

Designing Distance Education Resources

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and
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Series title: Creating Distance Education Resources

Other titles in the series:

Preparing Your Unit Information Guide
Preparing Your Study Guide
Preparing Your Resource Book
Preparing for Online Teaching
Preparing Your Audio and Video Resources

This booklet: Designing Distance Education Resources

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Foreword

The University of New England has a strong commitment to providing high quality flexible learning delivery and a long history of world class distance education or off-campus provision.

This series of booklets is designed to support academic staff and administrative assistants in all aspects of preparing quality learning materials for off-campus learning. They are intended as an adjunct to the educational development support provided by the staff of the Teaching and Learning Centre.

These resources are the outcome of a collaborative effort among many staff of the Teaching and Learning Centre and I congratulate them on the result.

I hope these resources will be widely used and that they provide assistance, guiding the development of effective teaching and learning materials.



Professor Denise Kirkpatrick

Director

Teaching and Learning Centre

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Acknowledgments

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The development of this series has been a major undertaking over almost a year and we gratefully acknowledge the support of Professor Denise Kirkpatrick, our Director, as well as the staff of the Teaching and Learning Centre in general.

With thanks

Robyn Smyth and Lewis Gratton

Designing Distance Education Resources

Introduction

This series '**Creating Distance Education Resources**' which explains the structure, pedagogy and layout of effective distance education materials, comprises six reader-friendly booklets and a web site where templates and examples of well-planned formats are included as links from the Teaching and Learning Centre home page. Booklets are available free of charge to UNE staff on request from the Teaching and Learning Centre.

Students studying at a distance have little face-to-face contact with lecturers and are usually heavily reliant on prepared teaching materials, textbooks, interactive media and, increasingly, the World Wide Web. To assist academic staff to develop resources for distance teaching, the Teaching and Learning Centre has developed this series of booklets and web pages providing information on teaching and learning at a distance. Since most of our students still rely on the print-based materials that we send them, the Teaching and Learning Centre provides up-to-date information on pedagogy and design ideas for integrating print, audio-visual, online and face-to-face materials.

Booklets in the Series

These booklets are available free of charge to UNE staff from the Teaching and Learning Centre:

- Designing Distance Education Resources
- Preparing Your Unit Information Guide
- Preparing Your Study Guide
- Preparing Your Resource Book

Future Titles

- Preparing for Online Teaching
- Preparing Audio and Video Resources

Resources

In addition to the booklets, the companion resources listed below are available from the Teaching and Learning Centre web site:

- Icon Library
- Template Library

Explanation of Terms

The terms 'Unit Information Guide', 'Study Guide', and 'Resource Book' have been used to standardise terminology describing the various components of learning resources and to minimise confusion when materials are adapted for web delivery. The Unit Information Guide contains administrative information for students, the Study Guide provides the core learning activities and the Resource Book contains reprints of readings and references essential to the unit content. These booklets are referred to as separate entities throughout this series, but the contents may be combined into one volume where applicable. We recommend that administrative information be explicitly delineated from content and resources in combined volumes. Coloured sections or divider pages are useful for this purpose.

Organisation of the Booklets

Each of the booklets may be used as a stand alone resource but, ideally, they should be read as a related and developmental set which models a consistent approach that is intended to make materials preparation easier and less time consuming while being user-friendly for students.

Within each booklet, a practical and pragmatic approach has been used to model effective practice and to provide background information and support from current research literature. Thus, each booklet is quite short and includes only a very brief discussion of pedagogical issues. Titles of further readings are provided in the reference list at the end of the booklets for those staff members wishing to explore such issues in greater depth.

The primary framework for the layout of the booklets is question-based. As in the examples below, a question is posed and information, rather than a definitive solution, provided. In most cases, advance organisers in the form of bulleted lists or diagrams alert the reader to the topics being covered in the major sections of each booklet.

Getting Started

Before you embark upon the development or redevelopment of teaching materials, there are a few issues to consider:

- the workload implications of this activity
- your purpose for developing or redeveloping teaching materials and the probable benefits to your students.

What are the Workload Implications of Developing or Redeveloping Teaching Materials?

When teaching materials are being developed or significantly revised, usually the most difficult resource to find is sufficient time. Time spent in planning the content, structure and activities in your unit before you start to write usually results in a better product and time saved in rewriting. For this reason, the Educational Developers at the Teaching and Learning Centre can assist you to plan the development of materials in a staged way that allows time to consider new pedagogy and the alignment of aims, student learning objectives, assessment and content. Please contact them for assistance, which can be provided either individually or to small groups.

Will I save time if I use a template when word processing?

Using the templates will support the development of your unit study materials and **reduce your development time**. The Teaching and Learning Centre has developed simple templates for each type of material: Study Guide, Unit Information Guide and the Resource Book. Material produced with these templates will be good preparation for web development should you decide to adapt materials for online delivery. **Your workload should be reduced** because you will save on editing time and be able to use the same preparation to produce materials for print, web or face-to-face delivery.

How can I use my distance learning materials in face-to-face teaching and learning?

In many ways, preparation of effective distance materials supports face-to-face teaching because the explicit structure needed for distance materials is useful to enhance face-to-face teaching. Students studying at a distance usually rely on prepared materials and textbooks, so

the materials provided should be carefully structured to enable the students to use them easily. By using concept maps, a carefully prepared Table of Contents, aims and/or objectives, and advance organisers for content, you are providing an explicit map or pathway for students to follow. Such materials can easily be converted into a PowerPoint presentation or overhead transparencies for use with internal students or uploaded onto the Web for both internal and external students to use.

What is my Purpose for Developing or Redeveloping Teaching Materials?

