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# Raising the Standards

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A Proposal for the Development of an  
ICT Competency Framework for Teachers

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A project undertaken by  
UWS, ACSA, ACCE and TEFA

on behalf of the  
Commonwealth Department of  
Education, Science and Training



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# Executive Summary

The impetus for this project stems from the report *Learning in an Online World: The School Education Plan for the Information Economy* (Commonwealth of Australia, 1999). The report outlines a range of objectives and associated strategies to achieve those objectives in the application of information and communication technology (ICT) in teaching and learning. One such strategy in the area of ‘People’ is the development of teacher ICT standards for the use of ICT in the curriculum and to incorporate those standards into human resource management within education authorities and schools.

The need to better exploit the teaching and learning potential of ICT is widely accepted and supported. However, to date, this potential has not been realised in any significant way, particularly the potential to transform how, what, where and why students learn what they do. While there are only limited examples of the transformative power in the educational sector, experience from industry and other sectors clearly demonstrates that new times need new approaches, and that the nature and application of ICT enable that transformation.

This proposal, for the development of an ICT Competency Framework, is only one of a number of significant national and local initiatives related to developing and supporting effective ICT use in school education. These initiatives stem from a range of sources including *Learning in an Online World*, from MCEETYA and from various government and non-government education systems.

The development of teacher professional standards is not without controversy. The research undertaken as part of the project has revealed a number of tensions and contentious issues surrounding both non-ICT specific and ICT specific standards. A detailed discussion of these issues is contained in the Literature Review and Mapping document, which is provided as an appendix to this report. The Literature Review and Mapping document also argues a rationale for a teacher ICT Competency Framework from which ICT standards can be developed.

This document, as the final report for the project, discusses the significant issues relevant to the development of a teacher ICT Competency Framework, makes recommendations and proposes a specific structure for the framework and the nature of ICT standards that could be developed from it.

Recommendations relating to the framework

## Language and the Nature of Competence

- *That competence be defined as the ability to combine and apply relevant attributes to particular tasks in particular contexts. These attributes include high levels of knowledge, values, skill, personal dispositions, sensitivities and capabilities, and the ability to put these attributes into practice in an appropriate way.*
- *That an ICT standard be defined as a combination of attributes underlying a particular aspect of successful professional performance involving the use of ICT.*

## Technical Competence or a Comprehensive View of ICT Competence

- *That for the purposes of this framework, and standards that may be developed from it, a comprehensive view of competence is to be taken. That such a comprehensive view include technical and higher order cognitive knowledge, skills, understandings and attitudes related to professional knowledge, professional practice and professional attributes.*

### The Importance of Context

- *That a comprehensive set of context rich ICT exemplars be an integral part of the framework.*
- *That the exemplars be used to assist in the development and illustration of ICT standards emanating from the proposed framework.*
- *That the ICT standards be general enough to enable them to have meaning and relevance and be demonstrable in a multitude of contexts.*

### Supporting Capabilities

- *That current work at the national level continue in the key areas of people, infrastructure, content and services, supporting policies and enabling regulation as identified in Learning in an Online World (Commonwealth of Australia, 1999).*
- *That a set of national teacher education institutional ICT capabilities be developed by the Australian Council of Deans of Education in collaboration with other relevant stakeholders as part of the proposed framework for use in institutional reviews and strategic planning, and, where appropriate, for the accreditation of programs and/or institutions.*
- *That a set of national school/schools system ICT capabilities be developed (as part of the proposed framework) as a resource for systems to use as part of their review, strategic planning and reporting processes.*
- *That schools, school leaders, system policy/decision makers, the Australian Council of Deans of Education and their Vice Chancellors be made aware of the need for these supporting capabilities.*

### Issues of Equity

- *That the ICT standards must ‘talk’ to all teachers regardless of ethnic, geographic, economic, social or cultural contexts.*
- *That there be enhanced access to ICT for learning purposes and for teachers to achieve and demonstrate competence, regardless of geographic, economic, social or cultural context.*
- *That there be sustained and appropriate professional development to enable all teachers to develop and demonstrate their competence.*
- *That there be flexibility for teachers to be able to achieve and demonstrate competence in a wide variety of contexts, regardless of the presence or otherwise of supporting capabilities as outlined in section 2.4 of this proposal.*
- *That the ICT Competency Framework be published as a web site with appropriate associated tools to facilitate and encourage teacher networking.*

### Relationships to Other Standards Developments

- *That a strategy is needed to ensure that teacher professional standards frameworks inform one another, particularly at the national level.*
- *That MCEETYA take a leadership role in fostering collaboration, encouraging the need for national frameworks and resolving the potential tension between generic standards frameworks and subject specific frameworks.*
- *That any student ICT competency framework developed by the MCEETYA Performance Measurement and Reporting Taskforce inform, and be informed by, work emanating from this project.*
- *That the MCEETYA Teacher Quality and Educational Leadership Taskforce work on teacher professional standards inform, and be informed by, this project.*
- *That the key role of professional associations in the development, implementation and assessment of standards be recognised and supported.*
- *That teacher employers and education systems be encouraged to develop standards using national frameworks.*

### **A Performance Management or Professional Development Model**

- *That the proposed ICT Competency Framework, and any standards developed from it, be expressed in such a way as to enable them to be used for both Performance Management and Professional Development purposes.*

### **Separate or Embedded ICT Standards**

- *That this framework proposal advocate separate sets of ICT standards.*
- *That further work is needed to develop strategies to ensure the embedding of ICT-rich descriptors and performance indicators in all existing, and any future, non-ICT specific professional teacher standards.*

### **Generic or Subject Specific ICT Standards**

- *That the proposed ICT Competency Framework, and any standards developed from it, be generic in nature — i.e. non-subject and non-level specific.*
- *That the framework provides access to rich sets of subject-specific exemplars to give meaning and context for teachers in all curriculum areas and at all levels of schooling.*

### **Standards for Different Groups of Educators**

- *That sets of ICT standards be developed for the following five groups of educators from the proposed ICT Competency Framework.*
  - *Pre-service/beginning teachers*
  - *Practicing teachers who are beginning users of ICT*
  - *Practicing teachers who are accomplished/highly accomplished users of ICT*
  - *School and educational leaders*
  - *Teacher educators*

### **A Minimum Set of ICT Standards for all Teachers**

- *That the framework be used to develop minimum sets of ICT standards for beginning teachers and practicing teachers who are beginning users of ICT.*
- *That the framework be used to develop sets of ICT standards for teacher educators and school leaders to support the achievement of these minimum standards for all pre-service and practicing teachers.*

### **Dimensions of ICT Use and Stages of Development**

- *That the ICT standards developed for each of the five groups of educators emphasise the specific relevant dimension(s) of ICT use and at the same time be cognisant of all four dimensions of ICT use (as identified in section 2.12).*

### **The Relationship between non-ICT Specific and ICT Specific Standards**

- *That any ICT standards developed from the proposed framework be derived from relevant non-ICT specific generic competencies.*
- *That these generic competencies be refined and expanded to take account of those dimensions of ICT competence and use that may transform education (and hence the generic competencies themselves).*
- *That any ICT standards developed from the proposed framework not only articulate the need to embrace change but also adequately reflect the concept of leading and shaping change in response to new technologies and new educational ideologies.*

### Who Develops the Standards?

- *For beginning (pre-service) teachers — standards should be developed by a partnership between the teacher education institutions and the employers/education systems.*
- *For practicing teachers who are beginning users of ICT — standards development should be the primary responsibility of the employers/education systems.*
- *For practicing teachers who are accomplished/highly accomplished users of ICT — standards should be developed by a partnership of the profession, including the relevant professional association(s) in collaboration with education systems.*
- *For school and educational leaders — standards development should be by a partnership of the profession, including the relevant employer and professional association.*
- *For teacher educators — standards development should be by a partnership of the profession including the relevant teacher accreditation agencies and professional associations.*

### Implementation and Assessment of the Standards

- *That the proposed framework does not specify how standards developed from the framework are to be implemented or how teachers are to be assessed.*
- *That the proposed framework points to a range of resources and examples that institutions, systems or professional associations may find useful if they are to implement and assess ICT standards based on the proposed framework.*

### Roles of Stakeholders

- *That the proposed ICT Competency Framework be developed at the national level taking into account the legitimate roles of all stakeholders.*
- *That MCEETYA, through the ICT in Schools Taskforce, takes a leadership role in seeking collaboration of all stakeholders.*
- *That strong collaboration between professional associations, teacher educator institutions and employers be the hallmark of all standards development processes.*

### Teacher ICT Competence, Curriculum and Student Learning Outcomes

- *That through the collaborative mechanisms of MCEETYA, education systems and boards of studies are made aware of the need for student ICT standards to be consistent with teacher ICT standards.*
- *That through the collaborative mechanisms of MCEETYA, education systems and boards of studies are made aware of the need for ICT-rich student learning outcomes to be embedded in all learning area curriculum frameworks.*

### Framework Evaluation and Review Processes

- *That framework evaluation strategies be developed as part of the framework.*
- *That a three-year cyclic framework review process be established.*

## Proposed framework structure

The following is a proposed structure of an ICT Competency Framework. This structure is derived from the literature and feedback from the project Forum. The proposal suggests a number of headings and what should be included under those headings. The headings are:

- Preamble
- Underlying Premises and Principles
- Supporting Capabilities

- Dimensions of ICT Use in Teaching and Learning
- Standards
- Exemplars of Practice
- Assessment and Credentialing
- Framework Evaluation and Review Processes
- Background to Framework

## Sharing and supporting current and further work on ICT standards for teachers

Proposed strategies for support, sharing the work, and to development of a framework at a national level are as follows.

