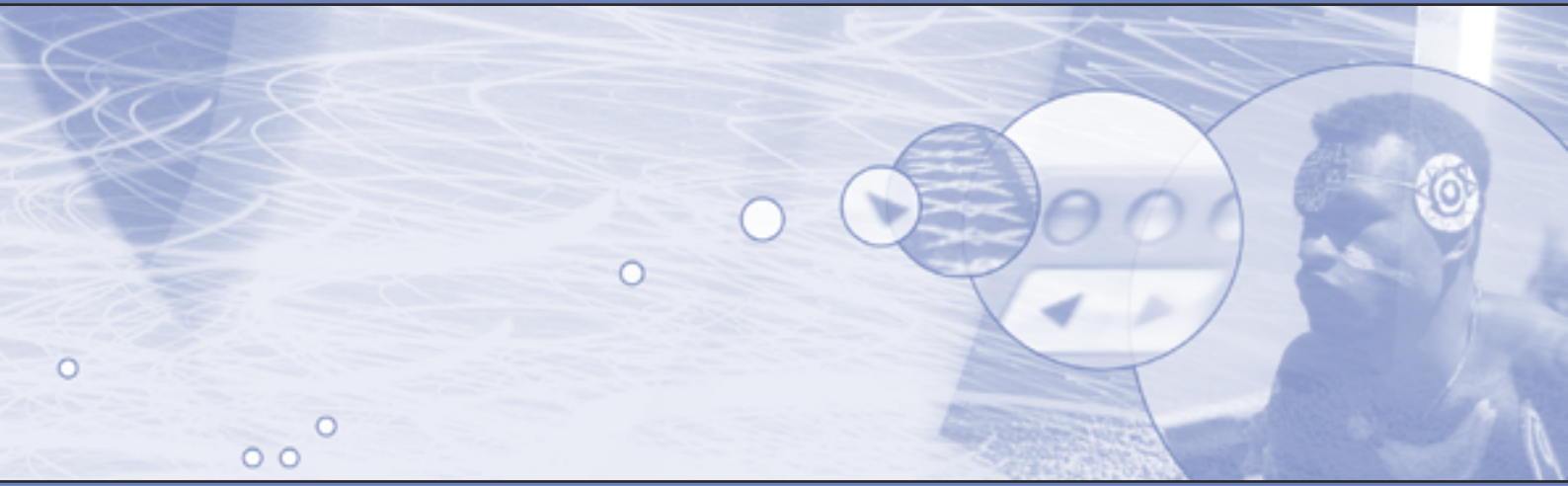

an idea-book
for producing educational multimedia in the South Pacific

by christopher robbins

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The software on the CD-rom included with this book is released as Open Source.

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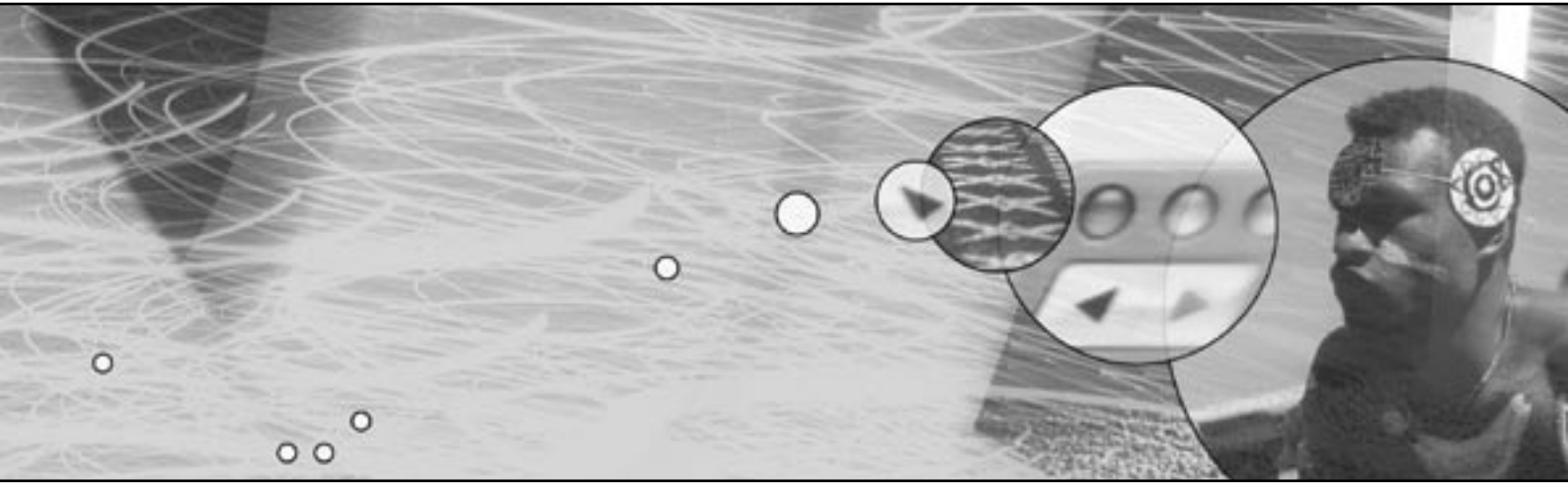

