VICTORIA UNIVERSITY | A NEW SCHOOL OF THOUGHT

GUIDE TO WRITING LEARNING OUTCOMES FOR UNITS OF STUDY IN HIGHER EDUCATION COURSES AT VICTORIA UNIVERSITY

PREPARED BY STAFF COLLEGE, TEACHING AND LEARNING SUPPORT

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Note: The *Student Assessment and Progress Policy* has been updated to reflect the version approved in 2009.

CONTENTS

PURPOSE OF THE GUIDE

The purpose of this guide is to assist academics to design and write learning outcomes for units of study in Higher Education courses at Victoria University. This guide can be used for a range of purposes including:

- teaching and learning;
- assessment design;
- Recognition of Other Learning (ROL) process;
- preparation of course approvals documentation.

Note: Throughout this guide a 'unit of study' refers to what was previously known at VU as a 'subject'.

TARGET AUDIENCE

This guide has been developed by the university's Staff College and is intended to assist the following audiences within the university:

- academics with teaching and unit of study development commitments;
- Associate Deans (Teaching and Learning);
- unit of study development teams.

DEFINING LEARNING OUTCOMES

Learning outcomes at Victoria University are defined as being:

> A statement identifying what students should have achieved as a result of successfully completing a unit. (Victoria University Student Assessment and Progress Policy - page 1)
> http://wcf.vu.edu.au/GovernancePolicy/PDF/POA090212000.PDF

BENEFITS OF WELL-DESIGNED LEARNING OUTCOMES

Well-designed learning outcomes benefit learners, academics, faculties, the broader university, and external bodies such as the professions, employers and government agencies.

Learners

1. The learning outcomes approach recognises and encourages learner-centred learning. Because explicit learning outcomes clearly align to assessment, learners are encouraged to take responsibility for what they learn.

2. Learners will be able to make better-informed choices of appropriate units of study in courses that match their learning needs and preferred learning styles.

3. Learners seeking recognition of their prior learning will be better able to identify how previous experiences and learning satisfy unit learning outcomes.

4. Graduates will enhance their employment prospects by increasing their ability to articulate and demonstrate to potential employers the knowledge, understanding, skills and other attributes they have gained as a result of study.

5. Learners will be able to provide better feedback and evaluation of units of study when the anticipated learning is made explicit.

Academics

6. Give sessional academic staff a clear overview of the unit.

7. Assist collaboration with colleagues in determining the "fit" of the unit with other units of study and in the overall mapping of the course's educational aims, activities and assessment.

8. Provide academics with another tool to evaluate their teaching.

Faculties

9. Evidence of the learning outcomes approach at unit and course level demonstrates the faculty's compliance with the Student Assessment and Progress Policy.

10. Course Advisers will be able to offer informed advice to learners by assisting them with matching learning outcomes of units of study to their educational/vocational aspirations.

Victoria University

11. At the level of course approvals, proponents will be able to demonstrate quality planning and the congruence of their course proposal with VU educational policy.

12. VU will be able to demonstrate how its academic teaching and learning policy is realised in its teaching and learning practice.

13. VU will be able to demonstrate in an AUQA audit the nexus between policy and learning, and its commitment to quality improvement systems.

Professions, employers and government agencies

PROFESSIONAL ASSOCIATIONS

Seeking or renewing professional accreditation/registration of courses will be facilitated by demonstrating how the required competencies and attributes are built into the curriculum design, learning activities and assessment tasks.

EMPLOYERS

Employers are often interested in what graduates can 'do' rather than what they 'know'. Learning outcomes assist employers in determining what graduates can do because the statements go beyond the content of discipline knowledge: a learner's achievement can be expressed in terms that include key or transferable skills, practical skills, VU Core Graduate Attributes (CGAs) and personal qualities.

AUSTRALIAN UNIVERSITIES QUALITY AGENCY

Dr Kay Stevens in her analysis of 25 AUQA reports for the Carrick Institute *Promoting and Advancing Learning and Teaching in Higher Education: The Messages from the AUQA Reports* indicates in Message 7:

> '*Expertise in mapping and tracking generic and graduate skills . . . requires aligning the skills with the institution's mission and integrating the skills into curricula as* ***demonstrable outcomes***' (emphasis added).

KEY UNIVERSITY POLICIES

University policy requires statements of learning outcomes in the design of all units of study. Well-designed learning outcome statements are central to university teaching practice. When designing learning outcomes, academic staff need to consult the following key policies, namely:

Learning and Teaching Policy

Policy: Learning & Teaching [http://wcf.vu.edu.au/GovernancePolicy/PDF/POA040916001.PDF]
Number: POA040916001
Date Approved: June 15, 2007

All modules and units of study will:

13.1 have clear statements of learning outcomes;

13.2 have learning activities that are designed to achieve those learning outcomes;

13.3 have assessment activities that are aligned to the learning outcomes;

13.4 be evaluated both informally and formally with the aim of continuous improvement of student learning (page 2).

Student Assessment and Progress Policy

Policy: Student Assessment and Progress Policy [http://wcf.vu.edu.au/GovernancePolicy/PDF/POA090212000.PDF]
Number: POA090212000
Date Approved: February 13, 2009