- The development of a website (under the auspices of EdNA) to house the framework and provide access to exemplars and other resources related to the refinement and use of the standards for a variety of purposes in differing contexts. The website should also provide access to EdNA and any other tools needed for online events, activities and development tasks so as to support the work of the writing teams and exemplar working groups and effectively engage stakeholders in the development process and use of the framework.
- The formation and support of teams (drawn from relevant stakeholders) for writing:
  - The overall framework
  - Support Capability statements for
    - ~ systems and schools
    - ~ teacher education institutions
  - Examples of standards for
    - ~ beginning teachers
    - ~ teachers beginning to use
    - ~ accomplished teachers
    - ~ school leaders
    - ~ teacher educators
- The formation and support of ‘exemplar’ working groups (drawn from relevant stakeholder groups). These groups would identify, and connect with, existing resources that might be useable in this project and modify existing exemplars or develop new exemplars so that the diversity of contexts, the levels of schooling and the full range of learning areas are represented in the database of exemplars.
- Organise and support the local and national workshops, online events, activities and discussion groups that will provide the mechanisms for achieving the development of the framework and its subsequent use.
- Provide ongoing support for the maintenance, review and refinement of the website and its resources to facilitate ongoing easy access for, and effective use by, the wide variety of stakeholders.
- Employment of a coordinator to drive the above processes and engage with the various major stakeholders in ways that strengthen their sense of ownership of the framework, and to facilitate the work of the various writing teams and exemplar working groups and the development of website and related resources.

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# Section 1

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## Introduction

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# 1 Introduction

This project encapsulates the integration of two policy agendas within school education. The first is the agenda to put in place a range of factors that will facilitate the effective use of ICT in schools and the second is the ‘standards/accountability’ movement within the school education sector. These agendas are a high priority in a number of countries, but it has only really been in the last five years that the ‘standards/accountability’ agenda has begun to intersect with the ICT in the education agenda.

Within Australia, the two agendas have been formally linked in *Learning in an Online World: The School Education Action Plan for the Information Economy* (Commonwealth of Australia 1999). One of the strategies under the key action area of ‘People’ is to:

Develop teacher standards in using ICT in curriculum practice and incorporate teacher ICT standards into human resource management within education authorities and individual schools, including recruitment and promotion practices. (p. 5)

This proposal for the development of a teacher ICT Competency Framework and related ICT standards is part of a broader range of national and system-level initiatives and projects in the area of ICT in education. Other initiatives focus on professional development, infrastructure, content and services, supporting policies and enabling regulation. They include: the Quality Teacher Program; the Models of Teacher Professional Development for the Integration of ICT into Classroom Practice project; the MCEETYA taskforce development of student ICT standards; the development of national generic and subject specific teacher professional standards; the Schools Online Curriculum Content Initiative (SOCCI); and education system initiatives in the area of professional teacher standards, professional development and provision of ICT infrastructure.

The ‘standards’ movement within Australia and overseas is not without controversy and concerns. Five of the major concerns are:

- whether standards or benchmarks distract teachers from focusing on the complex and rich tasks needed for engaged learning, in order to focus on ‘tickable’ outcomes from often trivial activities — thus ‘atomising’ the elements of students’ achievements and teachers’ work;
- that standards are being developed apart from the institutional contexts in which teachers live and work and which shape their professional lives and their sense of what is possible (Doecke & Gill 1999);
- a belief that standards are a ‘magic bullet’ to solve all the problems of schooling;
- that standards may lead to standardisation by not acknowledging the rich diversity of practice that constitutes effective pedagogy (Darling-Hammond 1999); and
- that adequate learning opportunities for candidates to meet standards may not be met on an equitable basis (Darling-Hammond 1999).

Notwithstanding these issues, the move to generate and use standards as a measure of teacher performance and as a tool for professional development has continued in terms of both beginning teacher standards and accomplished teacher standards. This report addresses both beginning teacher and accomplished teacher ICT standards, and also addresses ICT standards for school leaders and teacher educators.

A range of more specific issues has also been identified in the Literature Review and Mapping document. These issues form the basis of the recommendations for this project in Section 3 of this report.

## 1.1 Project Objectives

The overall focus of the project is the development of a framework proposal, which could be used by teacher education institutions, teacher employers and professional associations to develop ICT standards relevant to their purposes and contexts.

Specifically, the objectives of the project are to:

- develop a Literature Review and Mapping document, to be accessible on an appropriate website, which summarises the research and mapping work on teacher ICT performance measures;
- conduct a national workshop of 30–40 key players; and
- prepare a final report in web-ready format, which summarises the project work and presents proposals for a teacher ICT Competency Framework and for ways the work can be supported and shared at a national level.

## 1.2 Methodology

Consistent with the objectives, the project was conducted in three phases. The first phase comprised the development of a Literature Review and Mapping document. The document, which is included as an appendix to this report, consists of three sections: two sections, which map teacher professional standards developments in Australia and overseas; and the third section, which analyses the significant issues relevant to ICT competence in teaching and learning.

The second phase of the project was a two-day national forum of key stakeholders. This took place in Canberra on 18, 19 October 2001. The purpose of the forum was to raise issues and seek input on the key issues identified in the Literature Review and Mapping document and to provide expert opinion on the direction of the project. A full report on the forum is included as an appendix to this report.

The third phase was an analysis of the main findings of the Literature Review and Mapping document and discussions at the forum and the generation of a draft ICT Competency Framework proposal.

## 1.3 Structure of the Report

This final project report comprises the following sections.

- A proposal for an ICT Competency Framework including analysis of the important issues and recommendations derived from the first and second phases (outlined in Section 1.2 of this report).
- A proposed structure for an ICT Competency Framework.
- A proposal for ways in which this work can be supported and shared at a national level.
- Two appendices comprising a report on the national two-day forum and a forum participant list.
- The Literature Review and Mapping as a third appendix.

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## **Section 2**

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Proposal for a Teacher ICT

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Competency Framework

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# 2 Proposal for a Teacher ICT Competency Framework

From the literature review and mapping (completed through the project) and feedback from the project forum, a number of significant issues need to be considered in a proposal for an ICT Competency Framework. These issues are discussed below and include recommendations in relation to each issue.

## 2.1 Language and the Nature of Competence

The importance of language and terminology was highlighted both in the literature and from the project forum. Specifically the following issues were identified as important considerations in developing an ICT Competency Framework and in the development of standards from such a framework.

- It is vital that the framework, and any standards developed from it, ‘speak’ to all teachers and avoid ‘threatening’ and/or confusing language. Teachers must be able to relate to the standards and be able to link them to the context of their work as a professional teacher.
- Language use/terminology must be consistent with other national standards developments in Australia. These include: the work being undertaken by the MCEETYA Performance Measurement and Reporting; the Teacher Quality and Educational Leadership Taskforces; and the professional standards frameworks being developed by national teacher professional associations under the SPIRT projects.

Whilst the Contract and Statement of Requirement for this project uses the term ‘ICT competency standard’, research and feedback from consultations undertaken by the project indicate difficulties and confusion with this terminology. Therefore it is proposed to use the term ‘ICT standard’, which is consistent with what is found in the literature. Within this ICT Competency Framework proposal an ICT standard is defined as a combination of attributes underlying some aspect of successful professional performance involving the use of ICT.

Related to the use of language is the nature of competence. The notion of competence underpins the proposed framework and therefore a clear understanding of what is meant is essential. For the purposes of the proposed framework the following understandings are assumed.

