Review brief, listen back, evaluate composition in relation to purpose. Make adjustments and finalise structure. Plug-in effects and their purposes – demonstration. Explore EQ, compression, reverb, delay and modulation (chorus, flanger, tremolo, etc) effects. Experiment with applying effects to recorded audio or MIDI tracks and adjusting parameters to vary the sound. Balance the levels of the recorded tracks so that all instruments are audible and 'sit' in the mix. Use compression and automation if necessary to smooth out volume levels.	

ASSESSMENT TASK

Achievement standard:	91878, 91880, 91092
Standard title:	Develop a design for a digital outcome
	Develop a digital media outcome
	Compose two original pieces of music
Total credits:	13

OVERVIEW

In this assessment task you will develop a design for two musical compositions, develop musical ideas, and use digital recording and audio production tools to edit, structure and compose two original pieces of music.

HOW WILL YOU BE ASSESSED?

You must ensure that you provide detailed evidence of what you have completed for all requirements of the three achievement standards. Your teacher will tell you what format this needs to be in and what else you may need to provide. This evidence will depend upon the type of compositions you decide to create. Your teacher will also interview you about how you composed the pieces. You will also be asked to keep a log detailing the steps you take during the composition process.

You will be required to present an evidence trail of your processes (such as a series of dated files) to verify that this is your own work.

ASSESSMENT TASK

TASK

Part 1. Develop the design

Develop a design for a composition, considering the intended purpose, audience or 'end-users' of the music. You may need to seek feedback on your proposal from the intended audience or end-user before you begin composing. Examples of intended purpose could include but are not limited to:

- a score for a short piece of film or video

- music for a dance piece

- a musical soundtrack for a theatre piece

- a piece of electronic dance music (EDM)

- music for a video game

- music in a specific style

- an instrumental backing track for a rapper or singer

- a composition for a specific combination of instruments.

You will need to also:

- Generate a range of design ideas

- Choose one design

- Describe the appropriateness of your chosen design

- Describe any relevant implications of this design

- Data integrity and testing procedures

- Show how you used data integrity and testing procedures to improve the quality of your outcome

- Describe any relevant implications for your end-users

In developing your design, you will need to consider such things as:

- Who is it for, what is the purpose, who is the intended audience?

- How the piece is appropriate for its intended use (eg, length, instrumentation, mood, feel or groove, style, texture, instrumentation).

- Its overall structure or shape.

Achievement standard:	91878, 91880, 91092
Standard title:	Develop a design for a digital outcome
	Develop a digital media outcome
	Compose two original pieces of music
Total credits:	13

TASK (CONTINUED)

Part 2. Compose the music and improve your outcome

Following your design, you will use compositional devices and elements of music to create a piece of music that satisfies the needs of the end-user and the purpose. Your compositions must use digital elements, which may include but are not limited to:

• MIDI recording

• sequenced drum parts

• digital synthesisers

• loops and samples.

You will use MIDI devices and a digital audio workstation (DAW) such as Logic Pro or Ableton Live to record, edit and structure your ideas into a composition.

You will create a final mix using plug-in effects, which may include but are not limited to:

• reverb

• delay

• EQ

• compression.

Bounce your final mix as an MP3.

Create a visual representation of your final composition. This will probably be an annotated screenshot of your final composition in the Arrange window of your DAW. However, in some circumstances your visual representation could be traditional notation, such as an annotated lyric sheet with chords written above the lyrics plus a narrative description of the arrangement and instrumentation.

You will also need to provide evidence that shows how you:

• applied appropriate data integrity and testing procedures in the development of the final outcome

• and any improvements you made throughout the design, development and testing process

• how you applied effective design elements

• how you addressed any identified implications.

ASSESSMENT TASK

Achievement standard:	91878, 91880, 91092
Standard title:	Develop a design for a digital outcome
	Develop a digital media outcome
	Compose two original pieces of music
Total credits:	13

HAND IN

- Your design for your compositions, including any reference to feedback from end-users
- Your progress log, detailing the steps you took along with details of dated files
- Evidence that shows your improvement to the design over time
- Evidence that shows how you addressed any relevant implications
- An MP3 file of your final mix
- The visual representation of your completed compositions.