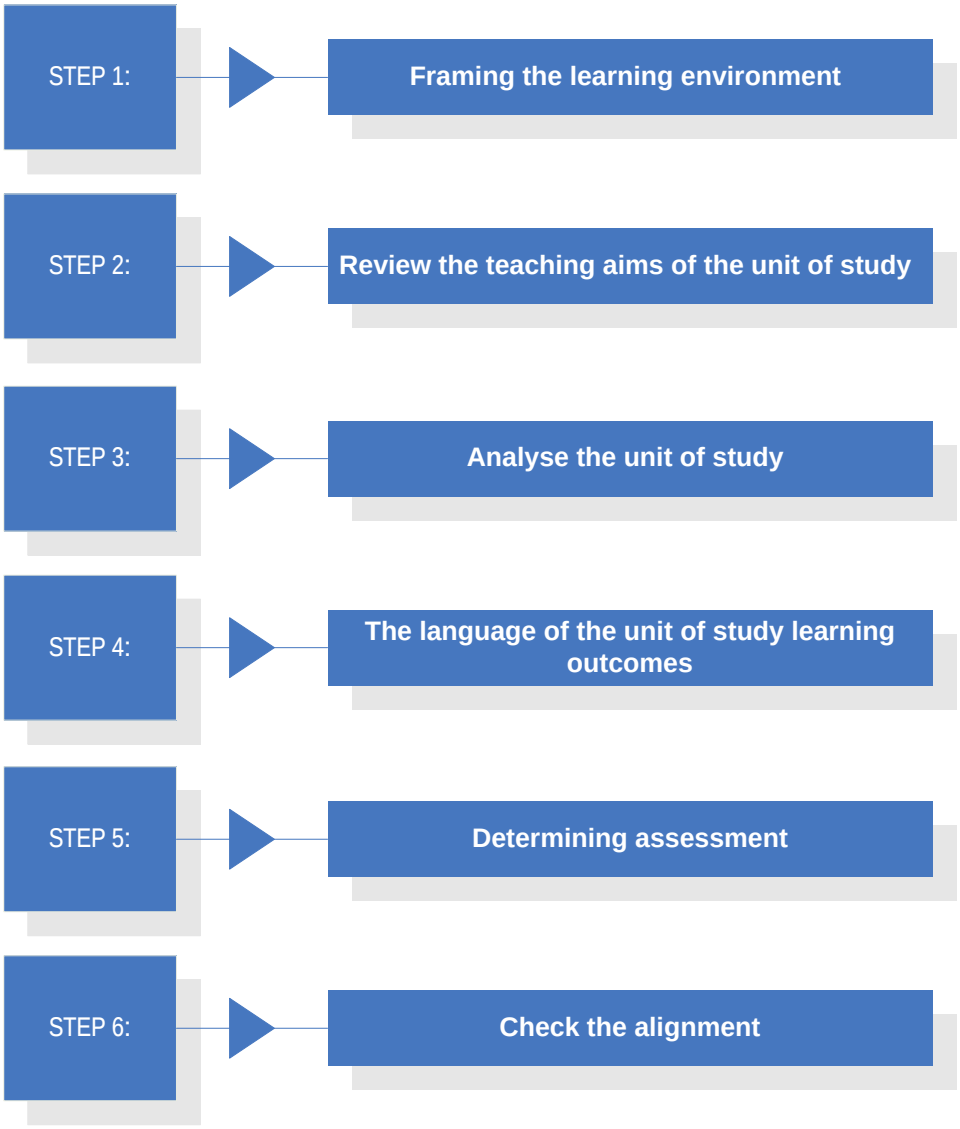
For each *unit*, students shall have access to documentation (e.g., Unit Guide), prepared in accordance with any University and relevant *Faculty*/College/School requirements, which includes a clear statement of the intended *learning outcomes,* details of assessment to be undertaken or performance criteria and the requirements for satisfactory completion/competency (page 3).

Assessment practice must be **clearly** aligned with planned *learning outcomes* including generic outcomes such as graduate capabilities or employability skills. The design of assessment tasks must reflect the *learning outcomes* specified for the unit or module ...(page 4)

Six Steps to Writing Learning Outcomes

Here is a suggested sequence of six steps to guide you in writing unit of study learning outcomes.

Before starting, go to it Appendix 1 (page 10) to read where Learning Outcomes "fit" within the Australian Qualifications Framework and how they differ from Course aims and objectives.



STEP 1: FRAMING THE LEARNING ENVIRONMENT

Listed below are some helpful sources and questions to consider:

- What are the university's policies on:
  - Values;
  - Core graduate attributes;
  - Learning and teaching; and
  - Assessment?

  (Go to http://wcf.vu.edu.au/GovernancePolicy/index.cfm?SearchPolicy=SearchPolicy)
- What, if any, are the professional accreditation/registration body's guidelines that the course operates under and how do they affect the design of learning for this unit of study?
- Are there institutional or state-level generic descriptors to guide my expectations of learner achievement at this level? For example, the proposed Eight Level Victorian Credit Matrix descriptors. Go to Appendix 2 (page 12) for the levels and for background go to www.vqa.vic.gov.au.
- How does this unit of study fit in to the overall course design?
- What assumptions can I make about the prior knowledge, understanding and skills of learners who will enrol in this unit of study?
- Which of my colleagues would be interested in working with me on this process?
  For many academics the process of articulating learning outcomes is best achieved collaboratively with peers.

STEP 2: REVIEW THE TEACHING AIMS OF THE UNIT OF STUDY

Unless you are developing a new unit of study, the teaching aims of the unit of study will be contained in the Course Proposal documentation and are included in the University Handbook as part of the unit of study description.

These teaching aims are often expressed in terms of 'know', 'understand', 'be familiar with', 'appreciate', 'be aware of', 'have a working knowledge of', and 'have been introduced to'. These are adequate as broad descriptions of teaching intent, but it may not be immediately obvious to a learner what they have to do to demonstrate, for example, that they 'understand' something.

The language of learning outcomes makes explicit how learners can demonstrate that they understand something by, for example, explaining a concept, describing a process, or discussing an idea.

Later in the process (Step 6 below) you will need to check that the unit of study learning outcomes you have developed align with these teaching aims.

STEP 3: ANALYSE THE UNIT OF STUDY

Your review of the teaching aims will immediately suggest a number of content areas or topics that you feel you will need to cover and some explicit and implicit ideas of what the learners should be able to do at the end of the unit of study.

As you think about the content/topics of the unit of study, use the following questions as a checklist:

- What do I expect learners to know, understand and be able to do at the end of the unit of study?
- What should learners be able to recall, explain, apply, analyse, evaluate?
- What kinds of tasks and problems should learners be able to perform/solve?
- What skills and methods should learners be able to apply?
- How can I help learners relate theory to practice?
- What broader issues for learners relating to, for example, future employment, personal development and values are suggested by these topics?
- What additional teaching and learning resources will I need?

In the unit of study development process there is a constant creative interplay between the academic content of a unit of study and learning outcomes. Given that learning is a cognitive process involving many levels of thinking, at this point in your design, frameworks are useful. One well-respected framework for planning units in all educational sectors is Bloom's revised taxonomy. This taxonomy shown in Figure 1 has six (6) levels of thinking, ordered in hierarchical levels of complexity.