- Competence is the ability to combine and apply relevant attributes to particular tasks in particular contexts. These attributes include high levels of knowledge, values, skills, personal dispositions, sensitivities and capabilities, and the ability to put these into practice in an appropriate way.
- Competence should not be interpreted as a ‘one off’ — i.e. not as something that, once achieved, can be ignored. The very nature of teaching and learning implies ongoing challenges and the need for a process of career-long development and learning.
- Competence must be embedded in teacher practice.
- Teacher competence is connected to student competence. The literature provides clear links between the ability of a teacher and resultant student learning outcomes. Further, student competence can be one indicator of teacher competence.

### Recommendations

- That competence be defined as the ability to combine and apply relevant attributes to particular tasks in particular contexts. These attributes include high levels of knowledge, values, skill, personal dispositions, sensitivities and capabilities, and the ability to put these into practice in an appropriate way.
- That an ICT standard be defined as a combination of attributes underlying a particular aspect of successful professional performance involving the use of ICT.

## 2.2 Technical Competence or a Comprehensive View of ICT Competence

The notion of competence with regard to the use of ICT in education is broader than the technical skills needed to use ICT. To take a technical view of competence is to deny the plethora of skills needed by teachers to create meaningful and productive learning contexts for students. Therefore, whilst it may be easy to take a technical view of ICT competence, this is not sufficient to equip teachers to understand, and make effective use of, ICT in the classroom. The type of ICT competence needed by teachers is a collection of knowledge, skills, understandings and attitudes that are inextricably bound up with context and pedagogy.

### Recommendation

- That for the purposes of this framework, and standards that may be developed from it, a comprehensive view of competence is to be taken. That such a comprehensive view includes technical and higher order cognitive knowledge, skills, understandings and attitudes related to professional knowledge, professional practice and professional attributes.

## 2.3 Importance of Context

It is clear that competence needs to be framed in contexts that have meaning to teachers. This was evident in the literature and was a recurring theme in feedback from the forum. The proposed framework, and any standards developed from it, must be based on pedagogy that teachers will recognise as desirable and something to aspire to. To further provide context, ICT standards need also to be illustrated by a rich set of exemplars that give pointers for teachers as to what constitutes effective practice in the use of ICT in different classrooms. The literature and experience from Australian standards developments indicate that such a set of exemplars can not only serve to illustrate effective practice in a variety of contexts but can also be used to further define the standards themselves.

Feedback from the forum also indicated that the framework should relate to the development of ICT standards that can be achieved and demonstrated in a multitude of ways and contexts reflecting the rich diversity of teachers' practice. The framework, and any related standards, must not be about standardisation.

### Recommendations

- That a comprehensive set of context-rich ICT exemplars be an integral part of the framework.
- That the exemplars be used to assist in the development and illustration of ICT standards emanating from the proposed framework.
- That the ICT standards be general enough to enable them to have meaning and relevance and be demonstrable in a multitude of contexts.

## 2.4 Supporting Capabilities

There is substantial evidence in the literature indicating that a multi-dimensional approach is needed to successfully implement the use of ICT in schools. In particular, certain conditions need to be present in terms of support and institutional capabilities for both teacher education institutions and schools/school systems. These conditions can be referred to as Supporting Capabilities.

### 2.4.1 Pre-service

For teacher education institutions to be able to train and graduate beginning teachers who have the necessary knowledge, skills, understandings and attitudes to make effective use of ICT in their teaching practice, a number of capabilities need to be in place. These can be categorised as:

- leadership and vision in the use of ICT;
- infrastructure providing appropriate access and technical support;
- curriculum/programs that integrate the use of ICT;
- partnerships with schools to provide appropriate professional experiences for pre-service teachers; and
- competence in, and understanding of, the effective use of ICT for teaching and learning by teacher education staff.

### 2.4.2 Schools/School systems

There are a number of institutional capabilities that are necessary for schools/school systems to effectively use technology for learning, teaching and educational management. These capabilities focus on physical, human, financial and policy decisions and can be categorised as:

- leadership, vision and support in use of ICT;
- high quality professional development programs to ensure system administrators, school leaders and teachers are competent in, and have a high level of understanding of, the effective use of ICT in teaching and learning;
- policies and standards supporting new learning environments;
- appropriate curriculum frameworks, timetables, teaching spaces and activities;
- quality curriculum resources;
- well articulated, ICT-rich student learning outcomes for all curriculum areas;
- appropriate pedagogies supporting student-centred, constructivist approaches to learning;
- access to contemporary technologies, software and high quality telecommunications networks;
- ongoing financial support for sustained professional development and technology use;
- technical assistance for maintaining and using technology resources; and
- community partners who provide expertise, support and real-life interactions.

### Recommendations

- That current work at the national level continue in the key areas of people, infrastructure, content, services, supporting policies and enabling regulation as identified in *Learning in an Online World* (Commonwealth of Australia 1999).
- That a set of national teacher education institutional ICT capabilities be developed by the Australian Council of Deans of Education in collaboration with other relevant stakeholders as part of the proposed framework for use in institutional reviews and strategic planning, and, where appropriate, for the accreditation of programs and/or institutions.
- That a set of national school/schools system ICT capabilities be developed as part of the proposed framework as a resource for systems to adopt for use as part of their respective review, strategic planning and reporting processes.
- That schools, school leaders and system policy/decision makers, the Australian Council of Deans of Education and their Vice Chancellors be made aware of the need for these supporting capabilities.

## 2.5 Issues of Equity

Evident in the literature is what is commonly referred to as the ‘digital divide’. Meredyth et al. (1999) concluded that inequitable access is a very real issue in Australia, especially for Indigenous Australians and for rural and isolated young people. However, issues of equity not only relate to access to ICT. The Organisation for Economic Cooperation and Development (CERI 2001) also identify the issue of teacher and student ICT competence as an equity issue:

So critical now is technological competence to social and economic life that its lack has become a major contributor to exclusion. Technological disadvantage adds to the familiar factors that diminish learning opportunities — poverty in social background, in home and cultural environment, in school ethos and quality. The absence of ICT competence compounds existing dimensions of social exclusion. Its presence represents a powerful means for bridging those other social and educational divides. (p. 6)

Appropriate access to ICT and the development of competence itself are integral to the effective use of ICT in teaching and learning. Equity issues must therefore help to shape the research agenda of the future about leading practice use of ICT. One such issue relates to teacher access to any published ICT Competency Framework, access to accompanying exemplars of practice and to support networks that facilitate the development and demonstration of ICT competence. A strategy to achieve the necessary equitable and timely access is to publish the framework as a web site with links to exemplars of practice and a range of tools to support teacher networking.

### Recommendations

- That the ICT standards must ‘talk’ to all teachers, regardless of ethnic, geographic, economic, social or cultural contexts.
- That there be enhanced access to ICT for learning and for teachers to achieve and demonstrate competence, regardless of geographic, economic, social or cultural context.
- That there be sustained and appropriate professional development to enable all teachers to develop and demonstrate their competence.
- That there be flexibility for teachers to be able to achieve and demonstrate competence in a wide variety of contexts, regardless of the presence or otherwise of supporting capabilities as outlined in Section 3.3 of this proposal.
- That the ICT Competency Framework be published as a web site with appropriate associated tools to facilitate and encourage teacher networking.

## 2.6 Relationship to Other Standards Developments

The mapping and literature review undertaken for this project has revealed significant work within Australia in the development of teacher professional standards in both the non-ICT and ICT specific areas. Organisations involved in professional standards development include state and territory education systems, professional associations and MCEETYA. Whilst much of this activity is based on similar research and literature, the range of outcomes reflects the purposes and context of the developing organisations. To date there has been limited collaboration between these projects and therefore a lack of consistency in approach, a range of terminology and meaning, and some duplication of effort. A real challenge exists, therefore, to establish mechanisms for genuine collaboration between the legitimate stakeholders such as the Commonwealth, education systems, teacher employers, teacher training institutions and professional associations.

Feedback from the project forum indicated strong support for a national framework that provides a commonly agreed approach within which teacher employers, education systems, professional associations and teacher education institutions might shape sets of ICT standards to meet their specific needs and capabilities.

Clearly, the issues of quality teachers and effective use of ICT in schools are of national importance. MCEETYA has a leadership role in the fostering of collaboration of the various stakeholders in the area of teacher professional standards. There is a need for clear and consistent messages to teachers about issues of professionalism and the purpose and role of professional standards. A consistent national approach will assist in bringing about the cultural shift needed to make teacher standards an integral part of the profession.

### Recommendations

- That a strategy is needed to ensure that teacher professional standards frameworks inform one another, particularly at the national level.
- That MCEETYA take a leadership role in fostering collaboration and encouraging the need for national frameworks and resolving the potential tension between generic standards frameworks and subject specific frameworks for ICT in education.
- That any student ICT competency framework developed by the MCEETYA Performance Measurement and Reporting Taskforce inform, and be informed by, work emanating from this project.
- That the MCEETYA Teacher Quality and Educational Leadership Taskforce work on teacher professional standards inform, and be informed by, this project.
- That the key role of professional associations in the development, implementation and assessment of standards be recognised and supported.
- That teacher employers and education systems be encouraged to develop standards using national frameworks.

