

## **FAST, FLEXIBLE AND FUNCTIONAL MATERIALS FOR LEARNERS IN AUSTRALIA**

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**A case study.**

### **Background**

The Onkaparinga Institute of TAFE services an area of 27, 400 square kilometres, including some very remote and sparsely populated areas in southern Australia. As demands on the Institute resources grew, alternative ways of delivering to this vast region had to be developed. Flexible approaches to educational delivery were seen as a priority. At the beginning of 1997, a Project Officer was given a brief to consider the implementation of flexible delivery at Onkaparinga. Five months later a report, *No limits to learning*, was finalised with a range of recommendations. Following the acceptance of the report, the Flexible Delivery Unit was established.

### Flexible delivery defined

Flexible delivery in vocational education and training (VET), is defined in the National Flexible Delivery Taskforce *Final Report*, as:

*an approach rather than a system or technique; it is based on the skill needs and delivery requirements of clients, not the interests of trainer or providers; it gives clients as much control as possible over what and when and where and how they learn; it commonly uses the delivery methods of distance education and the facilities of technology; it changes the role of trainer from a source of knowledge to a manager of learning and a facilitator.*

*Flexible delivery in VET is characterised by:*

- *placing control on the demand side of training – where clients determine the content, sequence, time, place and method of learning*
- *the provision of appropriate information systems*
- *the provision of appropriate learning support systems*
- *the provision of appropriate learning management systems and*
- *flexible assessment processes.*

(ANTA, June 1996)

### **From small beginnings**

The Flexible Delivery Unit was established with 4 staff in July 1997. One was a computing lecturer with extensive programming and information technology infrastructure knowledge, one had project management experience coupled with facilitation and change management skills and the remaining 2 were Multimedia Trainees with visual art backgrounds. It was up to this small team to gather the skills, resources and knowledge required to make a success of a vision still to be defined. With much enthusiasm, they set off and it was not long before the first major project emerged.

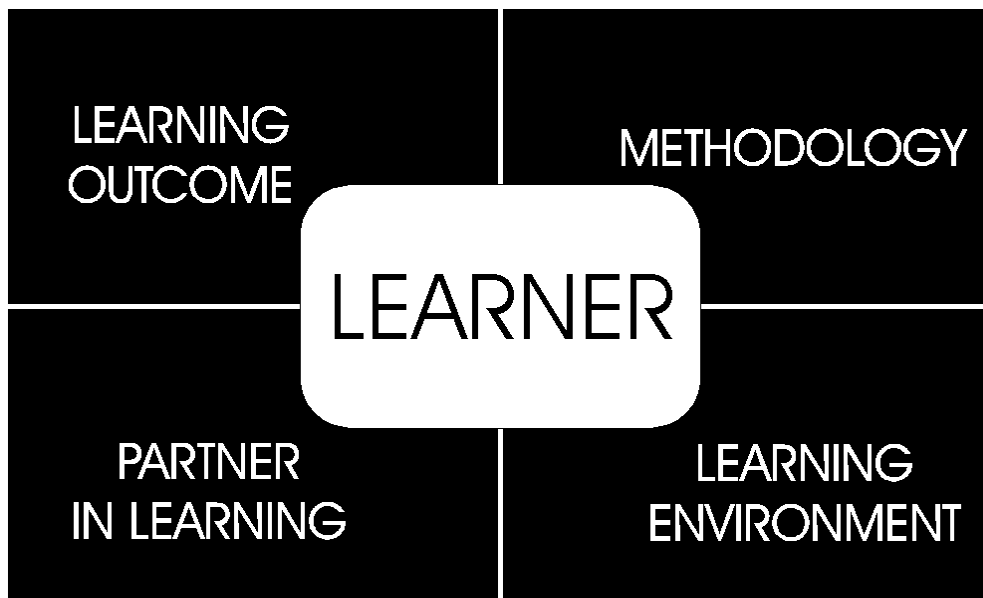
A work team within the Institute required materials for a nationwide workplace-training program. These students were currently receiving, by post, numerous workbooks and 48 different videos as the basis of their training. It was recognised that the postage and management of logistics could be dramatically improved if the resources could be integrated and compiled onto a few of CDs. In a very short time, the experimental work was complete and the existing video was compiled into a text-based document. Other graphics were integrated and a website was created as an additional resource. Industry and learners alike accepted the product. The quality of this product was poor, but this was the beginning of our journey.