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about this book

In 2003, the University of the South Pacific (USP) Media Centre, with funding from the Japan International Cooperation Agency (JICA), began a research and development project examining how educational multimedia could be designed according to learning approaches of the South Pacific. During the project, our research and development team spoke with several hundred USP staff and students, tested educational software, handed out questionnaires, and studied over a hundred academic articles related to learning, teaching and technology in the South Pacific.

As a result, we developed a list of recommendations for designing educational multimedia in the region, created an educational multimedia program to demonstrate and evaluate these recommendations, and produced a report detailing the process and the findings.

This book provides a short summary of the recommendations, illustrated with specific examples of how you can apply these ideas yourself. It is designed as a quick reference for educational media designers and teachers interested in using educational technology in the South Pacific. For more information, please contact me through the project web site http://nm.grographics.com.

Christopher Robbins
The University of the South Pacific, Media Centre

what's in this book

This book lists ten recommendations to consider when developing educational multimedia in the South Pacific.

1. **use multiple languages**
2. **utilise local metaphors**
3. **provide multiple explanations**
4. **encourage student reflection**
5. **show the big picture**
6. **use "layers of simplicity"**
7. **enable active imitation**
8. **seek alternatives to text**
9. **cater to multiple learning approaches**
10. **design for many media**

Each recommendation is paired with an illustration of a multimedia example to help you use it in your own work. A CD-rom entitled "Tracing our Ancestors" is also included, so you can see some of the ideas in action.

1. use multiple languages

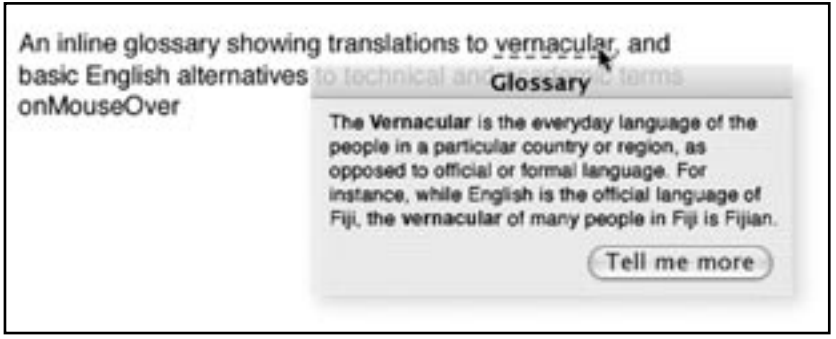
Even students fluent in English often turn to their local languages for clarification or deeper understanding, so it is a good idea to offer educational material in multiple languages. As text-books and lectures are predominantly English, multimedia can provide complements in vernacular languages.

There are several methods for integrating multiple languages into an educational multimedia project. A **drop-down menu** offers instant translations into many languages, and an **inline glossary** lets the student see translations for difficult terms, while keeping the major portions of the text in English.

Also, by organising your multimedia such that the text files are separate from the multimedia application itself, it is easier to translate and update the text into multiple languages than if all text were programmed into the multimedia application directly. For example, if developing using Macromedia Flash, have the text, image and sound files saved in separate folders, and program them to be inserted at runtime, rather than importing and editing text, image and sound within the Macromedia Flash program itself.

drop-down menu

inline glossary



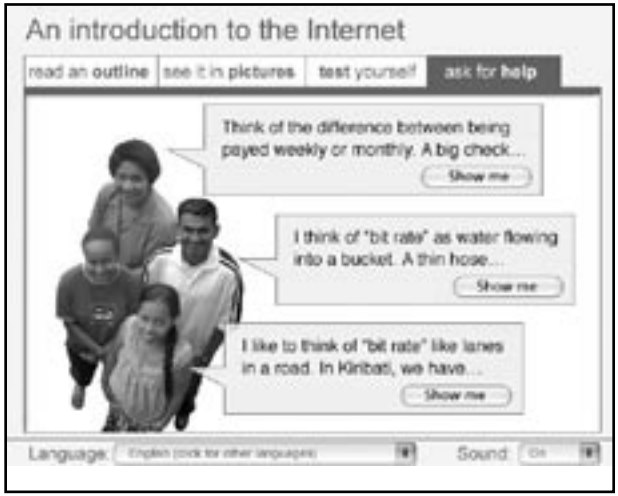
2. utilise local metaphors

People like to learn with examples that make sense in their own lives. This can be difficult to achieve when students in any one class come from as many as 12 different countries. Fortunately, there are some ways multimedia can customise learning materials to the students' own circumstances.

