

Audio Files for Te Reo Ataahua - Basic Te Reo Maori

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Overview

This paper summarises work to date on providing a viable means of alternative delivery for the Te Reo Ataahua programme.

The programme at the time of this work involves students obtaining a workbook by registering at the Bay of Plenty Polytechnic and a radio programme on Moana AM. The radio programme was broadcast twice daily from Monday to Thursday.

This initial study examines the issue of providing a means for students to access the radio programme component over the Internet. This would allow a student to listen to a programme:

- **At a time to suit:** personal circumstances sometimes would mean that students would not find the two radio broadcasts convenient to their lives
- **Even if a programme was missed:** for whatever reason, if a student misses one particular programme, they really needed the opportunity and ability to fill in that gap
- **As many times as the student wished:** repetition might well provide for better learning for many students.

It is also possible that providing this 'asynchronous channel' for delivery (meaning the student doesn't have to be in front of the radio at same time it is being broadcast) might make the programme more accessible for other possible audiences.

One such example would be schools or clubs who could then deliver the programme as a 'package' to their own groups, thus extending market penetration for the programme.

Finally, the study identifies opportunities and advantages in delivering the programmes on CDROMs in alternative formats.

Summary

One of the radio-delivered lessons was converted to a digital format suitable for Internet delivery. The resulting audio files are considered from a:

- **Technical point of view:** sound quality of the file when it is being played through your computer, and
- **Sociological point of view:** whether the time waiting for the files would be acceptable, or if the student might 'switch off' before getting the chance to listen.

Once some of the initial discussions have taken place, the project could further address a range of other related issues, including:

- **Delivery of the course workbook electronically:** it must not compromise the potential for EFTS funding
- **Provision of smaller/shorter segments:** splitting the files in such a way that the delivery could be even more acceptable
- **Provision of 'streaming audio':** effectively an on-demand broadcast system (rather than requiring the student to download an entire file before listening), and
- **Economic provision of CD-ROMs:** distribution to libraries and other institutions could be more cost effective if the original CD-ROMs were converted to a more economical sound format.

The Original Files

The programmes as provided on the CD ROM were in the typical audio CD format. When the disk is viewed in a file manager on the computer, they appear only as an entry such as **Track01.cda (CD Audio Track)** and show as being only 1kb in size.

The first lesson, the one used as the example in this paper, in fact occupies about 297MB on the disk, providing about 28 minutes of audio (spoken word, with some musical introduction and interludes).

While entirely appropriate as a storage medium and format for the course for radio delivery, the file size in particular presents a near impossible barrier to Internet delivery. For someone on a dialup Internet connection, this one 28 minute lesson would take more than 10 hours to download... For someone with an ADSL connection with a 1GB monthly cap, that one file is more than one quarter of an entire month's quota for downloading!

Decisions and Compromises

Delivery over the Internet always involves decision and compromise. The two sets to consider are:

- **Common file format versus a format with good compression:** While just about any computer can be expected to play a .wav file, that is not the best method of delivery for the Internet. .MP3 files are not quite so common, but offer a massive advantage in compression. Players (such as the Windows Media Player which comes with almost all computers...) are readily available for (free) download.
- **Size versus quality:** To get really good quality sound, you have to have big files, and these become unacceptable for people on a dialup connection.

For a good rule of thumb, you can expect a typical dial up connection to the Internet to give about 3 minutes per megabyte (that is based on a download speed of somewhere between 38.4Kbs and 56Kbs)

The File Conversions

The initial work with the files involved the processes of 'ripping and encoding'. Ripping is used to describe the conversion of the audio format into the more typical .wav sound file format. 'Encoding' is the process of conversion from .wav format to .mp3 format.

Software to carry out the work is readily available. Several programmes were used in this work that involved minimal or no cost for both ripping and encoding. Some minor differences (file size, speed of operation) might be expected if fully commercial software were to be employed, but the differences would be minor. Everything anticipated for the sound files should be able to be accomplished readily at very little or nil cost for conversion software.

Results of the Conversions

The table provided as Appendix 1 demonstrate the range of quality and size that come from the first lesson of the course.

Recommendation for Internet Delivery

After considering the range of size and quality, and considering people would relate to the time for downloading, the AM quality was ultimately recommended. It doesn't have the 'hiss and pop' that you get with the lower quality, but is still of a size that could be downloaded by someone who missed a session on the radio.

As it would have little impact on effort or storage, it would also be possible to provide a higher quality version on a site as well. A good candidate for this would be the voice quality version. This could be labelled as suitable for download by users with a faster Internet connection (such as ADSL or similar).

Recommendation for CDROM Delivery

The original CD-ROMs containing the sound files as produced for radio presentation have the potential for storing two 30 minute shows, though in practice they appear to be supplied one disk per show.

The ordinary audio CD format is suitable for any CD player or computer.

Many CD players (including home units, portable CD players and car CD players) are now capable of playing MP3 files as well as ordinary audio CDs.

Providing libraries and other such institutions with all of the programmes on CD in ordinary audio format is costly for materials and time-consuming to produce the CDs. Provision in MP3 format would provide advantages in cost and time, while remaining accessible for most listeners.

The considerations relating to quality versus size of file are considerably diminished in this exercise. Even at the highest quality of MP3 production, each programme would occupy on about 20MB, allowing 30 half hour shows to be put onto each disk.

The advantages can be seen readily in the table in Appendix 2, based on the assumption of delivering 30 half hour shows.

Next Stages for Consideration

This preliminary investigation dealt primarily with file formats and quality:size issues for the audio component of the course.

Further work identified as necessary for future developments included:

- **Copyright:** assurance that we have the proper authority to provide the facility, working through previous commitments to our own staff, Moana AM and presenters
- **Other audio delivery systems:** investigation of any advantages to streaming audio or provision of smaller file segments - perhaps even interleaved with parts of the workbook
- **Workbook considerations:** investigation of password protected delivery or other electronically initiated interactions with students, particularly as this might impact on EFTS funding

Appendix 1: Results of the Conversions

File type (bit rate)	File size	Download (dialup)	Download (ADSL)	Comments on sound quality
16kbs: Phone quality	3.3MB	8 min	1 ½ min	Music lacking in depth; sibilant sounds particularly disturbing
24kbs: Shortwave quality	5.0MB	12 min	2 ½ min	Music better but still 'thin'; some hissing sounds on sibilants
32kbs: AM quality (ultimately recommended)	6.7MB	16 min	3 ½ min	Music about like an AM radio; a little distortion on speech but acceptable.
64kbs: Voice quality	13.4MB	32 min	7 min	Music good, but not really high fidelity; very little distortion on voice, not noticeable in normal speech.
96kbs: FM quality	20.2MB	48 min	10 ½ min	Near CD quality for music; voices clear with no background noise at all.

Appendix 2: Delivery Comparisons (Based on 30 Half Hour Shows)

	CD format: 1 show/CD	CD format: 2 shows/CD	MP3 format
Number of CDs	30	15	1
Approx Unit Cost	\$30	\$15	\$1
Approx Time to Produce Using Fast Burner	1 hour	30 minutes	2 minutes