Bloom's revised taxonomy

Bloom's and his colleagues' work on the cognitive domain was published in 1956. They proposed six levels of thinking, ordered in hierarchical levels of complexity. Anderson & Krathwohl in their 2001 *A taxonomy for learning, teaching and assessment* revised this original work. The revised taxonomy is divided into two dimensions: the cognitive process dimension and the knowledge dimension.

THE COGNITIVE PROCESS DIMENSION

The model simply illustrates that the higher-order cognitive skills (analysing, evaluating, creating) are built upon the foundation of the lower-order skills of remembering and understanding.

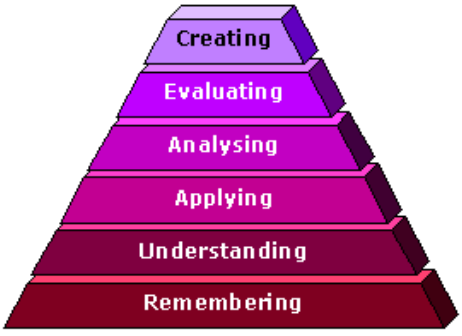


Figure 1 Bloom's revised taxonomy

(Source: Atherton J S (2005) *Learning and Teaching:* Bloom's taxonomy www.learningandteaching.info/learning/bloomtax.htm)

To keep on track with designing learner-centred learning outcomes, go to Appendix 3 (page 15) for a useful framework or chart for conceptualising the interplay between knowledge and thinking to reflect that:

> 'Learners are assumed to be active agents in their own learning: they select the information to which they will attend and construct their own meaning from this selected information. Learners are not passive recipients, nor are they simple recorders of information provided to them by parents, teachers, textbooks, or media. This move away from passive views of learning . . . emphasises what learners know (knowledge) and how they think (cognitive process) about what they know as they actively engage in meaningful learning.'
> (Source: Anderson & Krathwohl, 2001)

Useful Verbs for designing Learning Outcomes

For each of the cognitive process levels, Anderson & Krathwohl provide lists of active verbs, which are useful in writing learning outcomes.

1. Remembering

Typical assessment-type activities: testing recall and recognition, factual answers.
Typical learning outcome: The learner recalls information.

recall	record	list	reproduce	arrange
memorise	define	outline	state	recognise
relate	describe	identify	show	examine
present	quote	name	duplicate	tabulate

2. Understanding

Typical assessment-type activities: translating, interpreting and extrapolating.
Typical learning outcome: The learner explains ideas or concepts.

restate	discuss	clarify	locate	recognise
classify	translate	explain	express	review
interpret	select	summarise	contrast	predict
associate	estimate	extend	indicate	report

3. Applying

Typical assessment-type activities: knowing when and why to apply, recognising patterns of transfer.
Typical learning outcome: The learner uses the new knowledge in a familiar situation.

demonstrate	schedule	operate	dramatise	apply
employ	use	practise	illustrate	choose
solve	write	calculate	complete	show
examine	modify	relate	classify	experiment

4. Analysing

Typical assessment-type activities: break down into constituent parts.
Typical learning outcome: The learner differentiates between constituent parts and relates the parts to the whole.

distinguish	differentiate	investigate	categorise	appraise
inspect	test	debate	compare	contrast
question	criticise	solve	analyse	separate
order	connect	explain	calculate	Relate

5. Evaluating

Typical assessment-type activities: evaluate against some set of criteria and state why.
Typical learning outcome: The learner justifies a decision or course of action.

judge	score	select	evaluate	choose
rate	assess	compare	estimate	value
measure	discriminate	argue	defend	support
recommend	conclude	summarise	appraise	revise

6. Creating

Typical assessment-type activities: combining elements into a pattern not clearly there before.
Typical learning outcome: The learner generates new products, ideas or ways of looking at things.

compose	assemble	organise	plan	collect
propose	construct	design	create	formulate
arrange	devise	modify	derive	develop
integrate	rearrange	substitute	invent	generalise

STEP 4: THE LANGUAGE OF UNIT OF STUDY LEARNING OUTCOMES

The basic convention of writing unit of study learning outcomes is that they:

- Are written in the future tense (i.e. as a result of learning);
- Use active verbs (i.e. which involve learners in doing something, as in the lists in Step 3);
- Are achievable (i.e. are written at a 'pass' or 'threshold' level);
- Are assessable; and
- Use clear language that is easily understandable to learners at their level.

In addition, a statement such as 'On successful completion of this unit of study, you should be able to:…' prefaces learning outcomes, and are typically followed by a list of three to five further outcomes.

EXAMPLES OF UNIT OF STUDY LEARNING OUTCOMES

Example 1: Ecology

On completion of the unit, students should be able to:

- Outline the basic principles and concepts of ecology;
- Describe the major ecological processes within an ecosystem;
- Demonstrate skills in qualitative and quantitative description of communities;
- Describe the nature and organisation of ecological experimentation;
- Explain how ecological information is used as a tool in environmental management;
- Outline the issues relating to human interaction with the environment.

Comment:

(1) Note how in this first-year unit of study the active verbs (outline, describe, explain, demonstrate) are drawn from the first three levels of the cognitive process domain (remembering, understanding, applying) and are appropriate for an introductory unit of study.

(2) The learning outcomes give very clear, structured guidance to learners as to what they have to demonstrate.

(3) We prefer to address the learner as 'you' not as 'students'.

Example 2: Globalisation and Diversity

On completion of this unit, you should be able to:

- Explain fundamental political terms like globalisation, global ethics and global risk;
- Apply your understandings of the above terms to issues of cultural diversity, social justice and political risk, and global ethical accountability;
- Critically evaluate examples of racism, disadvantage and intolerance as well as positive examples of cultural coexistence;
- Develop reflective arguments on the wider ramifications of globalisation and diversity.

Comment:

(1) In this third-year unit of study, the learning outcomes reflect a progression of cognitive complexity from understanding ('explain') to applying ('apply') to evaluating ('critically evaluate') to creating ('develop'). Whilst the broad discipline-specific content areas are indicated, the learners are required to show independence of thought and study that is appropriate at this level and as a precursor to postgraduate study.