One way is with a **virtual peer**. In the example across the page, a group of virtual peers from different cultures in the South Pacific discuss aspects of the Internet using metaphors from their home countries. Clicking the "show me" button brings up animations, illustrations, audio clips, or descriptive text.

To further situate the learning to the student's own circumstances, the student is asked to make his or her own descriptions of the concept at hand. By saving these answers in a central database for future iterations of the program (either on the internet or locally in a computer lab or intranet), other students can view each other's perspectives, allowing students and staff to customise the materials themselves.

virtual peer



3. provide multiple explanations

In a group learning environment, when students do not understand particular concepts, they can ask teachers or fellow students for help. In distance modes, students may not have many people to turn to for answers to their questions, so it is helpful to develop educational mutlimedia to fill this gap.

One way to clear up students' confusion is by providing a variety of explanations for key concepts, and one way to provide these multiple explanations is through an **interactive quiz.** In the example on the right, a virtual peer guides the student through a quiz, providing hints for incorrect answers, and rephrasing the answer once the student has chosen the correct response.

As with the virtual peer on the previous page, interactive quizzes can offer additional ways of looking at the material by customising responses for different countries.

interactive quiz

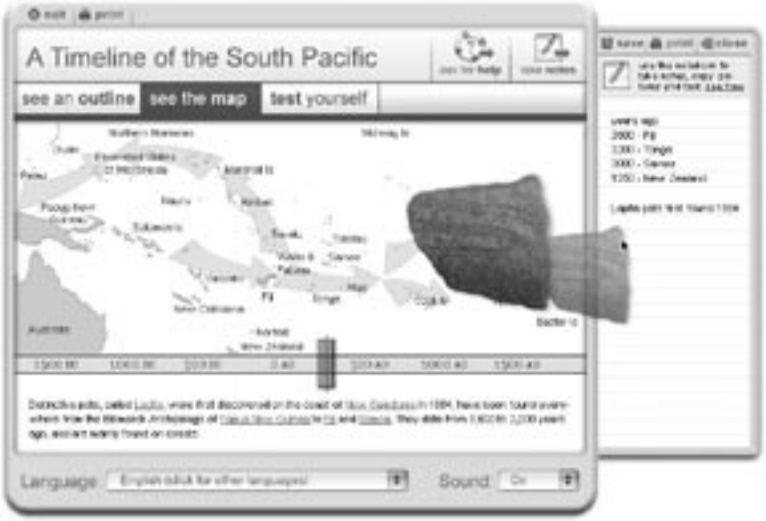
4. encourage student reflection

Obviously, getting students to reflect on what they are learning forces them to think through and make sense of their learning materials. But this can be difficult to achieve in distance learning environments where students are isolated from their lecturers and fellow students. E-mail and discussion boards offer a degree of feedback, but are little help to the many students without reliable or quick internet access, so it is important to look at ways multimedia can help elicit student feedback without requiring an internet connection.

Jerry Pakivai, a computer teacher at the University of the South Pacific Distance and Flexible Learning Centre in the Solomon Islands, came up with the idea of the **digital scrapbook** during a conversation we had in 2003.

A digital scrapbook lets students copy portions of text, images and even video into their own scrapbooks, add their own information or summaries, share their creations with other students, and save them for individual study. By integrating what is essentially just a word and image processor into the educational multimedia, it encourages students to rephrase the learning materials in their own words. In the example to the right, a student has summarised dates from a history CD-rom, and is dragging some supporting images to his scrapbook as well.

digital scrapbook



5. show the big picture

The importance of maintaining the big picture while dealing with specifics of concepts was raised by teachers and students in interviews, questionnaires and academic literature. There are many ways multimedia can help preserve **the big in the small,** and I found one simple way while looking for something else entirely. During the study, we asked 155 students of the University of the South Pacific to choose between two web designs.

The goal was to determine whether the students would feel more comfortable with inline navigation (links within the body of the text), or with a separate menu listing all of the links apart from the body of text. I expected students to prefer the simpler, inline approach, as this is closer to the layout of books, and so would be more familiar to them than the web-derived navigation menu. However, my hunch was proven unequivocally wrong — 93% of the students preferred the menu navigation.