## 2.7 A Performance Management or Professional Development Model

The literature identifies two ways in which standards for teacher evaluation can be used for performance management and/or for professional development.

- For performance management purposes, to safeguard the educational interests and welfare of students and ensure that teachers are able to fulfil their contractual responsibilities. This responsibility typically lies with the employer.
- For professional development, appraisal and recognition of excellence, which emphasises the need for teachers to continually review and improve their practice in the light of contemporary practice and profession-defined standards. This responsibility is typically delegated to professional bodies in most professions.

It is clear in the feedback from the project forum that both types of teacher evaluation could be catered for in the proposed ICT Competency Framework. Indeed, it was argued that the notions of teacher quality and improvement are central to both.

The literature, project research and forum feedback indicated that the type of teacher evaluation depends upon the audience for the standards.

- For beginning teachers (at the point of registration/employment), evaluation would be used for both performance management and for professional development purposes.
- For practicing teachers who are beginning users of ICT, the prime focus should be on professional development.
- For practicing teachers who are accomplished/highly accomplished users of ICT, the focus should be on professional development.
- For educational leaders, the emphasis should be on both performance management and professional development.
- For teacher educators, there should be a dual focus on performance management and professional development.

### Recommendation

- That the proposed ICT Competency Framework, and any standards developed from it, be expressed in such a way as to enable them to be used for both performance management and professional development purposes.

## 2.8 Separate or Embedded ICT Standards

In mapping current standards developments the researchers found a predominance of separate ICT standards and limited evidence of ICT-rich embedded standards. In the analysis of the literature, two reasons support the need for separate ICT standards.

- ICTs are ‘special’ and ‘new’ because of their relatively recent development and use in education and because of their potential to transform the very nature of learning and schooling at the classroom, school and system levels.
- The imperative to embrace ICTs has not been substantially taken up within existing non-ICT specific standards frameworks. There is a paucity of ICT specific descriptors and performance indicators in current non-ICT specific standards.

Further, as a result of the research, it is clear that the developers of non-ICT specific standards do not share, to the same extent, the concern clearly evident in the literature about the need to make explicit the knowledge, skills and attitudes required by teachers to make effective use of ICTs in schools. Analysis of non-ICT specific standards developments also indicated only a limited appreciation and understanding of the potential of ICT use to transform the very nature of schooling in terms of both process and content.

Whilst there are compelling reasons for separate ICT standards, there are also strong arguments from the literature to embed ICT-rich descriptors and performance indicators within existing standards frameworks. These arguments are that embedding:

- is consistent with the message that ICTs are integral to effective teaching and learning and the broader range of teachers’ professional work;
- mirrors what is aimed for in terms of integrating ICT use into classroom practice; and

- is consistent with the message that effective professional development strategies for the application of ICTs to enhance and transform teaching and learning must be embedded in the daily work of teachers and should address the student learning outcomes relevant to the age and nature of the taught curriculum.

Clearly, there is a need for both separate and embedded ICT standards in the short term. It is hoped that in the longer term, when effective ICT use reaches the ‘taken for granted’ stage (as is the case with non-digital technologies such as pencils and books), the need for separate ICT standards will diminish. At the ‘taken for granted’ stage, ICT-rich descriptors and performance indicators will be a normal part of non-ICT specific standards.

### Recommendations

- That this framework proposal advocate separate sets of ICT standards.
- That further work is needed to develop strategies to ensure the embedding of ICT-rich descriptors and performance indicators in all existing and future non-ICT specific professional teacher standards.

## 2.9 Generic or Subject Specific ICT Standards

The literature and project research revealed some tension and differences of opinion as to whether teacher professional standards should be generic or subject specific. Both types of standards exists in Australia and overseas as:

- generic standards that can be applied to any curriculum area at any level of schooling; and
- multiple sets of subject specific standards for each subject area of the curriculum and, in some cases, also for different levels of schooling within those subject areas.

The primary reason for subject specific and/or levels of schooling specific standards, as evidenced in the literature, is to make them relevant and meaningful to the widest possible audience of teachers. However, other parts of the literature argue that appropriately framed generic standards can be made relevant and meaningful to teachers through comprehensive sets of exemplars of practice and flexible assessment methodologies. Such standards frameworks have also been developed and implemented both within Australia and overseas.

The same discussions can also apply to the expression of ICT standards. However, a strong body of research indicates that the nature of competence needed by teachers for effective use of ICT in teaching and learning is the same regardless of the subject area and the level of schooling. This approach was strongly supported by feedback from the project forum.

### Recommendations

- That the proposed ICT Competency framework (and any standards developed from it) be generic in nature — i.e. non-subject and non-level specific.
- That the framework provides access to rich sets of subject specific exemplars to give meaning and context for teachers in all curriculum areas and at all levels of schooling.

## 2.10 Standards for Levels of Teachers or a Continuum of Development

The project has canvassed a considerable range of arguments about the notion of levels of competence, the need or otherwise for different sets of standards for teachers at different stages of their careers and the notion of a continuum of development. Several types of standards frameworks are evident in the literature. The continuums examined by the project articulate a sequence of increasing levels of competence typically expressed in a number of levels that are then related to stages of teacher career development.

An underlying assumption is that the achievement of increasing levels of competence is a linear process. However, research indicates that the pathways to ICT competence may not be linear and that there is indeed a need to separate out specific key groups of teachers who bring different perspectives, expertise and experience to teaching and learning. The following key groups have been identified.

### Pre-service/Beginning Teachers

- modest skills/experience in pedagogy and ICT use — achievement of basic ICT standards should be mandatory at this level.

### Practicing Teachers who are beginning users of ICT

- range of pedagogy and experience but modest ICT competence — achievement of basic ICT standards should be mandatory at this level.

### Practicing Teachers who are accomplished/highly accomplished users of ICT

- ICT standards which encourage teachers to develop professionally; give recognition for and acknowledgment of their expertise and support them to take on leadership, and transformative and innovator roles — assessment of ICT standards should be voluntary at this level.

### School Leaders

- ICT standards to encourage and support their roles as effective leaders and managers; to foster appropriate role modelling and the development of a vision to support staff and; to support the development of policies and structures to ensure the supporting capabilities are realised — achievement of ICT standards should be mandatory at this level.

### Teacher Educators

- ICT standards to inform their own practice as teachers and to provide effective role models for their students — achievement of ICT standards should be mandatory at this level.

### Recommendation

- That five sets of ICT standards be developed from the proposed ICT Competency Framework for:
  - Pre-service/beginning teachers
  - Practicing teachers who are beginning users of ICT
  - Practicing teachers who are accomplished/highly accomplished users of ICT
  - School and educational leaders
  - Teacher educators

## 2.11 A Minimum Set of ICT Standards for all Teachers

There is significant evidence from the literature and project research of the need for all teachers to attain a basic level of ICT competence. There is clearly strong national support for this from all Australian education systems. The need for ICT competent teachers is explicitly stated in *Learning in an Online World* (Commonwealth of Australia 1999) and is implicit in the *National Goals of Schooling* (DETYA 1999). At this level, there is clear recognition of the imperative to realise the teaching and learning potential of ICT. The literature also reveals that many overseas countries share these views.

Given that the achievement of a base level of ICT competence is essential for all teachers, it follows that this is unlikely to occur unless the educators of pre-service/beginning teachers are also ICT competent. The same applies in schools for practicing teachers who are beginning users of ICT. Their professional leaders and mentors also must be ICT competent so as to provide appropriate role models, understand the role of ICT and provide organisational and professional support for the effective use of ICT in teaching and learning. ICT competence for teacher educators and school leaders must also be underpinned by an understanding of, and support for, the need for adequate supporting capabilities at the institutional and systematic level as articulated in Section 2.4 of this report.

### Recommendations

- That the framework be used to develop minimum sets of ICT standards for beginning teachers and practicing teachers who are beginning users of ICT.
- That the framework be used to develop sets of ICT standards for teacher educators and school leaders to support the achievement of these minimum standards for all pre-service and practicing teachers.

## 2.12 Dimensions of ICT Use and Stages of Development

A recent report to DETYA (2001) identified the following four different, but overlapping, dimensions of ICT use in schools. ICT works as:

- a tool for use across the curriculum or in separate subjects where the emphasis is on the development of ICT-related skills, knowledge, processes and attitudes;
- a tool for enhancing students' learning outcomes within the existing curriculum and using existing learning processes;
- an integral component of broader curricular reforms, which will change not only *how* students learn but *what* they learn; and
- an integral component of the reforms, which will alter the organisation and structure of schooling itself.