Source: Southern Cross University
www.scu.edu.au/services/tl/pathways/pathways06/appendices/a1.html

STEP 5: DETERMINING ASSESSMENT

Assessment practices must be fair, equitable and transparent…. The design of assessment tasks must reflect the *learning outcomes* specified for the *unit* and assessment should incorporate a range of types or modes of assessment appropriate to the nature of the *unit*, method of delivery and the students involved (Student Assessment and Progress Policy p. 4)

Given that learning outcomes and assessment are inextricably linked, the task is to design appropriate assessment strategies that ideally engage the learners in activities they can relate to real-life or workplace situations.

Whilst every learning outcome has to be assessed, it doesn't follow that every outcome requires its own piece of assessment: outcomes can be grouped together and assessed in one assessment piece.

Use the following approaches to assessment as a guide when framing assessment tasks that go beyond, exams and tests.

1. Thinking critically and making judgments
(Developing arguments, reflecting, evaluating, assessing, judging)

Essay
Report
Journal
Letter of advice to … (about policy, public health matters …)
Present a case for an interest group
Prepare a committee briefing paper for a specific meeting
Book review (or article) for a particular journal
Write a newspaper article for a foreign newspaper
Comment on an article's theoretical perspective

2. Solving problems and developing plans
(Identifying problems, posing problems, defining problems, analysing data, reviewing, designing experiments, planning, applying information)

Problem scenario
Group work
Work-based problem
Prepare a committee of enquiry report
Draft a research bid to a realistic brief
Analyse a case
Conference paper (or notes for a conference paper plus annotated bibliography)

3. Performing procedures and demonstrating techniques
(Computation, taking readings, using equipment, following laboratory procedures, following protocols, carrying out instructions)

Demonstration
Role play
Make a video (write script and produce/make a video)
Produce a poster
Lab report
Prepare an illustrated manual on using the equipment for a particular audience
Observation of real or simulated professional practice

4. Managing and developing oneself
(Working cooperatively, working independently, learning independently, being self-directed, managing time, managing tasks, organising)

Journal
Portfolio
Learning contract
Group work

5. Accessing and managing information
(Researching, investigating, interpreting, organising information, reviewing and paraphrasing information, collecting data, searching and managing information sources, observing and interpreting)

Annotated bibliography
Project
Dissertation
Applied task
Applied problem

6. Demonstrating knowledge and understanding
(Recalling, describing, reporting, recounting, recognising, identifying, relating and interrelating)

Written examination
Oral examination
Essay
Report
Comment on the accuracy of a set of records
Devise an encyclopaedia entry
Produce an A–Z of …
Write an answer to a client's question
Short-answer questions: true/false/ multiple-choice questions (paper-based or computer-aided assessment)

7. Designing, creating, performing
(Imagining, visualising, designing, producing, creating, innovating, performing)

Portfolio
Performance
Presentation
'Hypothetical'
Projects

8. Communicating
(One and two-way communication; communication within a group, verbal, written and non-verbal communication. Arguing, describing, advocating, interviewing, negotiating, presenting; using specific written forms.)

Written presentation (essay, report, reflective paper etc.)
Oral presentation
Group work
Discussion/debate/role play
Participate in a 'Court of Enquiry'
Presentation to camera
Observation of real or simulated professional practice

Source: Nightingale et al.'s (1996) CAUT Project Assessing learning in universities, Lee Dunn and Chris Morgan from Southern Cross University .

For a list of useful on-task words and assessment tasks, and their potential relationship to VU's Core Graduate Attributes (CGA) go to Appendix 4 (page 16).

STEP 6: CHECK THE ALIGNMENT

Checking to see that assessment and learning outcomes align requires determining whether:

- the assessment includes knowledge, understanding or skills not in the learning outcomes then review the learning outcomes. If after review you are still happy with the learning outcomes then you will have to change the assessment;
- the assessment misses knowledge, understanding or skills in the learning outcomes then review the assessment.Refer to the Student Assessment and Progress Policy [http://wcf.vu.edu.au/GovernancePolicy/PDF/POA090212000.PDF]

REFERENCES AND RECOMMENDED RESOURCES

Allan, J Learning outcomes in higher education, in *Studies in Higher Education,* vol. 21 no. 1 Spring 1996. (available online via EBSCOhost)

Anderson, LW & Krathwohl DR (eds.) 2001, *A taxonomy for learning, teaching, and assessing: A revision of Bloom's taxonomy of educational objectives*, Longman, New York.

Biggs J 1999, *Teaching for quality learning at university*, The Society for Research into Higher Education and Open University Press, Buckingham UK.

Bloom, B, Englehart, M Furst, E, Hill, W. & Krathwohl, D 1956, *Taxonomy of educational objectives: The classification of educational goals. Handbook I: Cognitive domain*, Longman, New York.

Dunn, L & Morgan, C. Appendix 16: Selecting methods of assessment, Southern Cross University, Lismore, NSW Retrieved 5 April 2006 from www.scu.edu.au/services/tl/pathways/pathways06/appendices/a16.html#methods

Krathwohl, DR 2002, A revision of Bloom's taxonomy: An overview Retrieved 5 April 2006 from http://www.findarticles.com/p/articles/mi_m0NQM/is_4_41/ai_94872707

Nightingale, P, Te Wiata, IT, Toohey, S, Ryan, G, Hughes, C & Magin, D 1996, *Assessing learning in universities*, Professional Development Centre, University of New South Wales, Sydney. Retrieved 5 April 2006 from www.heacademy.ac.uk/embedded_object.asp?id=21933&filename=ASSLU

Stevens, K 2005, *Promoting and advancing learning and teaching in higher education: The messages from the AUQA Reports*, Carrick Institute. Retrieved 5 April 2006 from www.carrickinstitute.edu.au/carrick/go/pid/105

ONLINE RESOURCES

Higher Education level descriptors

Australian Qualifications Framework - retrieved 5 April 2006 from www.aqf.edu.au/bmdguide.htm

Victorian Qualifications Authority: Proposed Credit Matrix - Report on the outcomes of testing and trialling of the Credit Matrix Retrieved 5 April 2006 from www.eduweb.vic.gov.au/edulibrary/public/voced/Accreditation/Courses/CMtriallingoutcomes.pdf