Having a clear aim for your activity can assist in planning the steps and stages of the development and estimating the time you will need. Such planning might also provide a conceptual framework for your writing. This framework can then become the planning tool for designing the learning objectives, activities and assessment that students will undertake. The sequence, breadth and depth of the unit's content will flow from your conceptual framework. If you decide to share your framework or elements of it as an advance organiser in your notes, your students will benefit because they will be alerted to the purpose and relevance of the content, activities and assessment you have designed and will be able to see a clear pathway through their study. For some students relevant prior knowledge will be activated by such organisation and their learning will be further enhanced.

How Might I Plan My Materials?

There are many different ways to plan your teaching materials and it is important to develop a system that suits your personal needs. However, the need to align your aim for teaching the unit, the learning objectives for students, the content and your assessment of the students' achievement of the objectives should underpin any planning process (Biggs 1999). An advance organiser is a useful planning tool for this purpose that can take the form of a list, diagram, flow chart or concept map. Ideally, the advance organiser that you use to plan your teaching should be shared with your students.

Why are advance organisers useful?

An **advance organiser** provides a written, verbal or visual conceptual framework **prior** to instruction (Rowntree 1990, 1994). It provides a mental **scaffolding** for the lecturer to plan teaching so that learners can construct their learning more easily. When presented to students as an overview, the advance organiser is also the plan from which they will construct their learning by linking new learning to old.

An effective advance organiser uses concepts, terms and propositions that are expressed so as to engage the learner. It need not be lengthy but should be presented in a clear way. It could be simply a list of topics and sub-topics of a section or chapter presented as bullet points, in a table or as a concept map. Figure 1 provides one example of an advance organiser based on learner-centred questions.

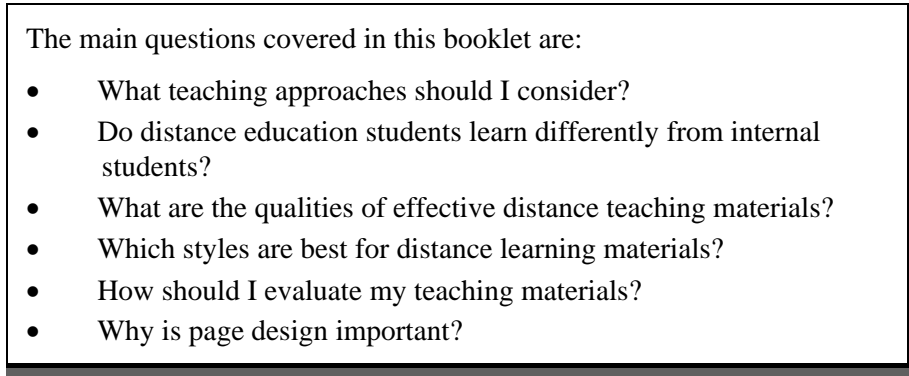


Figure 1: Sample Advance Organiser Displaying Major Topics Covered

This is actually an advance organiser for the material covered in this booklet. Generally, the advance organiser showing the outline of study topics for the unit is placed early in the Study Guide. Where relevant, a similar organiser showing pathways through a course of study may assist students to locate the particular unit in their pattern of study if it is located in the Unit Information Guide.

How might I use concept maps to plan teaching?

A **concept map** is a diagrammatic representation of the key concepts of the subject matter in an explicit and concise manner. Figure 2 shows a typical concept map about teaching and learning.

There are many ways to construct a concept map and they have a multitude of uses from thinking through issues or problems to planning teaching materials, essays or papers. You might wish to teach your students how to use concept mapping too! If you are not familiar with concept mapping, a simple process could be:

1. brainstorm all relevant ideas about your unit's content, topics, questions or issues;
2. record these ideas in thought bubbles, as a mind map, in a list, on post-it notes or any way that is sensible for your purpose;
3. organise the ideas into consistent, logical groups and then identify how and why certain groups of ideas could be linked together. This is the basis of concept mapping. The form that the map then takes will be determined by the subject matter and the learning style of the person compiling it.

There is no right way to construct a concept map. The usefulness of this tool is its flexibility to accommodate many planning and thinking tasks and most learning styles (Fraser 1996).

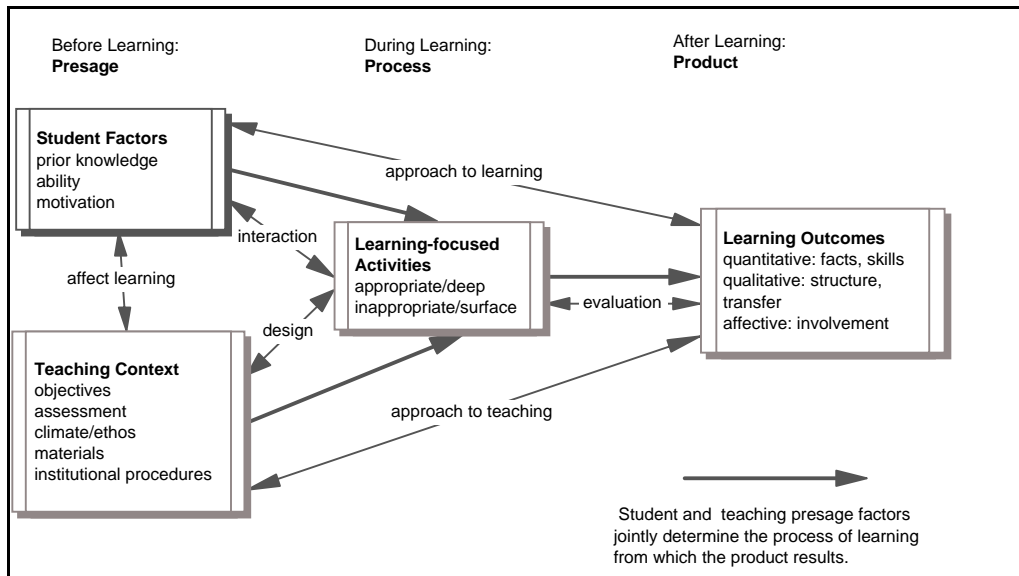


Figure 2: Example of a Concept Map

Source: After Biggs 1999, p. 18

What Teaching Approaches Should I Consider?