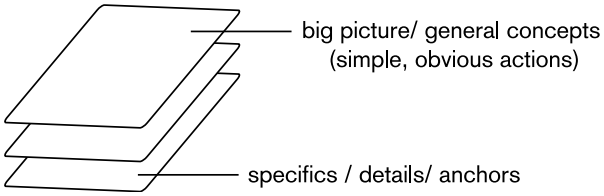
Students appreciated that the separate menu neatly summarised the longer text, and allowed them to jump directly to points of interest without losing their place. In this way, it allowed the students to keep the big picture in their minds while dealing with very specific aspects of the coursework.

inline versus menu navigation

6. use “layers of simplicity”

You can show “the big in the small” in many ways. In the example to the right, a map of the Pacific is integrated with a time-line to teach the student about immigration patterns in the history of the Pacific. The simple initial layer (arrows showing immigration patterns) is augmented with deeper layers of information (descriptions of archaeological remnants at different sites or related stories from regional oral histories) which the student can access by clicking sections of the map/ time-line with his or her mouse.

In this way, students can choose their own level of complexity, and can keep the bigger picture in mind while navigating specific points within the materials. Similar approaches can be used in maths, sciences, arts — any subject really — by using **layers of simplicity** to present increasing depths of information within a single, graphical interface.



map/ time-line

deeper layers can be accessed through the
hyperlinked glossary terms and circled details of the map

7. enable active imitation

While observation and imitation are mainstays of many teaching approaches, they are particularly relevant to many of the learning styles utilised in the South Pacific. Students like to try things out, and educational multimedia give us some powerful tools, such as simulated labs and interactive quizzes, that help students apply what they are learning by imitating what they are taught. There are also some less obvious ways we can use educational multimedia to elicit learning through imitation.

One such method is an **inline help overlay**. An inline help overlay works by showing the student how to use a program within the interface of the program itself, rather than relying on a separate set of instructions. In the example on the right, the student is led, step by step, through the process of using his or her educational software. At any time during the help session, the student can put the lesson into action by acting on the instructions.

It can also be helpful to set **timers** in your program, so that after a given period of inactivity, the program will launch into a help sequence, showing the student what he or she can do next. This helps students with a tendency to “freeze” when confused, and can help students explore aspects of the program they may have otherwise left untouched.

inline help overlay

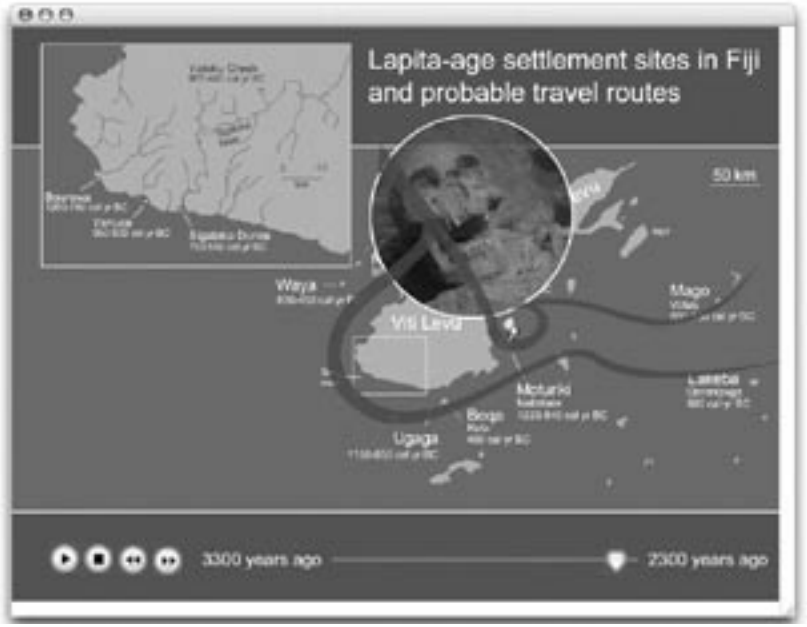
8. seek alternatives to text

In one part of the project, we tested students to find out which sorts of layouts they prefer to use to study. Graphical methods, such as pictures, charts, and simple tables, came in as their favourites, while passages of pure text were the clear losers.

The lesson from this is clear: minimise the use of text when developing educational multimedia programs, and look for alternatives such as voice-overs, animations, and interactive demos. While reading skills are essential for tertiary students, the vast majority of educational material used by distance learners is text based, so multimedia can provide a welcome break from “the loneliness of books,” as one staff-member put it.