News travelled and before long other programs were looking to gain assistance for the development of their resources. A video for one, print based materials for another, more CDs and a website. The expertise and experience of the team was growing. The Trainees were being exposed to many different experiences in their off-job training and the ideas grew as did the equipment. We had a very limited budget. We were managing to upgrade existing machines by purchasing and installing various boards and specialist cards to increase the capacity of our equipment. At the end of a six-month period we each had an IBM compatible PC and as a team we had a scanner, digital still camera, digital video camera, video player, television and a basic digital video editing suite.

The most exciting thing about this period was the learning curve on which we climbed together with our willingness to try almost anything. We learned a lot about what we didn't know and we found out where we could learn it. We contracted experts to give us just the information we required at the time. We searched the net, attended workshops, read copious books and worked late into the night. We laughed and we struggled. At the end of the day we had discovered, both personally and professionally, the richness, the flexibility, the capability and the impact of new technology on the learning environment. We had a fresh appreciation of our own complimentary skills, knowledge and experience and had developed a clear vision for the Institute. Now it was our job to sell it.

### **A learner centred approach**

The changes being driven at Onkaparinga Institute have clearly place the learner as the focus for the learning with four other variables involved in complex interaction. These are the learning outcome, the learning environment, the methodology and the partner(s) in learning. Each of these has many facets and variables and all will in some way impact on the outcomes.



The learner as the focus for all learning will impact on the remaining four variables. The learning outcome is based on the learner's needs and will be supported by the right methodology and suitable learning resources managed to assist the learner's successful completion.

This methodology will take into account the learner's requirements, preferred learning environment and those required to assist with the learner's achievement. The learning environment will be affected by the requirements of the learning outcomes together with the needs of the individual. The methodology will also influence the partners in learning. This may include a lecturer, tutor, marker, others learners studying the same program whether they are classroom colleagues or buddies established through a specially designed program for off campus learners. Other may include educational services and library resource centre staff, friends, family or work colleagues. Some

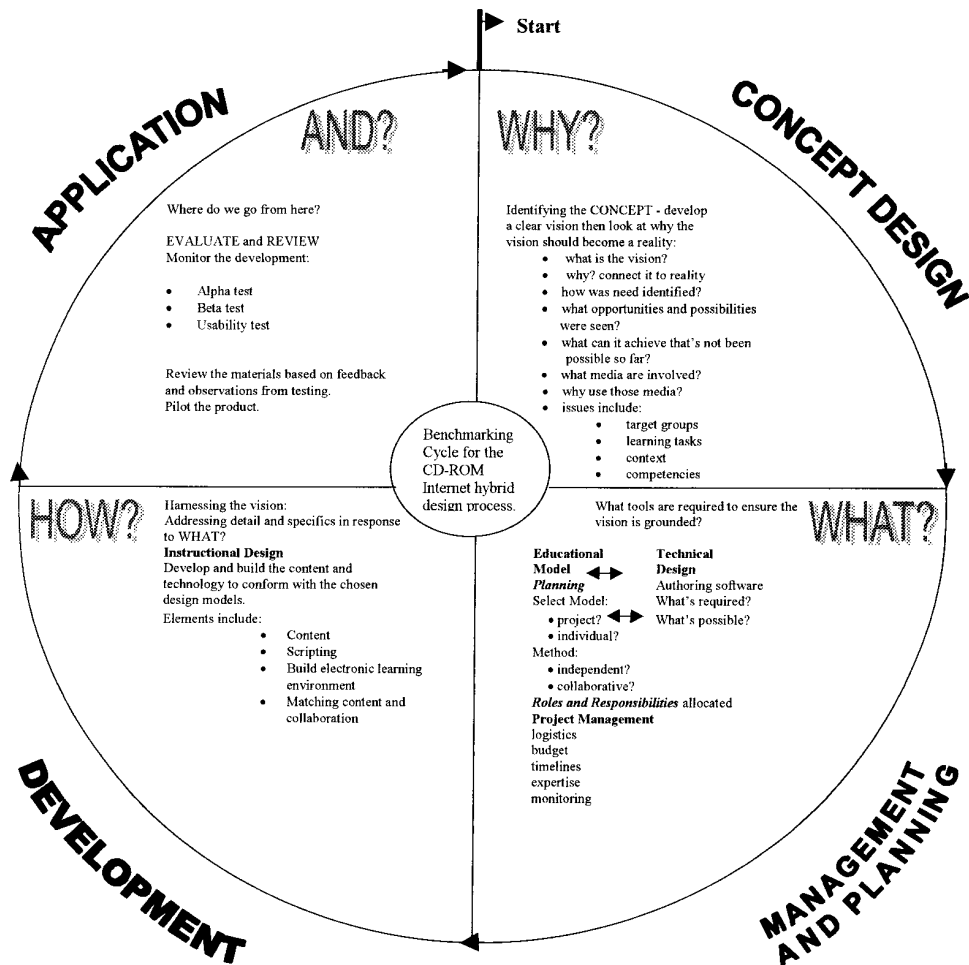
individuals will learn with little or no interaction except with the learning materials and resources provided depending on their learning style, the course content and the need for assessment.