What students learn is very closely associated with **how** they learn. This, in turn, is affected by the engagement and satisfaction that students derive from their learning. Thus the teacher's task is a complex and important one if the outcomes of learning are to be valued by their students (Ramsden 1992; Biggs 1999).

There are important features to consider when designing learning materials for students studying at a distance and in other individualised situations. Brief explanations are provided below on four relevant topics:

- constructed learning
- deep and surface learning
- student-centred approaches
- problem-based learning.

Constructed Learning

Constructivism contends that learners individually construct their own knowledge, based on prior experiences, mental structures and interpretations of objects and events. Therefore there is no one 'correct' view, but there may be alternative perspectives for any concept. Students' understanding can take place on a number of levels depending on their approach to learning, the teaching strategies used in the teaching materials presented to them, and their motivation to learn. Ideally, teachers aim to engage their students in **deep learning** and the construction of knowledge through a synthesis of information, critical reflection, problem solving and application of knowledge in different situations and contexts.

Deep and Surface Learning

Students come into higher education with different backgrounds, attitudes and approaches to learning. Research has revealed that the adoption of a deep approach rather than a surface approach to learning is a critical influence on the depth of understanding reached by the learner (Entwistle & Ramsden 1983; Gibbs 1992; Ramsden 1992; Biggs 1999).

Deep Learning is characterised by:

| Student Characteristics | Teaching Approach |
|---------------------------------------|--|
| Previous knowledge of topics | Matching content to previous knowledge |
| Perceived relevance of subject matter | Good teaching (pace, structure organisation of material) |
| Intrinsic interest in the subject | Opportunities for individual choice |
| Effective study skills | Study skills training and support |

Surface Learning is characterised by:

| Student Characteristics | Teaching Approach |
|---|--|
| Anxiety | Short answer and multiple choice questions |
| Fear of failure | Heavy workload and overloaded curricula |
| Reliance on memorisation | Spoon-feeding |
| Extrinsic motivation (concern for grades) | Lack of relevance or choice |

Source: Adapted from Entwistle & Ramsden 1983

Students whose teachers design their teaching to stimulate a deep approach to learning usually become deeply interested in the subject matter, whereas students whose teachers do not plan teaching effectively are forced to adopt a surface approach more concerned with rote learning motivated by fear of failure.

Teaching approaches that foster deeper learning

Recent theories of learning, that examine students' learning behaviours in relation to styles of teaching, highlight the different levels of understanding that students can engage in depending upon the stimulus from teaching materials (Biggs 1999). Deeper learning is enhanced if:

- academic expectations are stated clearly in the purpose for learning
- the relevance and connection of new material to old is established
- students are actively engaged by the learning activities
- students' learning is supported by explicit teaching of learning strategies
- reflection about new learning is encouraged.

The analysis of student outcomes using the SOLO (Structure of the Observed Learning Outcome) Taxonomy has provided much insight into the ways in which students interact with teachers' strategies. The influence that this interaction has on the outcomes of their learning is presented in detail in both Biggs (1999) and Ramsden (1992) and underpins the explanations given here.

How do my teaching strategies influence students' learning behaviour?

Surface or deep approaches to learning can be encouraged by planning the way in which you want students to engage with your teaching materials. The types of objectives that you set, the activities that you design and the assessment of learning all reflect your approach to teaching and learning. The messages that are perceived by students can be characterised as follows.

| Surface Approach | Deep Approach |
|--|---|
| <p>Learning is about:</p> <ul style="list-style-type: none"> • reproducing: an intention to reproduce parts of the content • passively accepting: learning by accepting ideas and information • assessment: concentrating only on assessment requirements • skimming: not reflecting on purpose or strategies in learning • memorising: rote learning facts and procedures routinely • disengagement: failing to recognise guiding principles or patterns. | <p>Learning is about:</p> <ul style="list-style-type: none"> • understanding: an intention to understand material for oneself • active engagement: interacting critically with content • construction of knowledge: relating ideas to previous knowledge/experience • organising: connecting ideas within integrating frameworks • synthesising: relating evidence to conclusions • enquiring: examining the logic of the argument. |

Should I Use a Student-centred Learning Approach?

To assist students studying in the distance mode, the approach should be learner-centred rather than teacher-centred. Where learning is student-centred, consideration is given to the individual needs of learners such as:

- designing learning materials that are easy to follow (navigate)
- allowing some flexibility for students to proceed at their own pace within the overall framework of study
- providing variety in the type of learning activities and media used so that students with different learning styles actively engage in the learning process.

Distance learning also includes the notion of resource-based learning which involves the provision of a variety of learning resources (printed notes, video, audio, computer-based learning) for students to engage with. **Thus, it is essential that the whole program of study be planned as an integrated set of learning experiences.**

If you intend using multiple media (combinations of audio, print, online or video), then planning should focus on the most effective ways to integrate media so that elements of the unit are designed systematically using appropriate media or combinations of media. It is often worthwhile to plan a staged or developmental approach to the incorporation of multiple media over time so that strategies can be tested and student evaluation of them used to inform subsequent developments.

Relevance to the student

Quality learning occurs if the students perceive that the material has some relevance to them. 'Cognitive growth lies not just in knowing more, but in the restructuring that occurs when new knowledge becomes connected to what is already known' (Biggs 1999, p. 73). Effective teaching engages the student so that deeper learning takes place. This can be achieved when teaching:

- builds on students' prior knowledge (what is known)
- is clearly structured (scaffolded)
- raises the students' awareness of how they learn (practices and processes)

- uses error constructively (problem oriented learning).

Rather than providing students only with abstract concepts and self-contained examples, Brown, Collins and Duguid (1989) suggest that students should be exposed to authentic activities and explicitly taught learning strategies which constitute the tools of learning in any particular discipline. Therefore, problem-based approaches in the form of projects, field trips, case studies, and experience in the field (e.g. by working with practitioners) can provide students with relevant learning opportunities.