These dimensions provide a way to contextualise the role and purpose of ICT use, and hence impact on the competence required by the educators who focus on particular dimensions.

Similarly, the literature reveals various approaches to continuums of use, in terms of the developing competence of the educator. These are normally expressed as having three, four or five stages of development. Education Queensland (2001) uses four stages of development. The stages are:

- Minimum
- Developmental
- Innovator
- Leader

While these provide useful descriptions of particular stages, it is important that development competence is not viewed as a linear process that passes through each of these stages. There are many pathways to competence.

In considering a proposal for an ICT Competency Framework, and standards that may be developed from it, the researchers consider it useful to reflect on the relationship between the dimensions of ICT use and the stages of development. This is represented in the following table. The reader needs to be aware that each dimension and stage underpins subsequent dimensions and stages, though not necessarily through a linear process of development. Whilst a particular target group is identified for each dimension and stage this should not be regarded as restrictive. It is assumed that teachers would be continually aspiring to achieve subsequent dimensions/stages in their application of ICT in teaching and learning.

Dimensions of ICT Use	Stages of ICT Development	Target Groups
ICT as a tool for use across the curriculum or in separate subjects where the emphasis is on the development of ICT-related skills, knowledge, processes and attitudes.	Minimum	Underpins all teaching practice in the same way as other literature
ICT as a tool for learning to enhance students' learning outcomes with the existing curriculum and existing learning processes	Developmental	For beginning teachers and practicing teachers beginning to use ICTs
ICT as an integral component of broader curricular reforms that change not only how students learn but what they learn	Innovator	For practicing teachers who are accomplished/highly accomplished users of ICT
ICT as an integral component of the reforms that alter the organisation and structure of schooling itself	Leader	For school and educational leaders and for teacher educators

### Recommendation

- That the ICT standards developed for each of the five groups of educators emphasise the specific relevant dimension(s) of ICT use in the above table and at the same time be cognisant of all four dimensions.

## 2.13 The Relationship between non-ICT Specific and ICT Specific Standards

The mapping of standards developments undertaken for this project revealed numerous examples of non-ICT specific standards, both generic and subject specific. Despite the varied origins of these different sets of standards there is a not unexpected similarity between them in describing the attributes of an accomplished teacher. The following common attributes are evident from the literature. An accomplished teacher has:

- a commitment to students and their learning;
- a deep knowledge and understanding of their subject discipline and of effective pedagogy;
- the ability to implement effective monitoring, assessment and reporting of student progress;
- a commitment to reflect critically on their own practice and to ongoing professional development; and
- a willingness to participate and contribute to the whole educational community at a range of levels.

Professional standards for schools leaders and teacher educators, although less numerous, also show similar commonalities.

In addition, an examination of the various existing ICT specific standards revealed a similar pattern of common dimensions of ICT competence. These include:

- ICT skills, knowledge, processes and attitudes;
- a deep understanding of their subject and of curriculum planning and development;
- implementation of the curriculum through effective classroom/learning environment planning and management, and effective pedagogy;
- student monitoring, assessment and reporting; and
- administrative competencies including decision making and planning.

It is evident that there are commonalities between non-ICT specific and ICT specific standards, particularly in the areas of understanding of subject knowledge and in student monitoring, assessment and reporting. There are also some disparities. For example, the ICT-specific attributes do not mention the role of an effective teacher in participating in, and contributing to, the wider education community, nor critical reflection. Similarly, the non-ICT specific strategies do not mention the underlying skills and knowledge needed to be literate in the tools and technologies of teaching and learning (e.g. books, libraries and writing). More importantly, perhaps, neither set addresses the changing social and technological contexts in which teaching and learning occur, and the need for continual reform and transformation of educational practice.

Clearly, neither set is comprehensive enough to form the basis of a set of ICT-specific standards without some further elaboration. However, given the level of consistency of sets of non-ICT specific standards in the literature, it can be argued that they form the logical base from which ICT standards be derived, provided the transformative dimensions of ICT use in teaching and learning are recognised. The potential to transform what we know as effective practice, the nature of schooling and hence the very dimensions of generic teacher competence cannot be overestimated. The duality was clearly identified in the Literature Review and Mapping document.

There should be no doubt that ICTs have the potential to transform how, what, where and why students learn what they do. While there are only limited examples of the transformative power within the educational sector, the examples with the financial, manufacturing and business sectors make it clear that new times need new approaches, and that the nature and functionality of the new technologies, the digital ICTs, enable that transformation. ... While the dimensions of needed capacities for the first two can easily be derived from existing generic and subject-specific teacher standards, the dimensions of needed capacities for the latter two cannot. The following are three such capacities that may not be readily derived from existing generic or subject specific standards. Sadly, they also do not obviously feature in any of the existing ICT specific standards that have been published:

- teachers need the knowledge and understandings of how ICTs are used within their discipline, not only in an educational setting, but also in industry, government and in the broader society.
- teachers need an understanding of how ICT use impacts on society and conversely how social, political and economic processes structure how and by whom technologies are accessed and used, so they can meaningfully relate ICT use in teaching and learning to the students', their families', and the broader community experience of ICT in their personal, community, educational and work-related lives.

- teachers need an understanding of the transformative potential of ICT use in redefining the who, when, where and why of the teaching and learning process — in relation to the work they currently do in classrooms, to their own professional development, and to the possibility of transforming the nature of the formal educational process within a rapidly changing society. (Appendix 3, 2001, 71)

An ICT competency framework must address all these dimensions of the application of ICT in schools if it is to complement existing generic and subject-specific standards at the same time as doing justice to the transformative potential to reshape these very standards.

Linked to this is the need for the proposed ICT Competency Framework to address the changing contexts that may result from evolving educational change and/or changing technologies. In pursuing the notion of critical reflection and self analysis of their practice, teachers, school leaders and teacher educators should model the development and improvement implicit in life-long learning, along with risk taking and flexibility entailed in the exploration of new ideas and changes in practice.

The ICT standards need to facilitate teachers, school leaders and teacher educators to reflect critically on their practice, to continually seek improvement of their practice, to adopt and adapt new technologies, and to take a proactive role in leading and shaping change that may result from the application of new technologies in teaching and learning.

### Recommendations

- That any ICT standards developed from the proposed framework be derived from the relevant non-ICT specific generic competencies.
- That these generic competencies be refined and expanded to take account of the dimensions of ICT competence and use that may actually transform education and hence the generic competencies themselves.
- That any ICT standards developed from the proposed framework not only articulate the need to embrace change, but also adequately reflect the concept of leading and shaping change in response to new technologies and new educational ideologies.

## 2.14 Who Develops the Standards?

From the project mapping, there are four groups of stakeholders involved in teacher standards development: teacher employers, professional associations, teacher educators and consortia involving combinations of these three groups. There is a strong argument from the literature that the purpose for which the standards are to be used is linked to who should develop the standards. For instance:

- If the primary purpose of the standards is performance management then it follows that teacher employers would have a prominent role in the development of professional standards.
- If the primary purpose of the standards is for professional development then the literature makes a compelling case for development by professional associations or consortia of combinations of stakeholders.

Within Australia, there have been, or are currently, projects by all such groups or consortia of groups. The most common activity is at the systemic level, where employers are developing teacher professional standards with a primarily professional development focus. Notwithstanding this, there are few examples of the use of standards where there has been wide scale adoption by teachers for professional development purposes. Similarly, overseas, where there have been well-funded projects and much publicity about standards developed by the profession for the profession, they remain an uncommon feature of the lives of most teachers. This complex issue needs to be addressed in any project to develop standards within Australia. Part of the solution lies in the direct engagement of the relevant stakeholders during the development process. The relevance of the stakeholders needs to be determined in relation to the primary purpose of those standards, namely performance management or professional development.

### Recommendations

- For beginning (pre-service) teachers — standards development should be by a partnership between the teacher education institutions and the employers/education systems.
- For practicing teachers who are beginning users of ICT — standards development should be the primary responsibility of the employers/education systems.
- For practicing teachers who are accomplished/highly accomplished users of ICT — standards development should be by a partnership of the profession including the relevant professional association(s) in collaboration with education systems.
- For school and educational leaders — standards development should be by a partnership of the profession including the relevant employer and professional association.
- For teacher educators — standards development should be by a partnership of the profession including the relevant teacher accreditation agencies and professional associations.

## 2.15 Who Implements and Assesses the Standards?

The implementation and assessment of ICT standards developed from the proposed framework is largely determined by who uses the framework and for what purpose. Whilst the development of the framework at the national level is strongly supported, it is recognised that various government and non-government education systems and professional associations will be responsible for implementation at local levels.