The Southern England Consortium for Credit Accumulation and Transfer (SEEC), Credit Level Descriptors for Further and Higher Education - detailed descriptions of UK HE levels. Levels 4 to 6 describe undergraduate, Level 7 Masters, and Level 8 taught PhD. These levels align closely with those proposed by the VQA. Retrieved 5 April 2006 from www.seec-office.org.uk/creditleveldescriptors2003.pdf

TEACHING RESOURCES

The University of New South Wales has constructed a rich website with advice and resources on course design, learning activities, and an extensive range of references. Retrieved 5 April 2006 from www.guidelinesonlearning.unsw.edu.au/toolkit.cfm

Another excellent and comprehensive online resource has been developed by the Teaching and Learning Unit at Southern Cross University *Pathways to good practice: A guide to flexible teaching for quality learning*. Retrieved 5 April 2006 from www.scu.edu.au/services/tl/pathways/

EXAMPLES OF LEARNING OUTCOMES AT COURSE LEVEL

The UK Open University has developed learning outcome statements for the majority of their courses. The link below will take you to their Masters of Education site from where you can go to courses of interest. Retrieved 5 April 2006 from www3.open.ac.uk/courses/bin/p12.dll?Q01F01

APPENDIX 1:
LEARNING OUTCOMES AND COURSE LEVEL AIMS

It is useful to distinguish learning outcomes from course level educational aims and objectives.

LEARNING OUTCOMES

Learning outcomes are embedded in the Australian Qualifications Framework (AQF). For example, here is the AQF characteristics guideline for a bachelor degree:

> 'Characteristics of learning outcomes at this level include:
>
> - The acquisition of a systematic and coherent body of knowledge, the underlying principles and concepts, and the associated communication and problem-solving skills;
> - Development of the academic skills and attributes necessary to undertake research, comprehend and evaluate new information, concepts and evidence from a range of sources;
> - Development of the ability to review, consolidate, extend and apply the knowledge and techniques learnt, including in a professional context;
> - A foundation for self-directed and lifelong learning; and
> - Interpersonal and teamwork skills appropriate to employment and/or further study.
>
> A course leading to this qualification also usually involves major studies in which a significant literature is available. Course content is taken to a significant depth and progressively developed to a high level which provides a basis for postgraduate study and professional careers.'

EDUCATIONAL AIMS

An educational aim is a statement about the purpose of a course of study and what that course is intended to achieve. Aims assist learners to select courses and broadly tell them what they can expect to study. For example, these are some of the aims of VU courses taken from the Course Guide:

- This course is designed to develop workplace knowledge and skills in managing customer/client service, managing financial and business processes, managing a branch or section within retail financial services, and managing advisory or distribution services within the financial services sector.
- This joint degree provides students with a broad-ranging program that meets the academic and professional requirements in electronic import and export operations; trade finance; international business operations; and electronic commerce. Students study core business units of study; international trade and electronic commerce specialisation units of study; and support units of study.
- This course provides a community and school-based approach to teacher education with substantial opportunity for students to develop skills associated with classroom practice, general pedagogy and student learning.

Templates used at Victoria University to develop unit of study outlines also refer to the educational aims of a unit of study. An educational aim for a unit of study is a statement about the purpose of the unit.

Note: Units of study at Victoria University were previously referred to as subjects.

LEARNING OBJECTIVES

Some writers of learning outcomes do not differentiate between a 'learning objective' and a 'learning outcome', thereby leading to the assumption that the terms are synonymous. This can be confusing and, for our purposes, a learning objective is one that indicates explicitly the standards of the learner's expected performance under prescribed conditions.

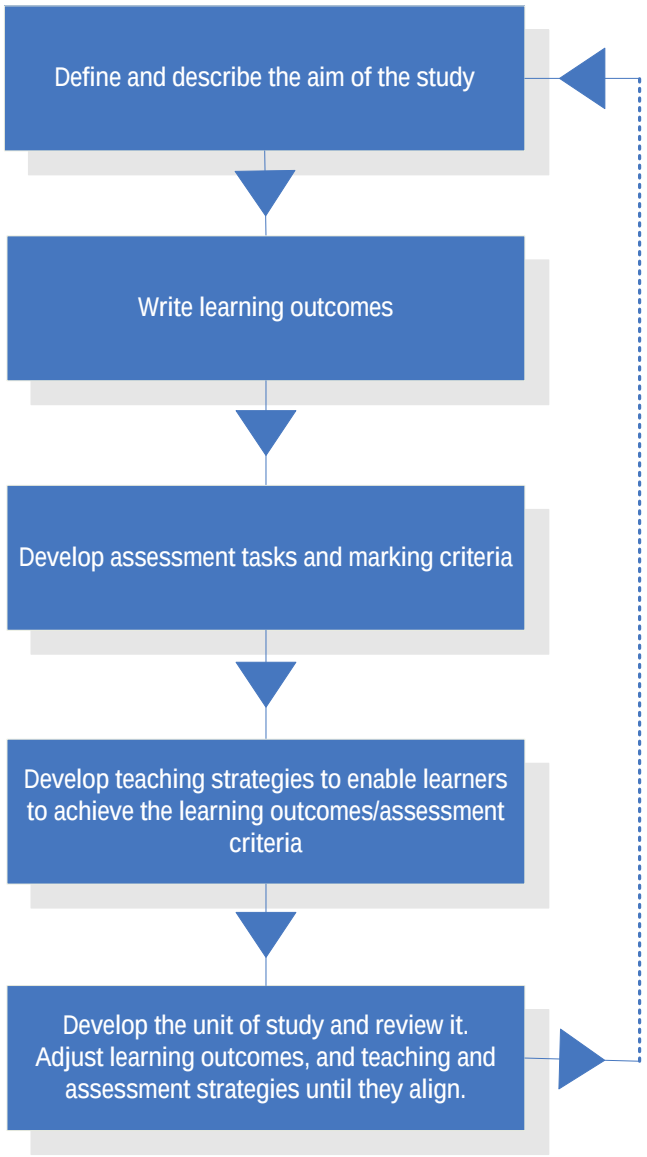
For example:

> *Be able to write a musical composition with a single tonal base within four hours. The composition must be at least sixteen bars long and must contain at least twenty-four notes. You must apply at least three rules of good composition in the development of your score.* (cited in Allan, 1996, p.4)

Depending on the discipline, learning objectives may well be appropriate, and if so, will be included in learning outcomes.