Why Should I Consider Inductive or Problem-based Learning?

Since an important goal of higher education is problem solving, a more open-ended approach (involving inductive teaching and learning strategies to encourage students to discover, induce the principles and solve the problems for themselves) may lead to deeper levels of perception. It may also provide the intrinsic motivation that students need to persist with the learning task and develop their own understanding. One of the generic skills highlighted in the policy 'Attributes of a University of New England Graduate' is problem solving so lecturers should be aware that teaching styles and well-designed materials for distance teaching can stimulate students' development in this regard.

Do Distance Education Students Learn Differently from Internal Students?

Students studying in the distance mode are likely to come from more diverse backgrounds than internal students. For instance, they often have full-time jobs, are usually older (over 30), may have children and may have been away from study for some time. Unlike new full-time students who are more likely to be school leavers, external students come from a wide range of occupational backgrounds. Therefore, they have to be highly motivated and need to be encouraged to stay on course by well-designed packages of study materials as well as being supported in their academic skills development. Because students have different backgrounds and a variety of educational and cultural experiences, it is important to gain information about the ones who will be undertaking your unit so that you can meet as many of their needs as possible and practicable.

What Motivates Distance Learners?

Unlike most students studying on-campus, many students studying in the distance mode have family or job commitments that can take priority over their studies. It has been argued that external students are more motivated than full-time internal students, but they have the added problem of isolation and conflicting demands on their time.

Intrinsic/extrinsic motivation

Most of our distance learners are mature, responsible people who are capable and independent in life and work. However, helping them to maintain their motivation is important for them to continue learning through distance education.

A major goal of student-based learning is to provide a meaningful learning context that supports students who are intrinsically motivated to complete self-paced learning. **Intrinsic motivation** occurs when students learn because they are so interested they enjoy 'learning for its own sake'. **Extrinsic motivation** occurs when an external reward (e.g. grades) motivates learning. Intrinsic motivation is of a higher quality than extrinsic motivation, on which surface learning is based.

Characteristics of intrinsic motivation

Intrinsic motivation results from the students' interest in, and satisfaction with, learning. If students have a history of rewarding engagement in knowledge acquisition, they enter into new learning with enthusiasm. The climate that teachers then create can support and enrich that motivation or erode it. By designing teaching to foster deep learning, intrinsic motivation becomes sustained. Research evidence over many years shows conclusively that teaching for surface learning promotes student dissatisfaction because extrinsic motivation is insufficient stimulus over prolonged periods of study. Teachers need to be mindful that motivation is not only helpful in stimulating learners for present learning, but also helps them to build up their confidence to continue learning (Johnson & Foa 1989).

How Important are Learning Styles?

Based on experiential learning theory, Kolb (1974, 1976) proposed a simple model of learning that is widely used and accepted as the precursor to the development of many modern approaches to learning. The model shows learning as an active and continuous process requiring critical reflection and the construction of new knowledge from existing experience and learning activities. The four main learning styles are all represented in Figure 3 below.

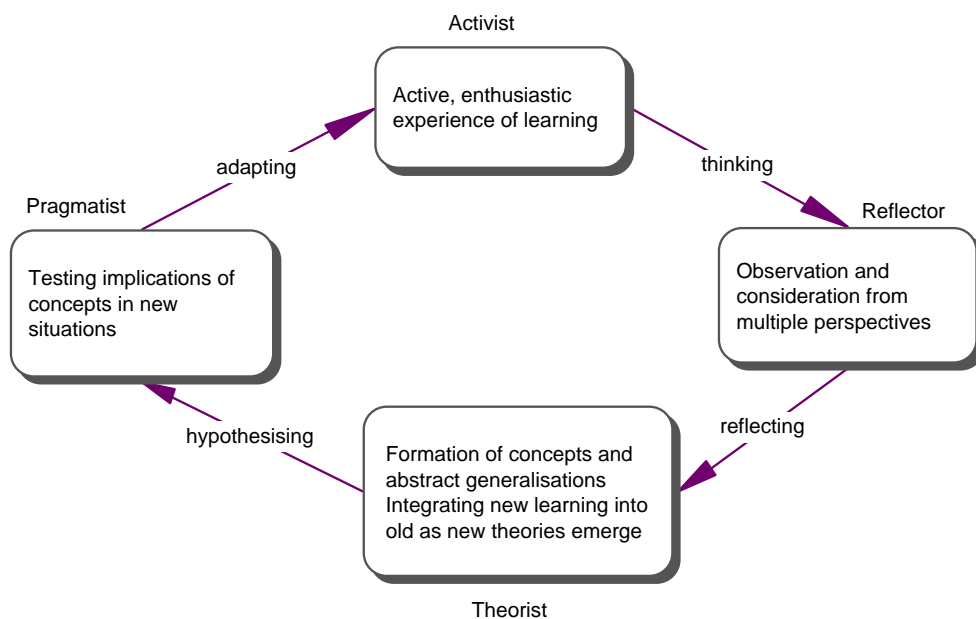


Figure 3: Experiential Learning Model: Predominant Learning Styles

Source: Adapted from Kolb et al. 1974

Learners all use a combination of styles for different learning situations, but most people have one style that is dominant or preferred. This is the style that they rely on most and it is usually a product of their dominant personality style and learned ways of learning.

The following short descriptions have been adapted from Honey and Mumford (1989).

- **Activists** involve themselves in learning without bias in new experiences. They are enthusiastic about learning anything new. They tackle problems by brainstorming, thrive on challenge but lack perseverance.

- **Reflectors** stand back and ponder new experiences from a variety of perspectives. They are cautious, like to be thorough and enjoy observing rather than participating in discussion. Their opinions are always considered and reflect a big picture approach.
- **Theorists** think problems through, adapt and integrate new knowledge into complex new theories that are logical and consistent. They tend to think rationally and logically, are keen on experiences 'making sense' and have difficulty with subjective judgement and lateral thinking.
- **Pragmatists** like to try new ideas or techniques to see if they work in practice. Practical and down to earth they want to get on with the job of solving problems and making decisions. Experimentation is central to their learning, which is often kinaesthetic.