Currently, at Onkaparinga Institute of TAFE, we offer education and training both on campus and off campus and through a variety of mixed modes. These include external or correspondence studies, online learning, workplace training, videoconferencing, audio teleconferencing and self paced packages.

### **Recognition of efforts**

In 1998 we were selected for an Australian National Training Authority (ANTA) demonstrating best practice project. Our involvement in a national benchmarking project has allowed us to reflect on our practices and research other models. Our project has focussed on the design process for the development of CD ROM-Internet hybrids or simply a CD hybrid. The following model was established as representative of the process by which we were operating. Changes are occurring as a result of the benchmarking exercise.

**Model for  
Benchmarking Cycle of CD-ROM-Internet hybrid  
Design Process**



**Making decisions**

We all know that there is no single best way to do anything. However that is not the message that was getting out to the work teams. Online delivery was being strongly promoted in the broader vocational education and training sector. This was fraught with difficulties. An unreliable network, slow connections, limited access to technology, skill shortfall in staff and few well constructed resources. But from the user perspective there was little joy either. Many country regions could not access an Internet Service Provider (ISP) except at long distance rates, which make the exercise extremely costly. In short they were not interested.

Our initial discussions with work teams would be based on the needs of the learners, their ability to access technology, the Program's existing methodology and resources and the willingness of staff to change. Most staff who came to the unit for support were willing to consider a range of options. An awareness of the limitations and benefits of the various media was a good starting point. Videoconferencing and teleconferencing have not been included here but were discussed as options with staff. The advantages of mixed modes of delivery were also highlighted for the benefits that can be gained.

| Medium       | Resource Implications  | Nature of learning  | Learner expertise  |
|--------------|--|---|--|
| Print based  | Limited requirements   | Theoretical, diagrammatic, interactive/passive  | Reading, Writing   |
| Video        | Relies on access to TV, video player and possibly headphones | Practical applications, passive (usually)   | TV, Video player usage<br>Listening  |
| Website      | Relies on computer with internet connection                  | Theoretical, diagrammatic, interactive/passive, Research orientation                      | Reading, writing, computer literacy, internet usage<br>May include listening |
| Compact Disk | Requires computer with CD ROM                                | Theoretical, diagrammatic, Practical applications, interactive/passive                    | Reading, writing, computer literacy, listening                               |
| CD Hybrid    | Requires computer with CD ROM and internet connection        | Theoretical, diagrammatic, Practical applications, interactive/passive, research oriented | Reading, writing, computer literacy, internet usage<br>Listening             |

Decisions were made at the concept design phase based on the target audience, the nature of the learning environment and the suitability of the medium taking into consideration all of these factors.

Within the Flexible Delivery Unit, the majority of our learning materials were being developed on CDs. This provided us with the opportunity of integrating the various medium to optimise the learning effectiveness and meet the needs of various learning styles. Most were linked to a website as an optional extra. They incorporated communication technology to ensure the ease of access to the lecturer by the use of e-mail and most had additional URLs for extension material. Not all included computer-based assessments, but all include a range of learning activities. The use of a CD allowed the learner to access quality streaming audio and video. The combining of CD with the internet allowed the best of both worlds.

### **Planning and managing the development**

A number of elements are involved in planning the learning materials. The design of a sound product will require the consideration of a number of design aspects. These include the

- educational design,
- instructional design,
- graphical design and
- human interaction design.

Each factor, if not examined closely, has the potential to undermine the effectiveness of the learning process. The careful consideration of these factors is important in the early stages of development. Analysis of or consultation with the target group is also vital. Likewise, the establishment of a team to develop the materials, ensuring the complete range of skills, is critical.

A brand new course or module provides a green field for development, which is challenging and rewarding at the same time. However a decision about existing materials needs to be taken. Three approaches can be considered. Are they going to be:

- refreshed,
- renovated or
- reinvented?

The approach chosen influences the timeline, costs and format considerably. The timeline and costs that can be borne by the project also influence the approach.

## **What have we learned?**

There is much that could be shared from our experiences, however, there are a few that stand out from our early products.