The following guidelines are supplied to support teachers/kaiako to carry out valid and consistent assessment using this internal assessment resource.

Teachers/kaiako need to be very familiar with the outcome being assessed by the achievement standard/s. The achievement criteria and the explanatory notes contain information, definitions and requirements that are crucial when interpreting the standard and assessing students/ākonga against it.

Please be aware that NZQA have read the assessment task but it will still need to be checked by the teacher using the assessment to ensure it meets all requirements.

CONTEXT/TE HOROPAKI

This activity requires students to develop a design for two compositions for a specific purpose. They must use digital recording, audio manipulation and editing tools to plan, develop ideas, and then refine and structure these in accordance with compositional conventions.

This task will take on more relevance for students if they can find a real-life application for their compositions, such as music for a drama production, Play It Strange songwriting competition or an original dance choreography. You will probably need to collaborate or consult with your colleagues (for example, media studies, digital technologies or dance teachers) when undertaking this teaching and assessment. It is particularly suited to collaborative project-based NCEA assessment, although is not limited to it.

During task 1, students should be encouraged to carefully consider who their 'end-user' or audience will be, and what that means for their compositions. Students will identify their target audience and generate a range of ideas that fit the specifications of their plan. They will use a digital audio workstation (DAW) to record, edit and structure their ideas and a range of software instruments to experiment with different timbres, textures and rhythmic ideas in the development of their composition.

A quality MIDI controller with options to assign knobs to different parameters of software instruments will enable students to experiment with a range of sound possibilities and explore the creative potential of the DAW as a compositional tool.

If students choose to use samples of existing recordings, they must be made fully aware of the copyright implications and the processes for gaining approval to use someone else's work. Samples may only be used where it is stylistically appropriate to do so and must be fully acknowledged.

CONDITIONS/NGĀ TIKANGA

Each student must collect his or her own evidence that all aspects of all three standards have been completed by them.

Students will keep a log of their progress, and check in regularly with the teacher throughout the task. Students will be required to attest to the originality of their work and must create an evidence trail during the compositional process (such as a series of dated files) to verify that this is their own work.

Conditions of Assessment related to this achievement standard can be found at http://ncea.tki.org.nz

RESOURCE REQUIREMENTS

Minimum requirements:

Computer with DAW software: Garageband, Logic Pro (Mac only) Pro Tools, Ableton Live, Cubase, Reaper, etc

Audio interface or Analogue–digital converter

MIDI controller keyboard or other MIDI instruments: drum pads, MIDI-capable guitar, electronic drum kit, etc

Headphones or monitor speakers

Microphone.

Optional:

Samplers, drum machines, synth modules, KAOSS pad, etc.

ADDITIONAL INFORMATION

This assessment should follow a unit of teaching and learning about composition, and students should have the opportunity to listen to and analyse a wide variety of music that uses digital audio recording, editing and arranging techniques. Students should also use a range of digital technologies tools e.g screenshots, editing of images, etc.

The timeline for this task allows for the teaching, learning and completion of a single original composition. A second composition will take longer, extending the duration of this task to allow for the completion of AS91092.

ASSESSMENT SCHEDULE: COMPOSING IN THE DIGITAL AGE

EVIDENCE/JUDGMENTS FOR ACHIEVEMENT/PAETAE	EVIDENCE/JUDGMENTS FOR ACHIEVEMENT WITH MERIT/KAIAKA	EVIDENCE/JUDGMENTS FOR ACHIEVEMENT WITH EXCELLENCE/KAIRANGI
Develop a design for a digital outcome	Develop an informed design for a digital outcome	Develop a refined design for a digital outcome
Part 1: Identifying the need The student has identified a need for two musical compositions, including who the end-users (listeners, audience) will be. The student has developed an appropriate design that will adequately support their artistic compositional decisions. **The student has:** • defined the purpose and end-users • researched and generated a range of design ideas • selected an appropriate design and described the appropriateness of the design • described relevant implications, for example: aesthetic, cultural, intellectual property, usability.	**Part 1: Identifying the need** The student has identified a need for two musical compositions, including who the end-users (listeners, audience) will be. The student has developed an informed and responsive design that will clearly support their artistic compositional decisions. **The student has:** • used feedback to improve the design • explained how the design meets relevant implications.	**Part 1: Identifying the need** The student has identified a need for two musical compositions, including who the end-users (listeners, audience) will be. The student has developed an effective and highly appropriate and responsive design that will support their artistic compositional decisions. **The student has:** • clearly and persuasively justified, with evidence, that the chosen design is suitable for the purpose and end-users.