Traditionally, teaching in the distance mode has relied heavily on print material, which is particularly suitable for students who have a strong preference for learning by reading and writing. However, some students may have a strong preference for other ways of learning, for example, visual (graphic) or kinaesthetic (doing) learning, and thought should be given to providing them with opportunities to engage their preferred style by incorporating video clips, audiotapes, computer-based activities, observational or practical tasks into the learning experiences being planned.

Different learning tasks often require different learning approaches; so it can be useful to alert learners to the range of learning styles that can be adopted so they can select the most appropriate style for particular tasks, circumstances and purposes. Some students will find it more difficult than others to use a style that is not natural for them. Honey and Mumford (1989) and Mills (1992) have published Learning Styles Questionnaires for the purpose of determining a learner's dominant style. The learner then has the challenge of strengthening their less dominant styles and using them for appropriate tasks and activities.

Should I Guide the Pace of Learning?

Distance learners have greater opportunities to study at times that suit them and that fit their schedule. They are not bound by a fixed lecture/tutorial schedule and, depending on the lecturer, may not be bound by a strict assignment submission schedule. However, many are new to studying in isolation and appreciate a suggested timetable of activities/tasks. It is important to provide an explicit structure for students to use in planning the pace of learning but, equally, this structure needs to have some in-built flexibility to accommodate unforeseen circumstances.

Refer to the notes in the booklets detailing preparation of Unit Information and Study Guides for practical tips on the structure and pacing of learning.

What are my Responsibilities Regarding Students with Disabilities?

Under the anti-discrimination laws in Australia, education providers are obliged to make teaching materials available to students with special needs. It is therefore efficacious to prepare your teaching materials with these needs in mind. For example, would you be able to supply a blind student with digital copies or audiotapes of your lectures/notes if required? How would you meet the needs of a hearing impaired student attending your residential school? For assistance, contact the Disability Adviser in the Equity Office or one of the Educational Developers in the Teaching and Learning Centre.

What are the Qualities of Effective Distance Teaching Materials?

In a lecture or tutorial, students not only have the opportunity to ask questions but can give an indication through body language (puzzled looks etc) if there is any difficulty with the material presented. However, teaching in the distance mode means that neither the lecturer nor the student has the chance for immediate feedback. Some qualities of good distance teaching material, which reduce the potential for misunderstandings or frustration, are:

- clearly stated unit aims and student-centred learning objectives that provide indicators of the knowledge, skills, values and attributes that students are expected to develop
- advice about how to study the material with plenty of helpful examples, illustrations and exercises that engage the learner with the material
- a clear heading hierarchy that assists students to follow the structure of the argument or presentation of ideas within the material
- relatively short manageable chunks of material expressed in language that is reader-friendly
- wide margins and spacious layout for learners to make notations and add ideas
- links made to other media or materials so that learning is integrated rather than ad hoc
- explicit acknowledgment of the learners' own experiences as the basis from which to construct new knowledge.

Lecturers should imagine their distance students not as listening to a lecture, but as participating in a one-to-one tutorial. Rowntree (1990) suggests that everything that has to be said to students by a tutor in an on-campus tutorial needs to be written down. He offers the following advice for conducting this 'tutorial-in-print'.

- **Help** the learners find their way into and around your subject, bypassing, repeating, or cross-referencing sections where appropriate.
- **Tell** them what they need to be able to do before tackling the material.
- **Make clear** what they should be able to do on completion of the material by providing clear learning objectives.
- **Advise** them on how to tackle the work, for example, how much time to allow for different sections, how to plan for an assignment.
- **Explain** the subject matter in such a way that learners can relate it to what they already know.
- **Encourage** them sufficiently to make whatever effort is needed in coming to grips with the subject.
- **Engage** them in exercises and activities that cause them to work with the subject matter, rather than merely reading about it.
- **Give the learners feedback** on these exercises and activities, enabling them to judge for themselves whether they are learning successfully.
- Help them to **sum up** and perhaps **reflect on** their learning at the end of a section, topic or module.

How Important is Assessment and Aligning Learning?

Much of the most recent research into teaching in higher education emphasises the need for structure, consistency and planning of learning experiences. In particular, Biggs (1999) and Ramsden (1992) place importance on the direct links between planning learning tasks and

activities, stating the objectives that students need to achieve and directly assessing the skills, attitudes, knowledge and values expressed in the learning objectives. When assessment is not a product of detailed planning based on the derivation of outcomes from learning objectives, there is a risk that students will perform poorly and feel dissatisfied because their focus for learning was unclear and their resultant effort misdirected. Students benefit from making clear links between objectives and assessment since the former provide the focus for navigating the content that is to be learned and subsequently assessed. Feedback given by the lecturer to the students about their performance in assessment tasks should reflect on the student's performance against the learning objectives.

You might find the following broad strategy is useful as a starting point for conceptualising and defining the tasks involved in aligning the learning objectives, assessment and content of your teaching materials. Reflect on the following questions and steps.

1. **What is the aim for your teaching?** In other words, what are the broad skills and knowledge that you want to impart? What assumptions are you making about the students' aptitudes, skills and capacity to undertake learning?
2. **How can your aim be translated into learning objectives** that provide a clear set of goals for students' learning? What language is appropriate, clear and student-centred?
3. **What types of assessment strategies might be appropriate** to determine whether the learning objectives have been achieved and your aim met? Variety in assessment, allowing for learning styles and ease of marking, are important considerations.
4. **What specific content** do you require and what opportunities exist for students to access the required information or practice skills? What information sources should you provide?
5. **How will students engage with the materials?** What scaffolding is needed to assist students? Is it necessary to explicitly develop and assess academic skills?