Multimedia consisting of printable pdf files or videos of “talking-heads” of lecturers reading text is not a good use of educational multimedia. More graphical alternatives such as the interactive map shown on the opposite page can show in a quick animation what would take many paragraphs of text to explain.

an interactive animation used instead of a page of text



note: this animation was based on a map drawn by Patrick Nunn of USP Geography department

9. cater to multiple learning approaches

Not all students have the same goals or approaches to learning at University. Some prefer to learn through discussions, others prefer to study alone; some want rich, detailed learning materials while others prefer quick summaries. Catering to all of these goals and approaches with a single piece of educational multimedia may seem a daunting task, but if we divide materials by learning approach as well as thematically, we can go a long way towards satisfying many different types of students. In other words, don't simply organise the learning materials according to the curriculum; think of several approaches students can use to learn the materials, and present the material using each of these approaches.

During the study, we found that students' preferences for educational media fell into a few basic categories: **efficiency, detail, graphics** and **test-focused**. To cater for this, the same material can be presented graphically, in outline form, through conversation-like tests, and through exploratory hands-on interfaces. In the illustration on the opposite page, the same material is presented in three different ways, each catering to a different learning approach.

the same material is presented in outline, graphical, and test form

10. design for many media

It is important to be aware of the level of access to technology enjoyed by the students who will be using the educational materials you create. In much of the South Pacific, multimedia developers cannot currently rely on internet access when designing their projects. Access to computers can often be unreliable as well, and in many areas, even electricity is not a given. Of course, multimedia requires computers, and computers require electricity, but there are some methods for making educational multimedia more accessible.

- produce material as interactive CD-roms, not just as web sites
- distribute interactive CD-roms that also play as audio-CDs, so that students with stereos but without computers can use the materials
- ensure that all multimedia have printable components
- organize the files that make up the multimedia so that students can access individual files (images, text, audio, video) without needing to run the multimedia program itself
- release your educational multimedia as open source, providing copies of all supporting files, layouts and code, so that your educational multimedia can be customised at different sites for different needs

an example cd-rom

Included with this idea-book is an interactive CD-rom **Tracing our Ancestors**, which was developed using many of the recommendations outlined in this book. Built with Macromedia Flash and XML, this CD-rom contains an educational multimedia program about Pacific History. The information is presented in 12 languages used in the South Pacific, and is divided into three sections: a simple, text-based outline, an animated map, and a "test-yourself" section with a virtual-peer from each USP country who gives hints and feedback to help students learn through the test.

A help section demonstrates how to use the program within the active interface, showing students exactly where on the screen to click, so students can act on the instructions immediately. The help section is also presented in 12 languages used in the South Pacific, in visual, textual and audio formats. The program is distributed open source, with source files for layouts, illustrations, animations, code and text included on the CD-rom, so as to enable deeper customisation, and to serve as a building block for other educational multimedia.

Hopefully, this CD-rom will give you some ideas for producing your own educational multimedia. If you have any questions or feedback, please contact me through the project website **http://nm.grographics.com**.

using the cd-rom

Installing **Tracing our Ancestors** on PC/ Windows

In **My Computer,** right click the CD **PACIFIC_HISTORY** and choose **"open"**

Drag the folder inside onto your desktop

To run the program, open the file called **Ancestors_PC** in the Tracing Our Ancestors folder

Installing **Tracing our Ancestors** on Mac/ Apple

On the Desktop, open the CD **PACIFIC_HISTORY**

Drag the folder inside to your **Applications** folder

To run the program, open the file called **Ancestors_MAC** in the Tracing Our Ancestors folder

Don't have a computer?

If you do not have a computer, you can listen to this CD in any CD-player.

Each track is a different language:

1. **Cook Islands Maori**
2. **English**
3. **Fiji**
4. **French**
5. **Hindi**
6. **Kiribati**
7. **Marshallese**
8. **Nauruan**
9. **Niuean**
10. **Samoan**
11. **Solomon Islands Pidgin**
12. **Tongan**
13. **Tuvaluan**
14. **Vanuatu Bislama**

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This book provides **a simple and practical reference** to help **educational technology developers and teachers in the South Pacific** consider some of the learning approaches of students in the region as they create educational media. It is an outcrop of a research and development project funded by the Japan International Cooperation Agency (JICA), and conducted by the Media Centre of the University of the South Pacific.

Each of the **ten basic recommendations** in this book is illustrated with an example of an educational multimedia program, and many of these recommendations are utilised in the **example CD-rom included with the book**.

Further information is available at the project web site: **nm.grographics.com**.

Christopher Robbins is the Multimedia Production Specialist at the University of the South Pacific Media Centre, in Suva, Fiji.