The link between purpose and implementation is strongly supported in the literature and by feedback from the project forum. The following are specific examples of this.

- In Western Australia, the *Competency Framework for Teachers* (EDWA 2001) is designed primarily for professional development purposes, and, therefore, it was recognised that the implementation and assessment of the competencies must be in the hands of the profession. To this end, a consortium of the profession, including the Education Department, was established at Murdoch University to undertake the implementation and assessment processes for Level 3 of the framework. In fact, assessors of the competencies are drawn from teachers who were previously successful in being assessed themselves. Assessment is a voluntary process.
- In Queensland, the *Minimum Standards for Teachers-Learning Technology* (Education Queensland 1998) were developed as part of an Enterprise Bargain Agreement (EBA) for primarily performance management purposes. In this case, the standards were implemented by the employing body and assessed, on behalf of the Department, by Principals at the school level. Assessment was mandated for all teachers by the EBA.

Notwithstanding this, the literature and practice strongly indicate the need for the following issues to be addressed in terms of standards implementation and teacher assessment.

- The importance of acceptance by the profession including the concept of ‘ownership’ of the standards.
- The need to gain support from the whole education community.
- The need to ensure the credibility and validity of the standards.
- The need to ensure valid and reliable assessment processes including the training of, and moderation between, assessors, and the use of a range of assessment instruments to adequately reflect the complex and varied nature of teachers’ work.
- The provision of appropriate incentives and credentialing.
- Resolving the tension, in relation to roles and responsibilities, between the legitimate stakeholders.

### Recommendations

- That the proposed framework does not specify how standards developed from the framework are to be implemented or how teachers are to be assessed.
- That the proposed framework points to a range of resources and examples that might guide institutions, systems or professional associations if they are to implement and assess ICT standards based on the proposed framework.
- That the stakeholders consider future collaborative efforts that would support the development and implementation of assessment strategies.

## 2.16 Roles of Stakeholders

The imperative of realising the educational potential of ICT in teaching and learning is a national issue. Notwithstanding this, it is recognised that state/territory and non-government education systems play leading roles in school education. Curriculum units within education systems are key stakeholders in any ICT standards activity as they drive changes in student learning and assessment. In addition, the legitimate roles of national professional associations and other stakeholders, particularly in relation to teacher professional standards, also need to be recognised.

Within the Teacher Education sector the concept of stakeholders must be broadened to include all teacher educators, that is those who teach foundation and curriculum studies as well as the ICT specialists.

Although there is support in the literature (Ingvarson 2001; Senate 1998) for a national approach to standards in Australia, at present there is no national structure to provide the necessary national collaboration as suggested in Sections 2.12 and 2.13 of this report. A national Australian consortium, incorporating all relevant stakeholders, would be ideally placed to undertake the necessary ICT standards development. In the absence of such a structure the real challenge is to establish mechanisms for genuine collaboration between the legitimate stakeholders such as the Commonwealth, education systems, teacher employers, teacher training institutions and professional associations. The MCEETYA structures currently preclude the type of collaboration required and therefore would need to be modified to provide broader representation to undertake this work. In particular, they exclude the professional associations.

The literature and feedback from the forum strongly support the concept of a nationally developed ICT Competency Framework to ensure consistency of purpose and content. A national framework, at the same time, needs to acknowledge the respective roles of all stakeholders and ensure that any standards developed from the framework are sensitive to local issues and are able to be interpreted at the local level.

### Recommendations

- That the proposed ICT Competency Framework be developed at the national level taking into account the legitimate roles of all stakeholders.
- That MCEETYA, through the collaborative efforts of the ICT in Schools Taskforce and the Performance Measurement and Reporting Taskforce, take a leadership role in seeking collaboration of all stakeholders.
- That strong collaboration between professional associations, teacher educator institutions and employers be the hallmark of all standards development processes.
- That the curriculum units of education systems be recognised as key player in systems' engagement in debate action around ICT standards.

## 2.17 Teacher ICT Competence, Curriculum and Student Learning Outcomes

A major driving force behind the development and implementation of a teacher ICT Competency Framework is to improve the levels of student ICT competence and student learning outcomes. The development of student ICT competence can be addressed in two ways (or a combination of both).

- Separate generic ICT student learning outcomes/competency statements that can apply in any curriculum area.
- Subject specific learning outcomes expressed in curriculum frameworks, course documents, etc.

Both approaches are evident in Australian education systems. Nevertheless, it could be argued that the practice does not match the rhetoric. From project research it is evident that ICT student learning outcomes are not addressed in any significant way in key learning area (KLA) documents with the exception of the technology KLA, and then only in a limited way. To meet the imperative of realising the educational potential of ICT, the researchers argue that, as for teachers, ICT-rich student learning outcomes statements should be embedded in all curriculum frameworks, curriculum profiles and course documents as well as in separate ICT standards statements.

Several state and territory education systems, including the Australian Capital Territory, New South Wales and South Australia, have developed, or are in the process of developing, separate student ICT standards statements. This work is occurring in parallel with the work of the MCEETYA Performance Measurement and Reporting Taskforce (MCEETYA 2000) in relation to the development of student ICT standards for the purpose of monitoring progress towards the relevant national goals for schooling (DETYA 1999).

As argued earlier, it is important that there be coordination of these activities to ensure consistency and compatibility. Further, the literature strongly argues that student ICT competence and teacher ICT competence are interrelated and that they need to be addressed together.

### Recommendations

- That through the collaborative mechanisms of MCEETYA, education systems and boards of studies are made aware of the need for student ICT standards to be consistent with teacher ICT standards.
- That through the collaborative mechanisms of MCEETYA, education systems and boards of studies are made aware of the need for ICT-rich student learning outcomes to be embedded in all learning area curriculum frameworks.

## 2.18 Framework Evaluation and Review Processes

The dynamic nature of education in general and the role of ICT in particular dictate that strategies for the evaluation and review of the framework be developed. Such review and evaluation processes also ensure currency, relevance and effectiveness.

### Recommendations

- That framework evaluation strategies be developed as part of the framework.
- That a three-year cyclic framework-review process be established.

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## **Section 3**

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Structure of the

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Proposed Framework

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# 3 Structure of the Proposed Framework

The following is a proposed structure of an ICT Competency Framework. This structure is derived from the literature and from feedback from the project forum. The proposal suggests a number of headings and what should be included under those headings.

- Preamble
- Underlying Premises and Principles
- Supporting Capabilities
- Dimensions of ICT Use in Teaching and Learning
- Standards
- Exemplars of Practice
- Assessment and Credentialing
- Framework Evaluation and Review Processes
- Background to Framework

## 3.1 Preamble

In order to orientate the reader, the Preamble needs to provide information about the following areas.

### 3.1.1 The nature of competence and standards

The preamble should define the nature of competence and standards. This would facilitate a common interpretation of the framework by the intended audience. Clear definitions and explanations of terminology need to be given. Terms such as competence, standards and the nature of competence adopted should be clearly articulated. For example:

- This framework is about providing a structure from which ICT standards can be developed. For the purposes of this framework, a broad comprehensive view of competence has been adopted. Competence is defined as the ability to combine and apply relevant attributes to particular tasks in particular contexts. These attributes include high levels of knowledge, values, skill, personal dispositions, sensitivities and capabilities, and the ability to put those combinations into practice in an appropriate way.
- An ICT standard is a combination of attributes underlying a particular aspect of successful teacher professional performance involving the use of ICT.

### 3.1.2 The rationale for and purpose of the framework

The Preamble should include a rationale for the framework and for ICT standards. This rationale should refer to the imperative of realising the teaching and learning potential of ICTs, why ICTs are so important and the need to develop a broader understanding of the potential of ICTs to transform the very nature of schooling in terms of structure, process and content. The rationale should link the role of teacher ICT competence to this imperative.

For example, rationale and purposes could include the need to:

- improve the ICT competence of all teachers, school leaders and teacher educators;
- realise the potential of ICT in improving student learning outcomes;
- develop ICT literate students who are critical consumers of ICT and have a critical understanding of the roles ICT plays in our society;
- improve the understanding of decision and policy makers and the whole education community of the potential of ICT not only to improve student learning outcomes but also to transform the very nature of schooling in terms of what is taught/learned and how it is taught and learned;
- provide a national focus on the importance of ICT in teaching and learning;
- provide a structure from which sets of ICT standards can be developed for
  - beginning/pre-service teachers
  - practicing teachers who are beginning users of ICT
  - practicing teachers who are accomplished/highly accomplished users of ICT
  - school leaders
  - teacher educators;
- give a stronger definition of teachers' work
- make the broader community aware of the complex nature of teachers' work;
- provide models of effective practice;
- have the profession take greater responsibility for the purpose and nature of professional development;
- improve the effectiveness of professional development;
- provide a basis for curriculum reform; and
- inform other standards work.