Biggs (1999) uses the SOLO Taxonomy as a framework for understanding how students learn and for framing learning experiences (including assessment) appropriately. Since his style is light but informative and he models sound pedagogy and structure, it is worth reading Biggs' early chapters and those on assessment and having his book on your shelves as a reference. Chapter 2 of Biggs' work is included as a reading in the booklet 'Preparing Your Resource Book'.

Is a Team Approach Useful?

Developing learning materials for distance learning courses really requires a team approach. The team approach brings together different expertise and facilitates peer review and interaction. The development team could comprise the following.

The subject expert/author

The author takes the role of content specialist. A staff member or members from a relevant university academic school/department usually contribute to the unit, although with some specialist units, authors from outside the University are sometimes employed. The author has the major role to play in planning the unit structure, writing an outline and study guide, and assembling prescribed readings for the learners. It is desirable that the author works as a team member with an Educational Developer to select the best teaching and learning approach and media to suit learners' needs. (See Joughin & Johnston (1994) for an insightful article on the collaboration between author and Educational Developer.)

The Educational Developer

The Educational Developer has a background in education, with particular skills in improving teaching and learning. Such a person can offer advice on teaching strategies, including new technologies that influence the educational process, and can also provide suggestions on the assessment of learning that has taken place. An Educational Developer can give suggestions on structuring content and on incorporating activities for independent learning packages, as well as providing assistance with designing computer assisted learning activities and advice on appropriate media to use for particular subject matter. To gain most from such expertise, the Educational Developer should be consulted before a new unit is written or an existing one revised. **Ideally, the author and Educational Developer will work collaboratively throughout the preparation of the teaching materials.**

Specialist members of the team

Since there is a variety of media to choose from, the choice of specialists in the educational development team will need to be considered at the outset. Media need to be chosen carefully for their inherent suitability to the aims and content of the unit, with consideration for student capability and accessibility and with regard to workload implications for academic staff. The introduction of interactive media is often best left to the second phase of unit development, particularly where the lecturer needs to allow time for professional development in the use of the technology.

Computer-based learning specialists

The computer-based learning specialists assist with computer interface design and production. They include specialists in interactive multimedia — a medium which can take advantage of audio, video and graphical presentation on both Macintosh and IBM/PC compatible computer platforms.

Online learning specialists

If you are planning to incorporate interactive online components into your unit, you will need to apply for access to WebCT. WebCT is the software used by the University of New England to develop integrated courseware for delivery via the Web. It includes tools, which allow communication with students via a computer and the Internet, as well as many other tools which allow for other forms of engagement with the content (e.g. quizzes, student presentations, self-assessment activities, other media etc). The Teaching and Learning Centre has a specialist educational development team to assist you with web-based teaching. Refer to <http://www.une.edu.au/online-info/guidelines/> for guidelines and details.

Editor

The editor is a specialist who ensures consistency of language usage, referencing and style amongst subject authors writing the teaching/learning materials. The editor also ensures that all material referred to is included, that tables and figures are correct and that grammatical inconsistencies are brought to the author's attention. **Online and web-based materials should also be proofread by an editor.**

Graphic designer

The graphic designer is a specialist who assists with overall graphic design of the texts, web pages and multimedia materials including layout and illustrations.

Video and audio production specialists

The video and audio production specialists assist with planning, scripting, researching and editing educational video and audio productions. These may be in conventional form or prepared specially for use in web-based or multimedia teaching. An Educational Developer should be consulted during planning of audio and video resources to ensure the educational effectiveness of the final products.

Academic skills office staff

The staff from the Academic Skills Office are specialists in assisting students to develop academic writing and study skills. Where the development of unit materials has a strong component of academic skills development, ASO staff can act as advisers during the development process.

Library staff

The Dixon Library provides many services to assist distance students with information gathering, research tasks and assignments. It is important that lecturers contact their Faculty Librarian to discuss resource requirements. Refer also to the booklet in this series 'Preparing Your Unit Information Guide' where these issues are explored in greater depth.

How Should I Evaluate My Teaching Materials?

Evaluation is the process of providing the unit development team members with accurate information that will contribute to decisions about improvement either during or at the end of the unit. It can be an evaluation of learner achievement, usefulness of various media or effectiveness of teaching methods or all of these.

Different evaluators define evaluation in different ways and the accompanying methods used are, of course, different. However, evaluation is considered to be more effective if it is ongoing rather than conducted after the unit has been completed by the student (Ramsden 1992; Cunningham 1991; Biggs 1999.). Evaluation is better if it is a cooperative activity. Recommendations and comments can be made by colleagues in the subject area as well as by other specialist colleagues such as Educational Developers.

Formative evaluation

Formative evaluation is an ongoing process in which information regarding the effectiveness of particular aspects of a course is gathered with a view to making the course better. It refers to appraisals of quality focused on instructional programs that are still capable of being modified (Guba & Lincoln 1989).

Summative evaluation

This is an activity conducted at the end of a course in which information regarding the effectiveness of the course is collected so that decisions can be made whether to retain, adapt or discontinue the course. It refers to appraisals of quality focused on completed courses (Popham 1988).

In a distance setting the media and the methods have a major impact on instructional effectiveness. Thus, the unit development team needs to expend effort and resources to determine how effective the chosen media are for a given unit and identify any learning problems. In this sense, evaluation involves collecting information about the study materials, interpreting the information and making judgements about what action should be taken to improve practice. Such evaluation should apply to any forms of material used. Ideally, planning for evaluation should happen before the unit is written.

Although informal evaluation is useful, a more accurate evaluation occurs when the academic actively seeks answers to specific questions about the unit and the accompanying study materials.

Who Conducts the Formal Evaluation and Review of my Units?

The Teaching and Learning Centre is responsible for the **student evaluation of unit and lecturer teaching performance** surveys, and also manages a variety of national questionnaires for the Graduate Careers Council of Australia. Refer to <http://www.une.edu.au/tlc/evaluation/> to find out more about evaluation and review at UNE.