### 1. Navigation

The importance of good navigation is a primary concern. Learners must be able to feel they are in control of the package. Simple navigation with a variety of alternatives will meet the diverse needs and learning styles of learners.

### 2. Simple interface

A simple well-designed graphical interface is absolutely essential. The difference in the appearance of products from the time our visual artists became involved was significant. This has a huge impact on the useability of the product and influences the overall design including the amount of information that can be included on each screen.

There is a particularly useful User Interface Rating Form that can be found on the web at [http://mime.marc.gatech.edu/MM\\_Tools/](http://mime.marc.gatech.edu/MM_Tools/), developed by Thomas Reeves, Ph.D. and Stephen Harmon, Ed.D. It incorporates navigation.

### 3. Good graphics

Our ability to include very clear coloured graphics is good. Occasionally a poor illustration is included and the feedback is immediate. We have established an expectation in our learners and we must maintain the quality.

### 4. Short, sharp video

This is a critical factor that lecturers don't want to hear or understand. It is imperative that any video is crisp and clear visually and audibly. Research indicates that the average time spent viewing a page on the web is 21 seconds and this is a good guide as to the length of time acceptable to many learners. We have also found that very few learners will spend 3 minutes watching even a good video on the computer screen. Our rule of thumb is to keep video segments to between 20 and 60 seconds. By breaking activities down in this manner they have much more impact.

As a result of these findings, there is little existing video that is suited to being incorporated onto CDs as most is created in a conversational format. In scripting new video, we ask writers to create the segments in short focussed pieces that can be linked. This means that interviews have to be very structured and that the chalk and talk methodology of many teaching staff is unsuitable for this approach.

### 5. Text on screen

On average most people read 25% slower on a computer screen than from a printed page. Therefore it makes sense to reduce the amount of text. If there is considerable essential text required, provide it in a print-based form. Our experience is that there is a preference for Arial type script in a minimum font size of 14. In taking existing learning material, we have also found that we could reduce the text by 30% without any distortion and this increased to between 40 - 60% with the use of audio and/or graphics. This has been applauded by many of the users.

The University of Georgia's Department of Instructional Design has a website that we have found to be particularly useful. It can be found at <http://mime1.marc.gatech.edu/MiME/> along with a variety of papers on multimedia and learning. Another useful guide is found at <http://www.deetya.gov.au/divisions/vet/guide/index.htm>. It is entitled, *How to write successful training materials: a guide*.

## **Finalising a product**

### Timelines

Due to our learning-as-we-go approach to the development of the resources, it was difficult to assess the time it would take to complete a project. This is much more easily established given our 18 months experience. Project timelines are now established with confidence.

A relatively simple CD that integrates text, audio, video and graphics can be produced within 7 working days from receipt of the script, if suitable existing video exists. A 40 hour module developed in Authorware and incorporating text, video, graphics, step by step tutorials and assessment will take 6 weeks to complete with the correct level of skills within the team. The speed with which we can produce a CD and the ease with which we can change or customise them makes CDs a viable option for many work teams.

### Alpha and beta testing

The trialing or piloting of the learning packages has become an integrated process rather than an important phase of the development. Initially the completed product would be proudly presented, even launched to the staff for introduction. A more realistic approach is now in place, whereby the materials are taken into the workshops or classrooms, even out into the workplaces and homes of willing learners. Provided with a feedback form, the learners are invited, encouraged and in some cases, bribed to give us honest feedback on the incomplete product. This may occur several times throughout the development phase to ensure the final product meets the needs of the user, that it follows a logical sequence and that all instructions and assessments are clear. It also helps with the debugging of the product. Our experience is that the feedback always influences the final version in a significant manner.

## **In conclusion**

Technology, when used well, is a very useful tool that can provide real benefits to learners, administrators and Lecturers alike. There is a growing bank of research and evidence that supports the use of multimedia in learning. Our experiences have highlighted the opportunities and the pitfalls. But most importantly it has also shown that for a very modest sum, an institution can establish a unit to produce very sound learning materials.

Feedback from students who have trialed our CD hybrids and industry representatives who have viewed them have been overwhelmingly supportive of the developments. A reduction in the time taken to complete a unit of work of up to 50% over traditional methods has been recorded. Students in the Transport Engineering - Heavy Vehicles program have accessed more tutorial materials than they would have in their print based modules and indicate a strong preference for this approach to learning. At the same time many Lecturers have been converted from opposed to supportive of this approach. The changes we have achieved in our first 18 months have been beyond our expectations.

Note: Samples of a range of CD's developed by the Unit will be demonstrated in the workshop session.

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