### **3.1.3 The scope and intended audience of the framework**

The Preamble should define the scope and intended audience of the framework. This should be done in terms of providing a national structure from which ICT standards can be developed for the key groups. For example:

- For students — to enhance the quality of teaching and learning through the requirement that all teachers demonstrate the knowledge, understanding, skills and professional values described in professional standards for effective teachers.
- For pre-service/aspiring teachers — to provide authentic expectations of teachers' work and roles, and provide evaluation of the learning and work of pre-service teachers and beginning teachers.
- For practicing teachers — to reflect on their professional effectiveness, to determine and prioritise areas for professional growth, to identify professional development opportunities, to assist their personal and career development planning and to increase the status of the profession in the eyes of the community.
- For school leaders to provide the quality leadership and management to develop and implement a vision for the role of ICT in their school, provide appropriate role models, provide supportive structures and use it to enhance their own work.
- For teacher employers/school systems — to provide a focus for the recruitment, selection, accreditation, professional development and promotion of teachers.
- For teacher educators (foundations curriculum and professional studies educators as well as ICT specialists) — to guide program development and review.

- For schools/school systems and teacher education institutions — to provide mechanisms for the development and measurement of supporting capabilities.
- For the community — to provide greater assurance of the quality and capability of teachers in schools.

### 3.1.4 The importance of context

The Preamble should articulate the need for standards to be placed in teaching and learning contexts that are meaningful and relevant to the key groups. This needs to be done in such a way that they will be able to relate to their current practice and identify and plan pathways to develop their competence. The importance of catering for different levels of competence and multiple pathways to, and contexts for, demonstrating competence needs to be stressed.

The context also extends to the level of supporting capabilities of a particular institution and the socio-economic circumstances of the broader community in which the institution exists. The variation of these factors will impact on the capacity and opportunity for the development and demonstration of ICT competence. Equity issues need to be an important consideration in the development, implementation and assessment of standards. For example:

ICT standards developed from this framework must be expressed in such a way that has meaning and relevance for their intended audience. They must be linked to and illustrated by context-rich exemplars of practice. The following factors must be taken into account.

- Standards must speak to all teachers.
- Standards, whilst developed nationally, must be able to be translated into local contexts.
- Standards must support and promote exemplary practice.
- The framework and standards cannot be developed and implemented in isolation.
- The context should be provided by a comprehensive set of ICT-rich exemplars.

## 3.2 Underlying Premises and Principles

This section needs to address premises and principles that underpin the development of teacher professional standards frameworks in general and an ICT Competency Framework in particular. These premises and principles are based on what constitutes effective pedagogy, the effective use of ICT in schools, and research and experience from the development and implementation of other teacher standards frameworks. They are intended to provide guidance for any future work in developing a framework from this proposal and guidance for the development of ICT standards from that framework.

For example, it is assumed that an ICT Competency Framework will:

- acknowledge the notion that teachers need time and support to develop competence;
- assist teachers to uncover their personal beliefs about teaching and learning;
- encourage teachers to describe their experiences with ICTs and the assumptions they have about ICTs;
- assist teachers to make the necessary curriculum links to effectively integrate ICT use in their classroom practice;
- enable teachers to assess their level of ICT competence and develop pathways to improve that competence;
- address social justice issues such as access to professional development, access to appropriate resources, geographic isolation and ethnicity;

- be supported simultaneously by a range of complementary initiatives including institutional capabilities, technological capacity, infrastructural capacity and policy support;
- allow for the development of standards based on a sound understanding of the complex nature of teachers' work;
- support the concept of learning communities that share ideas and experience;
- link to, and provide a focus for, life-long learning as part of a teacher's ongoing professional development;
- be consistent with student ICT standards;
- be complemented by ICT-rich student learning outcomes across all KLAs;
- cater for both Performance Management and Professional Development purposes;
- be supported by a program to embed ICT rich descriptors and performance indicators in non-ICT specific professional standards frameworks; and
- have a limited life as a consequence of that embedding process.

### 3.3 Supporting Capabilities

This section addresses the supporting capabilities that need to be present in an institution or system for the teaching and learning potential of ICT to be realised in any significant way. The lack of such capabilities will severely inhibit the capacity and opportunity for students and their teachers to develop and demonstrate ICT competence and realise the full potential of ICT.

All teacher education institutions, schools and school systems should be seeking to develop these capabilities. The supporting capabilities, therefore, need to be developed and expressed in a way such that they can be used as a resource by institutions and systems to review their current capability and to inform future ICT strategic planning.

These capabilities focus on physical, human, financial and policy decisions for both teacher education institutions and schools/school systems. For example:

For teacher education institutions the capabilities are categorised as:

- leadership and vision in the use of ICT;
- infrastructure providing appropriate access and technical support;
- curriculum/programs which integrate the use of ICT;
- partnerships with schools to provide appropriate experiences for pre-service teachers; and
- competence in, and understanding of, the effective use of ICT for teaching and learning by all staff including foundations and curriculum studies staff and staff leading professional experience.

For schools/school systems supporting capabilities are needed in:

- policies and standards supporting new learning environments;
- leadership, vision and support from the education system;
- high quality professional development programs to ensure educators are competent in and have a high level of understanding of the effective use of ICT in teaching and learning;
- ongoing financial support for sustained professional development and technology use;
- access to contemporary technologies, software and high quality telecommunications networks;
- technical assistance for maintaining and using technology resources;
- appropriate curriculum design, timetables, teaching spaces and activities;
- quality curriculum resources;

- well articulated, ICT-rich student learning outcomes for all curriculum areas;
- appropriate pedagogies supporting student-centred, constructivist approaches to learning; and
- community partners who provide expertise, support and real-life interactions.

### 3.4 Dimensions of ICT Use in Teaching and Learning

This section discusses the nature of the relationships between the four dimensions of ICT use, the four stages of development of ICT competence and the five key groups identified for whom ICT standards should be developed.

For example, the following table would be helpful in explaining the relationship between the dimensions of ICT use in teaching and learning, the stages of development of ICT competence and how this relates to the five identified key groups.

Dimensions of ICT Use	Stages of ICT Competence	Key Groups
ICT as a tool for use across the curriculum or in separate subjects where the emphasis is on the development of skills, knowledge, processes and attitudes related to ICTs.	Minimum	Underpins all teaching practice.
ICT as a tool for learning to enhance students' abilities to deal with the existing curriculum and existing learning processes.	Developmental	For pre-service/beginning teachers.
ICT as an integral component of broader curricular reforms that change not only <b>how</b> students learn but also <b>what</b> they learn.	Innovator	For practicing teachers who are beginning users of ICT and for accomplished/highly accomplished users of ICT.
ICT as an integral component of the reforms that alter the organisation and structure of schooling itself.	Leader	For highly accomplished users of ICT and for school leaders and teacher educators.

### 3.5 Standards

This section could begin with consideration of how the relevant non-ICT specific standards, evident from the literature review and mapping processes, might be used to develop the ICT specific standards. However, these non-ICT specific standards will need to be extended and refined to better reflect the dynamic and transformative nature of ICT use in education as argued in Section 2.13 of this report. Five sets of standards will be developed for:

- teachers;
- pre-service/beginning teachers;
- practicing teachers who are beginning users of ICT;
- practicing teachers who are accomplished users of ICT;
- for schools leaders; and
- for teacher educators in all disciplines (for example foundations and curriculum studies and professional experience staff).

The standards will need to take account of the following premises.

- Standards must be accurate and true reflections to which all teachers aspire.
- Standards should be guides for professional growth.
- Standards must be rigorous, but attainable.
- There must be a process for validating the standards prior to and as part of the implementation and assessment processes.
- Standards developed from the framework should be derived from, but not restricted to, the non-ICT specific standards for the five identified key groups.
- The standards must reflect the four identified dimensions of ICT use in teaching and learning.
- The standards must be consistent with the five identified dimensions of ICT competence (see section 2.13 of this report).
- The standards must be informed by, and illustrated through, a comprehensive set of ICT-rich exemplars as outlined in section 3.6 of this report, and that the exemplars be used to derive descriptors and performance indicators for the standards.

### 3.5.1 ICT Standards for Teachers

This section articulates the three sets of standards to be developed for:

- pre-service/beginning teachers;
- practising teachers — beginning users of ICT; and
- practising teachers — accomplished/highly accomplished users of ICT.