Which Styles are Best for Distance Learning Materials?

Distance learning provides a kind of resource-based teaching which depends heavily on material specially prepared for the student. This section provides information on the planning and production of distance learning materials with particular emphasis on print, although the guidelines presented can be applied to other forms of delivery. Topics covered are:

- Preparation of Printed Learning Material
- Why is Page Design Important?
- What About Web Compatibility?

Preparation of Printed Learning Material

Before developing the learning materials, it is important to decide what components will be included. A unit produced for students studying in the distance mode usually consists of:

- A **Unit Information Guide** which contains administrative details as well as an outline of the unit structure
- A **Study Guide** which structures opportunities for learning (including subject content, built-in activities etc)
- A **Resource Book** which contains readings, journal articles, chapters from books and other documents relevant to the unit, which are not included in the textbooks for the unit.

This material may be in separate booklets or integrated. It is important to have consistent layout and a well-organised Table of Contents so that the student can find the sections and topics easily.

Why is Page Design Important?

Research over many years has identified a number of design and layout features for print and online resources, which enhance student learning by making the material easy to read and ensuring that the structure and sequence of the content is clear. Good page design, including the use of white space, headings and other points of emphasis such as **bold text**, can be an important aid to learning. For the student it is motivational, especially when good graphics are used. It also provides clarity and therefore affects readability. Even the best content can be presented so poorly that learning does not take place.

Design features that have an impact on readability include the use of:

- short line lengths and ragged right-hand margin alignment so that eyestrain from tracking is minimised
- a type style or serif font like this one (Times New Roman) that clearly tracks from one letter to another within the words in the text

- white space around the areas of text so that students have room to annotate
- structural features such as 'chunking' of text into clearly delineated sections
- a hierarchy of headings to aid comprehension of content as well as navigation through the unit of study. A clear heading hierarchy assists the student to navigate within sections of the material and to make explicit connections between first, second and third order levels of importance in the content.

Attention to 'chunking' is particularly important when materials are being developed for web-based delivery.

Emphasis/clarity

In face-to-face teaching (e.g. lectures) important points may be emphasised by tone of voice, repetition or using the blackboard or overhead projector. However, in the distance mode, many students may find it difficult to distinguish crucial information from less important detail.

Emphasis and clarity are significant since they help learners to focus on important points and help them to clarify concepts, which the authors intend the learners to follow. Therefore it is essential to consider ways to emphasise key concepts and important information to facilitate student learning.

Emphasis can be achieved by:

- using a hierarchy of relevant headings
- using suitable icons (e.g. book icon to identify a reading)
- highlighting an important word in **bold** format
- using an indent for a quotation (italics are not particularly readable on the Web)
- placing important information in a box, list or indented text
- using bullet points
- separating information into manageable paragraphs
- suitable arrangement of graphics (e.g. diagrams or charts).

Clarity is enhanced by:

- providing an organised Table of Contents
- providing an advance organiser of the content to be covered
- providing student-centred learning objectives
- arranging information clearly
- using relevant diagrams or graphics
- clear labelling of graphs, tables, graphics and diagrams
- providing an introduction and summary for each topic or subsection.

White space, font type and size

The purpose of leaving white space around textual material is often misunderstood and tends to be viewed as costly and a waste of space. Appropriate **white space improves the overall legibility** of the text and helps learners to:

- write marginal notes or summarise paragraphs
- make additional notes like key points or produce diagrams and therefore gain some 'ownership' of the material
- make headings and marginal notation stand out.

An appropriate line length (10–12 cms) and the use of a serif font (like Times New Roman) of at least size 11 point but preferably 12 point:

- facilitates comfortable yet speedy skimming and reading because the students' eyes can track easily from one letter and word to the next and one line to the next
- reduces eyestrain to the reader and therefore the onset of fatigue and improves concentration and motivation
- reduces frustration and increases the students' ability to engage in effective learning.

Heading hierarchy

A heading hierarchy shows the student explicitly the emphasis that the lecturer wishes to place on certain areas of content. The templates designed by the Teaching and Learning Centre contain an in-built heading hierarchy similar to that used in this document. They model the following basic principles:

- headings may be in a non-serif font for emphasis (like Arial or Helvetica) with the main heading centred
- font size and density (boldness) diminish as the hierarchy proceeds to lower levels, for example, from size 16 point bold through to 12 point not bold
- headings and sub-headings are left justified even when a wide left-hand margin is used
- headings are attached to (and move with) following paragraphs
- all capitals are only suitable for the main heading if used at all
- an initial capital letter is used for the first word or main words in the heading
- headings are **not** italicised when material is to be used on the Web. Refer to the Guidelines for Web Materials at: <http://www.une.edu.au/online-info/guidelines/>.

Tables/figures and illustrations

Tables, figures, diagrams and illustrations can often clarify a point more effectively than text. Tables and figures should be numbered and any reference to them in the text should quote that number rather than the page number.

Illustrations should not be regarded simply as decoration but should be an integral part of the text. Illustrations include maps, etchings and engravings, cartoons, diagrams and photographs. Providing illustrations not only makes the topic more visually interesting but also can play a major role in student learning. Tables and figures should be well-labelled with headings for tables and captions for figures. Any diagrams, pictures, tables, graphs or figures copied from journal articles, books or web sites belonging to other authors **must be referenced** and attributed to the original author. Not attributing the source of any material is an infringement of copyright laws and models plagiarism to students rather than acceptable academic standards.

What About Web Compatibility?