ASSESSMENT SCHEDULE: COMPOSING IN THE DIGITAL AGE

EVIDENCE/JUDGMENTS FOR ACHIEVEMENT/PAETAE	EVIDENCE/JUDGMENTS FOR ACHIEVEMENT WITH MERIT/KAIAKA	EVIDENCE/JUDGMENTS FOR ACHIEVEMENT WITH EXCELLENCE/KAIRANGI
Compose two original pieces of music	Compose two effective original pieces of music	Compose two convincing original pieces of music
Part 2: Composing the music The student has composed two original pieces of music using digital tools and elements. **The student has:** • manipulated digital data using digital elements to realise artistic intentions that are fit for purpose • generally satisfied the needs of the end-user • generated musical ideas, using riffs, motifs, chords, ostinato, or tonal centres • developed ideas using compositional devices and techniques, such as repetition, contrast, sequence, and extension • organised ideas into a structured composition • represented their ideas in an appropriate audio and visual form.	**Part 2: Composing the music** The student has composed an effective original piece of music using digital tools and elements. **The student has**: • effectively manipulated digital data, using digital elements to realise artistic intentions • effectively satisfied the needs of the end-user • generated musical ideas, using riffs, motifs, chords, ostinato, or tonal centres • developed their ideas coherently and with stylistic control, using compositional devices and techniques, such as repetition, contrast, sequence, and extension • organised their ideas into compositions with coherent structure, unity, and contrast • represented their ideas coherently in an appropriate audio and visual form.	**Part 2: Composing the music** The student has composed two convincing original pieces of music using digital tools and elements. **The student has:** • convincingly manipulated digital data, using digital elements to realise artistic intentions • convincingly satisfied the needs of the end-user • generated musical ideas, using riffs, motifs, chords, ostinato, or tonal centres • developed their ideas skillfully and with stylistic assurance using compositional devices and techniques such as repetition, contrast, sequence, and extension • organised their ideas into compositions with skilful structure, unity, contrast, and structural balance, • represented their ideas skilfully in an appropriate audio and visual form.

EVIDENCE/JUDGMENTS FOR ACHIEVEMENT/PAETAE	EVIDENCE/JUDGMENTS FOR ACHIEVEMENT WITH MERIT/KAIAKA	EVIDENCE/JUDGMENTS FOR ACHIEVEMENT WITH EXCELLENCE/KAIRANGI
Develop a digital media outcome	Develop an informed digital media outcome	Develop a refined digital outcome
Part 3: The digital media outcome The student has presented their final compositions, mixed on a DAW and bounced to MP3 format. Throughout the composition and recording process, **the student has:** • used appropriate tools, techniques and design elements for the purpose and end users • applied appropriate data integrity and testing procedures in the development of the outcome (Examples could include: listening back to recorded work, applying a tempo grid, using a metronome to ensure timing, checking volume levels to ensure no distortion etc) • described relevant implications. (Examples could include: rhythms out of time, distorted signal or poor mix).	**Part 3: The digital media outcome** The student has presented their final compositions, mixed on a DAW and bounced to MP3 format. Throughout the composition and recording process, **the student has:** • used information from testing procedures to improve the quality and functionality of the outcome • addressed relevant implications. (Examples could include: quantizing MIDI notes to correct timing, adjusting levels or using compression to avoid clipping and distortion).	**Part 3: The digital media outcome** The student has presented their final compositions, mixed on a DAW and bounced to MP3 format. Throughout the composition and recording process, **the student has:** • demonstrated iterative improvement throughout the design, development and testing process • applied design elements effectively.

Final grades will be determined on a holistic examination of the evidence provided against the criteria in the achievement standard.

All supporting materials are supplied with this programme and can be found on the TKI website.