LEARNING OUTCOMES AND UNIT OF STUDY DESIGN

The relationship between learning outcomes and unit of study design is illustrated diagrammatically below. The flow of activities follows the iterative quality cycle of 'Plan, Do, Review, Improve' (PDRI).



APPENDIX 2:
PROPOSED VICTORIAN CREDIT MATRIX (AS OF JUNE 2006)

LEVEL DESCRIPTORS
CREDIT MATRIX – SUMMARY LEVEL DESCRIPTORS

The table below contains a summary description of each of the eight levels of complexity. The descriptors focus on the main features of the tasks or activities that would be associated with successful achievement of unit outcomes at each level. From a learner's perspective, they describe the kinds of things learners would be able to do if they successfully achieved the outcomes of a unit at any one of the eight levels.

LEVEL 8	Successful completion of a unit at this level would mean that a learner would be able to carry out tasks and activities that involve leading-edge knowledge and expertise in an area or related areas of study or practice. These tasks and activities require creative approaches to highly complex and/or new issues and result in an original contribution to knowledge and practice. They require critical, independent and original thinking, as well as very high level skills in organising self and/or coordinating others.
LEVEL 7	Successful completion of a unit at this level would mean that a learner would be able to carry out tasks and activities that involve knowledge and skills of substantial breadth and/or depth, involve issues that are both complex and important, and generally result in a significant contribution being made to theory, method or practice. They require substantial critical and independent thinking, as well as high level skills in organising self and/or coordinating others.
LEVEL 6	Successful completion of a unit at this level would mean that a learner would be able to carry out tasks and activities that involve broad, overall mastery of the theory or technical basis of an area of study or practice. They involve complex issues set in varying situations and circumstances. Any available guidelines usually need to be substantially changed or redeveloped. They require critical thinking, as well as substantial skills in organising self and/or coordinating others.
LEVEL 5	Successful completion of a unit at this level would mean that a learner would be able to carry out tasks and activities that involve a range of technical and/or abstract knowledge and skills with significant underpinning theory. They involve complex issues set in varying situations and circumstances. Any available guidelines or procedures usually need to be substantially adapted. Significant skills in organising self and/or coordinating others are needed.
LEVEL 4	Successful completion of a unit at this level would mean that a learner would be able to carry out tasks and activities that involve theoretical and/or technical or abstract knowledge and skills, with significant depth in one or more areas. Skill and judgement are needed in interpreting and/or adapting guidelines or procedures for a range of different situations and circumstances. Skills in organising self and/or others are also needed.
LEVEL 3	Successful completion of a unit at this level would mean that the learner would be able to carry out tasks and activities that involve a combination of theoretical and/or technical and factual knowledge and skills. Judgement is required in varying guidelines or procedures to deal effectively with any unusual or unexpected aspects that may arise. Some skills in organising self and/or others are also needed.
LEVEL 2	Successful completion of a unit at this level would mean that a learner would be able to carry out tasks and activities that involve a range of knowledge and skills. These will include some basic theoretical and/or technical knowledge and skills. Limited judgement is required, such as making an appropriate selection from a range of given rules, guidelines or procedures.
LEVEL 1	Successful completion of a unit at this level would mean that a learner would be able to carry out tasks and activities that draw on a limited range of basic knowledge and skills. They generally have a substantial repetitive aspect to them. Minimum judgement is needed as there are usually very clear rules, guidelines or procedures to be followed.

CREDIT MATRIX - DETAILED LEVEL DESCRIPTORS

The table below provides descriptions of the kind of knowledge and skills, the kind of issues or problems and ways of addressing them, and the degree of independence that are typically associated with outcomes at each level of complexity.

LEVEL	KNOWLEDGE AND SKILLS	APPLICATION	DEGREE OF INDEPENDENCE
8 Typical outcomes at LEVEL 8 involve	Knowledge and skills that: • involve the creation and interpretation of new knowledge, practice or techniques, through original advanced research of a quality to satisfy formal, academic review • reflect critical, independent and original thinking	Applied in activities that: • are set in a wide range of contexts involving new aspects or combinations of aspects • involve significant, complex and emergent issues which are tested, formulated and addressed, resulting in an original contribution to theory, method or practice	In conditions where: • there is minimal guidance • high level judgement, planning and organisation of self and/or coordination of others are needed
7 Typical outcomes at LEVEL 7 involve	Knowledge and skills that: • reflect critical awareness of current or new knowledge, practice or techniques, some of which are at the forefront of an area of study or practice • reflect critical and independent thinking	Applied in activities that: • are set in a wide range of contexts with significant unfamiliar and/or unpredictable aspects or combinations of aspects • involve significant, complex and emergent issues which are tested, formulated and addressed, resulting in a significant contribution to theory, method or practice	In conditions where: • there is minimal guidance substantial judgement, planning and organisation of self and/or coordination of others are needed
6 Typical outcomes at LEVELS 6 involve	Knowledge and skills that: • involve critical thinking and recognition of the limitations of current knowledge, practice or techniques • reflect broad mastery of the theoretical or technical basis of an area of study or practice	Applied in activities that: • are set in a range of contexts with significant unfamiliar and/or unpredictable aspects or combinations of aspects • involve non-routine, complex issues which are identified, tested and addressed by substantially changing or redeveloping procedures or guidelines	In conditions where: • there is broad guidance • substantial judgement, planning and organisation of self and/or coordination of others are needed
5 Typical outcomes at LEVELS 5 involve	Knowledge and skills that: • are technical and/or abstract with significant underpinning theory	Applied in activities that: • are set in a range of contexts with significant unfamiliar and/or unpredictable aspects • involve non-routine, complex issues which are identified, tested and addressed using substantially adapted guidelines or procedures	In conditions where: • there is broad guidance and direction • a considerable degree of judgement, planning and organisation of self and/or others are needed
4 Typical outcomes at LEVELS 4 involve	Knowledge and skills that: • are mainly theoretical and/or technical or abstract with significant depth in one or more areas	Applied in activities that: • are set in a range of contexts, most of which involve a number of unfamiliar and/or unpredictable aspects • involve largely non-routine issues which are identified and addressed using guidelines or procedures which require interpretation and/or adaptation	In conditions where: • there is broad guidance and direction • judgment, planning and organisation of self and/or others are needed