Writing for web-based teaching and learning requires a different approach than writing for publication in print so seek advice from the Educational Developers in the Teaching and Learning Centre. Although it is possible to upload extensive text files onto the Web, it is not recommended. There are significant limitations to effective learning when consideration is not given to modifying print materials to avoid students spending endless hours tied to a computer scrolling through the material. **Significant effort that has gone into developing materials that promote deep learning can be nullified by placing them in an unsuitable learning environment.**

Copyright Permission

Who is responsible for copyright? The short answer is the **academic staff member writing and teaching the unit is responsible for compliance with copyright agreements**. The responsibility for obtaining and, in some cases, paying for copyright privileges, lies with the academic staff member who wishes to use the material. All print, audio, video and online materials not copyrighted to the University of New England or given clearance by the publisher and author, attract copyright fees and must be accompanied by a copyright declaration from the academic staff member when submitted for reproduction. Downloadable declaration forms are available from: <http://www.une.edu.au/library/services/crguide.htm>.

Warning!

The laws surrounding electronic copying and use have changed. There are new laws covering the use of electronic resources and defining copyright responsibilities. You could be **infringing copyright laws and be personally liable** for a large fine if you include hard copies of some electronic resources in your Resource Book. Any copyright material included in an online unit must also include a copyright statement as the **first page** of each PDF file. A pro forma is available at: http://www.une.edu.au/online-info/guidelines/copyright_notice.rtf.

Any material **recorded from television or radio broadcasts** for teaching purposes must be declared on the UNE Television and Radio Copying Record Form and labelled accordingly. Any such tapes which require duplication for students to use must be accompanied by an Audio-visual Duplicating Clearance form. Both forms are available at: <http://www.une.edu.au/library/services/crguide.htm>.

What Other Resources are Useful for Students?

For many students, learning can be significantly enriched by the addition of audio-visual resources or online components to printed materials. Students often report feeling less isolated or inhibited about contacting lecturers if they have seen a photo and received, for example, an audiotape containing a personal introduction, discussion about the context and philosophy of the unit or debate between the lecturer and colleagues.

Audio and Videotapes

Audiotapes are cheap to produce and can be used for a wide variety of educational purposes such as:

- introducing lecturers
- discussing significant or controversial issues
- illustrating spoken dialogue
- oral language training
- recording feedback about assignments in preference to lengthy written comments.

Video resources can provide important elements and course content, which cannot be adequately presented in a textual form. Video resources are also highly motivating to students because they enable distance students to see aspects of practical work, which cannot be easily replicated off-campus.

Computer Disks and CD-ROMs

For some disciplines, exercises or other relevant teaching materials are most easily sent to students on computer disks. These can be sent out with the students' regular packages of teaching materials so please ask your Materials Officer for advice.

Free Recording

The University is equipped with modern audio and video recording studios with highly trained technical staff available to assist academic staff wishing to:

- record and edit audio and video master tapes for distribution as audio or video cassettes, CDs or CD-ROMs.
- duplicate existing cassettes or create new ones from existing master tapes
- digitise to CD or CD-ROM.

These services are free of charge for the preparation of teaching resources.

We recommend collaboration with an Educational Developer from the Teaching and Learning Centre who can ensure the educational effectiveness of all types of resources, particularly large or complex CD-ROMs where technical issues regarding file types and size can restrict accessibility for some students.

Student Access to Electronic Resources Through Dixson Library

Many journals are now available electronically via the Dixson Library's Electronic Resources databases. Your Faculty Librarian can assist you in identifying and linking to licensed electronic material for use by your students.

The Library has an objective of ensuring ongoing and universal access to electronic resources for all students, including those temporarily, or otherwise, lacking Internet access (perhaps a student with a disability or one studying away from home, on a prac, etc). To this end, the Library's Reserve Room staff would like to hear about, and include in its e-reserve room, references and links to the licensed electronic materials, which you identify for your students. In this way the Library will be able to continue to provide support where necessary in the same way it does now via its holdings of paper Resource Books.

The Library's Reserve Room staff through their e-reserve project also now have the facility to image, make available online and handle the copyright issues for journal articles and book chapters which are not otherwise available electronically. That is, if you have a journal article or a book chapter that is not electronically available, Reserve Room staff will image it and make it electronically available for you and your students. Further, through e-reserve these e-resources can be integrated with loan items such as books and videos in a single library resource environment. From their desktops, via e-reserve, students will be able to view linked and imaged documents online and identify items to borrow. External students will have the added benefit of being able to order loan items directly. In your Study Guide, students should be directed to the Dixson Library home page if you wish them to search for or access resources electronically through the Dixson Library databases or e-reserve.

Summary

This booklet has emphasised the need for lecturers to be aware that students learn in different ways and, particularly in distance education, they learn in different contexts. Current educational theory detailing constructed learning and the notion of learning styles has been explored.

The booklet has also emphasised that off-campus students can have different characteristics compared with on-campus students because they are often working, are usually older and some may have been away from study for a time. Student-centred learning is promoted over teacher-centred learning so that, for instance, teaching materials are designed to allow students to proceed independently within the constraints of semester timelines and with the assurance of clear guidance from the lecturer. Because clarity within the structure of the materials is crucial, conceptual tools and scaffolds (like concept maps and advance organisers) were illustrated. The need to align teaching aims, learning objectives, assessment strategies and content was emphasised.

There is a need for lecturers to be thorough in their preparation of teaching materials for distance education students because campus-based informal learning opportunities and contact with staff and fellow students are usually unavailable to them. Therefore, formal and informal learning opportunities for distance students have to be made available in the teaching materials. The choice of media and combinations of media form part of the educational development process and should be integrated rather than added later in an ad hoc fashion.

Regular evaluation of teaching materials is also seen as a critical part of unit and course design to ensure that improvements can be made to the materials on an informed basis.

Staff of the Teaching and Learning Centre hope that you have found this booklet informative and useful. We would appreciate any feedback that you care to give. Please contact the Coordinator of the Academic Support Unit with your feedback.

If you require further advice on the design of teaching materials, please contact an Educational Developer in the Teaching and Learning Centre by phoning extension 2999. Other professional development materials, workshops and consultations are also available. For further information, visit the Teaching and Learning Centre's web site at <http://www.une.edu.au/tlc/>.

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