LEVEL	KNOWLEDGE AND SKILLS	APPLICATION	DEGREE OF INDEPENDENCE
3 Typical outcomes at LEVEL 3 involve	Knowledge and skills that: • are a balance of theoretical and/or technical and factual	Applied in activities that: • are set in contexts with some unfamiliar or unpredictable aspects • involve routine and non-routine issues which are identified and addressed by interpreting and/or applying established guidelines or procedures with some variations	In conditions where: • there is routine or general guidance and direction • some judgement, planning and organisation of self and/or others are needed
2 Typical outcomes at LEVEL 2 involve	Knowledge and skills that:	Applied in activities that: • are set in a range of familiar and predictable contexts • involve routine issues which are identified and addressed by selecting from and following a number of set rules, guidelines or procedures	In conditions where: • there is substantial support, guidance or supervision • limited judgement or discretion is needed
1 Typical outcomes at LEVEL 1 involve	Knowledge and skills that: • are manual or concrete or factual and/or operational in focus	Applied in activities that: • are set in a limited range of highly familiar and predictable contexts • involve straightforward, routine issues which are addressed by following set rules, guidelines or procedures	In conditions where: • there is very close support, guidance or supervision • minimum judgement or discretion is needed

Source: Victorian Qualifications Authority: The Credit Matrix – retrieved 18 July 2006 from www.vqa.vic.gov.au/vqa/credit_matrix/descriptors.htm

APPENDIX 3:
THE KNOWLEDGE DIMENSION – ANOTHER FRAMEWORK

In the knowledge dimension Anderson & Krathwohl discriminate between:

- Factual knowledge
  Basic elements learners must know to be acquainted with a discipline or solve problems within it:
  (1) Knowledge of terminology
  (2) Knowledge of specific details and elements.

- Conceptual knowledge
  The interrelationships among the basic elements within a larger structure that enable them to function together:
  (1) Knowledge of classifications and categories
  (2) Knowledge of principles and generalisations
  (3) Knowledge of theories, models, and structures.

- Procedural knowledge
  How to do something, methods of inquiry, and criteria for using skills, techniques, and methods:
  (1) Knowledge of subject-specific skills
  (2) Knowledge of subject-specific techniques and methods
  (3) Knowledge of criteria for determining when to use appropriate procedures.

- Metacognitive knowledge
  Knowledge of cognition in general as well as awareness and knowledge of one's own cognition.

When these two dimensions are charted, a useful tool is produced for conceptualising the interplay between knowledge and thinking: interplay it is suggested that results in 'meaningful learning'. As Krathwohl (2002) indicates in an online overview of his and Anderson's revision of Bloom et al.'s work:

'Learners are assumed to be active agents in their own learning: they select the information to which they will attend and construct their own meaning from this selected information. Learners are not passive recipients, nor are they simple recorders of information provided to them by parents, teachers, textbooks, or media. This move away from passive views of learning . . . emphasises what learners know (knowledge) and how they think (cognitive process) about what they know as they actively engage in meaningful learning.'

Knowledge Dimension	Cognitive Process Dimension					
	Remember	Understand	Apply	Analyse	Evaluate	Create
Factual						
Conceptual						
Procedural						
Metacognitive						

(Source: Anderson & Krathwohl, 2001)

APPENDIX 4:
'ON TASK' WORDS ASSOCIATED WITH SKILL LEVELS AND VU CORE GRADUATE ATTRIBUTES

(REPRODUCED WITH PERMISSION, PROFESSOR JULIE THACKER, VICTORIA UNIVERSITY)

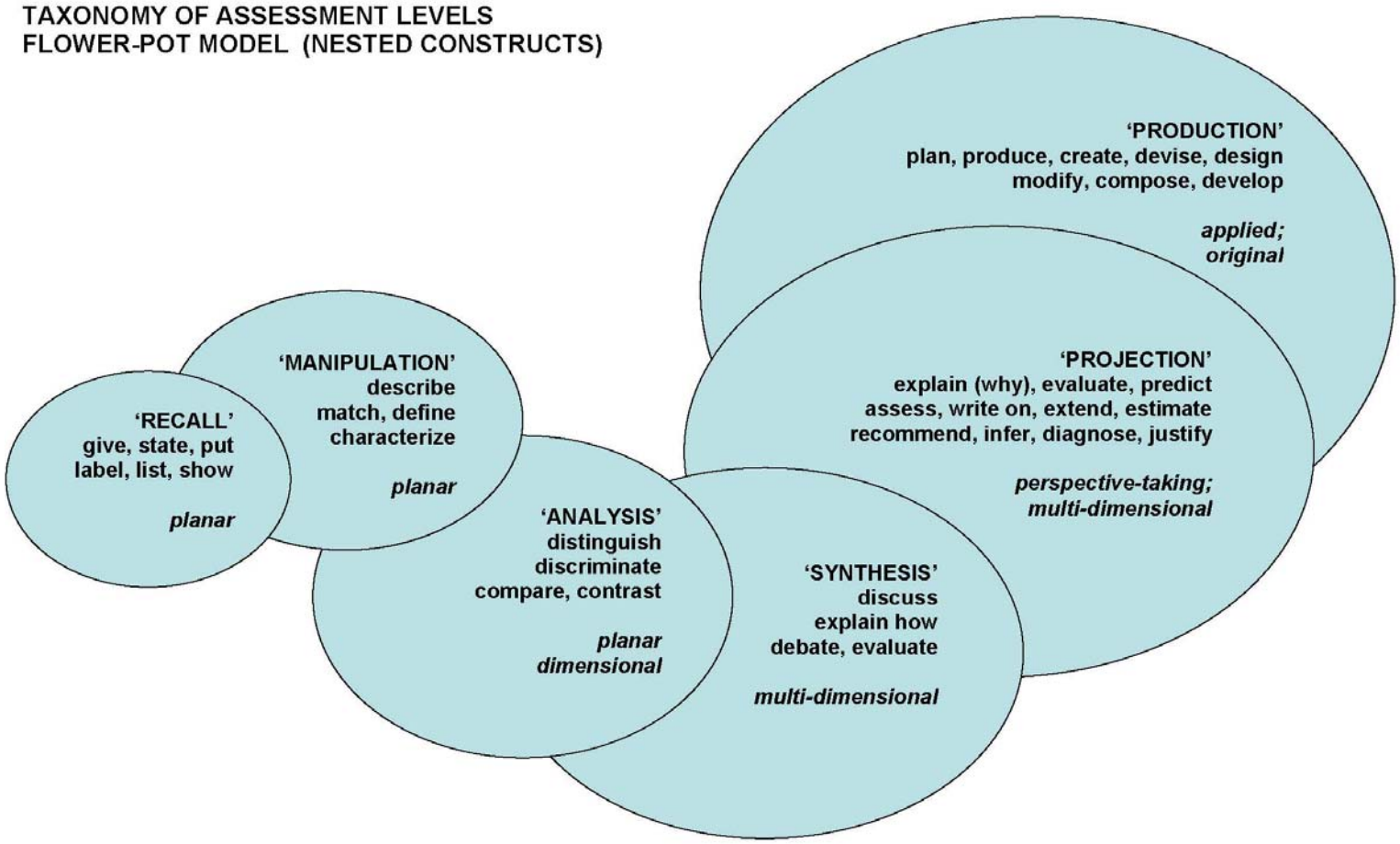
Higher levels subsume earlier levels, ie, summary presumes the ability to recall; analysis presumes the ability to summarise and recall; production presumes all earlier levels.

Basics	Level	'On-task' words	Assessment tasks	Potential Core Graduate Attributes
'what' 'who' 'where' 'when' 'how' 'why' Outcomes (= answers): truncated or in full	Recognition Recall - knows the 'vocab', - identifies the items, [planar information: 'facts']	ask, choose, cite, complete, draw, find, give, identify, indicate, isolate, label, list, locate, name, pick, put, select, show, state, tell, underline	MCQs (recognition) SAQs (recall): completes blanks labels diagrams produces set answers [standardised marking key, fixed allocation of marks]	Problem solving (P1) -- Communication (oral & written) (O1, W1) Working as a professional (autonomous & collaborative) (A1, C1) Social and cultural diversity (D1)
'what' 'who' 'where' 'when' 'how' 'why' Outcomes: truncated or in full	Manipulation (with and without commentary) - shows meanings, - shows functions, - links (shows) cause-effect, effect-cause [planar linkage of information]	arrange, assemble, categorise, change, characterise, combine, complete, compute, convert, define, demonstrate, describe, do, execute, give, examples, initiate, match, measure, move, operate, order, organise, participate, perform, prepare, propose, report, respond, separate, show, solve, start, use	MCQs SAQs (recall, manipulation (mental & physical)) Oral presentations (group, individual work) [standardised marking keys; fixed allocation of generally pairs of marks] [seminar format, viva, OSCE format]	Problem solving (P1) Using information (I1, I2) Communication (oral, written) (O1, O2, W1) Working as a professional (autonomous & collaborative) (A1, C1) Social and cultural diversity (D1, D2)
'what' 'who' where' 'when' 'how' 'why' Outcomes: limited or in full	Analysis - contrasts like and unlike information [planar and multi-dimensional linkages of information]	assemble, balance, compare (= only compare), comply with, contrast (includes compare), critique, differentiate, discriminate, distinguish, manipulate, moderate, qualify, share, sketch	MCQs SAQs Oral presentations (group, individual work) LAQs (essays, diagrams, calculations)	Problem solving (P1, P2) Using information (I1, I2) Communication (oral, written) (O1, O2, W1) Working as a professional (autonomous & collaborative) (A1, A2, C1) Social and cultural diversity (D1, D2)
'what' 'who' 'where' 'when' 'how' 'why' Outcomes: structured and cohesive	Synthesis - teases out linkages and assesses merits of the inputs, outputs and linkages [interpolation, with assessment]	agree, apply, correct, criticise, critique, debate, deduce, defend, discuss, evaluate, explain how, justify, replicate, summarise	SAQs Oral presentations (in everyday language) LAQs [peer assessment]	Problem solving (P1) Using information (I1, I2) Communication (oral, written) (O1, O2, W1) Working as a professional (autonomous & collaborative) (A1, A2, C1, C2) Social and cultural diversity (D2)
'what' 'who' 'where' 'when' 'how' 'why' 'why bother' Outcomes: logical, well-developed, cohesive	Projection - discusses ramifications: extends knowledge and skill base beyond the topic [extrapolation, with assessment]	apply, appraise, argue, assess, diagnose, comment on, estimate, explain (why), extend, generalise, judge, justify, predict, recommend, recover, write on	SAQs: series of related questions, with changing circumstances Oral presentations (to general public) LAQs [wider appreciation of importance of topic]	Problem solving (P3) Using information (I3) Communication (oral & written) (O3, W2) Working as a professional (autonomous & collaborative) (A3, C3) Social and cultural diversity (D3)
'what' 'who' 'where' 'when' 'how' 'why' 'why bother' Outcomes: logical, well-developed, cohesive, extended, novel	Production - creates new 'product': places 'product' in future context [original contribution: projects & research]	apply, compose, construct, contribute, create, design, develop, devise, establish, modify, plan, produce, restructure, revise	SAQs: developmental problem-solving Oral presentations LAQs [applied; wider appreciation (implications) of application]	Problem solving (P3) Using information (I3) Communication (oral & written) (O3, W3) Working as a professional (autonomous & collaborative) (A3, C3) Social and cultural diversity (D3)

Notes:
MCQs = multiple choice questions;
SAQs = short answer questions (excludes 'assertion-reason' format);
LAQs = essays, laboratory reports, theses; technical language (maths, music, chemistry, other

APPENDIX 5:
TAXONOMY OF ASSESSMENT LEVELS

(REPRODUCED WITH PERMISSION, PROFESSOR JULIE THACKER, VICTORIA UNIVERSITY)



Thacker, J. (2004). *Assessment strategies* [Seminar].
Faculty of Medicine, Dentistry and Health Sciences. University of Melbourne.
Adapted from Bloom (1953), Johns & Davies (1983), Krathwohl et al. (1965).