The ICT Standards for teachers will derive from (and be organised around) the following non-ICT specific characteristics of an accomplished teacher. These characteristics are identified from the literature analysed in the Literature Review and Mapping document for this project. An effective teacher:

- has a commitment to students and their learning;
- has a deep knowledge and understanding of their subject discipline and of effective pedagogy;
- implements effective monitoring, assessment and reporting of student progress;
- has a commitment to reflect critically on their own practice and to ongoing professional development; and
- participates in, and contributes to, the whole educational community at a range of levels but will additionally address the 3rd and 4th dimensions of ICT use in teaching and learning.

### 3.5.2 ICT standards for school leaders

This section articulates the ICT standards for school leaders. They will be based on (and be organised around) the following non-ICT specific characteristics of an effective school leader. The following are based on *Leaders and their Learning, National Framework of Competencies for School Leaders* (APAPDC 2000).

An effective school leader has high levels of skill and knowledge in the areas of leadership and management and:

- ensures that the learning of students in the school is optimal;
- has vision, develops cooperatively a common purpose, is creative and inspiring in their interactions with others, and uses their talents in setting future directions for the school in a cooperative way;
- has an understanding of cultural values and the role of education in Australia today;

- negotiates with teachers, parents and community members on the direction the school is charting to achieve its mission and goals;
- undertakes consistent, systematic and critical review and reflection on all aspects of practice;
- provides an optimal learning environment where all educational issues are carefully considered, matched with current trends in curriculum content and processes and then evaluated;
- ensures the educational ideals of the school are fulfilled;
- ensures that a school is running smoothly and that the goals and common purposes leading to improved student outcomes are achieved.

Again these will be expanded to specifically address the 3rd and 4th dimensions of the ICT use, outlined in Section 2.12.

### 3.5.3 ICT standards for teacher educators

The following teacher educator standards are from the US Association of Teacher Educators (ATE). The ATE is affiliated with the National Council for Accreditation of Teacher Education. The full statement of standards is at [www.siu.edu/departments/coe/ate/standards/TEstandards.htm](http://www.siu.edu/departments/coe/ate/standards/TEstandards.htm). Research has failed to discover an Australian equivalent. These standards would serve as a basis from which ICT competencies standards could be derived (and be organised around).

Teacher educators:

- model professional teaching practices that demonstrate knowledge, skills and attitudes reflecting the best available practices in teacher education;
- inquire into, and contribute to, one or more areas of scholarly activity that are related to teaching, learning and/or teacher education;
- inquire systematically into, and reflect on, their own practice and demonstrate commitment to lifelong professional development;
- provide leadership in developing, implementing and evaluating programs for educating teachers that embrace diversity, and are rigorous, relevant and grounded in accepted theory, research and best practice;
- collaborate regularly, and in significant ways, with representatives of schools, universities, state education agencies, professional associations and communities to improve teaching, learning and teacher education;
- serve as informed, constructively critical advocates for high-quality education for all students, public understanding of educational issues, and excellence and diversity in the teaching and teacher education professions; and
- contribute to improving the teacher education profession.

### 3.5.4 Structure of ICT standards

This section would address how the standards will be structured and communicated. For example, the following structure, as evidenced from the literature, could be used to articulate the standards.

- Standards statements based on the non-ICT specific characteristics could be used as headings/organisers.
- Elaboration of the standards could be through descriptors and indicators of performance derived from the exemplars of practice.
- Specific links could be made to exemplars of practice.

## 3.6 Exemplars of Practice

This section would provide access to a comprehensive collection of exemplars of ICT practice and is integral to this framework proposal. The exemplars serve a range of purposes including:

- assisting in the development of descriptors and performance indicators to support the standards;
- providing a mechanism to illustrate and ‘bring to life’ the standards;
- providing ‘real life’ contexts for the standards to which teachers, school leaders and teacher educators can relate;
- providing guidance to teachers, school leaders and teacher educators in terms of reflecting on their practice and gaining ideas for improvement; and
- providing levels of ICT competence and practice to which teachers, school leaders and teacher educators can aspire.

The set of exemplars will need to be as comprehensive as possible so that all educators can ‘connect’ to them and draw from them to improve their practice. To cater for as wide an audience as possible, exemplars will need to be identified from all levels of schooling and represent all areas of the curriculum. They must also relate to each of the four stages of ICT competence and the four dimensions of ICT use identified in Section 4.4 of this report.

Consideration needs to be given to how exemplars are to be identified, represented and accessed. For example:

- what criteria should be used to identify exemplary practice;
- what format should be used to document the practice;
- how should they be published;
- how best can they be shared across Australia; and
- who should be involved in the process?

In seeking answers to these questions, the developers of the framework should draw on the experiences of previous projects involved with the identification and publication of exemplary ICT practice. Such projects include *Gateways — IT in the Learning Process* (DETYA, 1996) and the *Good Practice & Leadership in the Use of ICT in Schools* project (DETYA, 2000).

Notwithstanding what the answers may be, it is essential that the identification, documentation and publication of exemplary practice be an ongoing process. Structures need to be put in place to ensure that the collection does not remain static and that it continues to grow and develop.

## 3.7 Standards Validation

This section should address how the standards will be validated. Validation of standards is an essential part of the implementation of teacher professional standards to ensure their integrity and status within the profession. The framework should suggest a process of validation that involves the profession in examining the standards against identified exemplars of practice.

### 3.8 Assessment and Credentialing

This section discusses assessment and credentialing. The framework should not be specific about the nature of standards assessment and credentialing. The purposes for which standards developed from the framework are used will largely determine the assessment and credentialing processes employed and by whom. However, in devising and implementing such processes the users of this framework should be aware that a number of factors need to be taken into account.

There needs, firstly, to be recognition of the legitimate role that all stakeholders have in the assessment of teacher professional standards, and, secondly, that the purpose of the assessment should determine which group(s) be involved in the assessment process.

In terms of assessment methodologies, it is important that the status of the assessment process be such that it commands the respect of the profession. This can be achieved in a number of ways including ensuring that assessment is rigorous and valid, that appropriately selected and qualified assessors are used and that the process is fair and transparent. Appropriate moderation procedures between assessors will assist in a fair and valid assessment system.

The types of assessment instruments used need to be sufficiently varied and flexible to enable competence to be demonstrated in a variety of ways reflecting the rich diversity of teaching and learning practice. Much can be learnt from examining existing teacher professional standards assessment systems.

The assessment process must be equitable and affordable so that all potential candidates have the same opportunities in terms of access to assessment. The nature of the assessment process needs to be made clear to all potential assessment candidates in terms of how it is to operate, what is expected of them and how best to prepare.

The literature clearly indicates the importance of support mechanisms for candidates prior to and during the assessment process, and that an effective way to provide this is through the development of networks of candidates. Detailed feedback to all candidates following completion of assessment must be an integral part of the process and include opportunities for further development. Assessment evaluation and review procedures must also be integral to the process. Importantly, data for assessment evaluation comes from both candidates and assessors.

Appropriate credentialing must also be part of the process. Credentialing should provide recognition, both in professional and tangible forms, which is accepted and supported by the whole profession, including the employing authority. Consideration should also be given to how long the credential remains valid and what mechanisms, if appropriate, need to be put in place to provide renewal opportunities.

### 3.9 Framework Evaluation and Review Process

This section will address the evaluation and review process. A framework evaluation and review process is needed to ensure that the framework is kept up-to-date and relevant. A three-year review process should draw on data from users of the framework, standards development and implementation and feedback from teacher assessment undertaken as part of the implementation of any standards developed from the framework. The review process should be conducted at a national level by an independent body.

### 3.10 Background to the Framework

This section will give a brief background to the origins of the framework including a rationale based on the *National Goals of Schooling in the Twenty-First Century* (DETYA 1999) and the key action areas from *Learning in an Online World* (Commonwealth of Australia 1999). From this a rationale for the need to develop an ICT Competency Framework should be given. This section should also refer to the work of this project including the Literature Review and Mapping document and the analysis of the key issues and subsequent recommendations made in Section 2 of this report.

A suggested rationale could be:

The need for ICT competent teachers stems from the need for ICT competent students and for ICT-rich learning environments that enhance students' learning across the curriculum. Recent national and systemic documents abound with references to these needs. For example, they are specifically addressed in the *National Goals for Schooling in the Twenty-First Century* (DETYA 1999). Goal 1.6 states that when students leave school, they should be confident, creative and productive users of new technologies, particularly information and communication technologies, and understand the impact of those technologies on society.'

More recently, the Cuttance Report (Commonwealth of Australia 2001) cites a range of evidence to substantiate the potential of ICT to enhance learning environments and improve students' learning outcomes in both cognitive and non-cognitive domains as follows.

- First order effects refer to improved learning and stronger student motivation.
- Second order effects relate to ICT creating new contexts and environments for practice and being a potential catalyst for change of work roles, patterns, procedures and organisational groupings compared to those adopted in traditional classrooms.

The literature (ISTE 2000; Meredyth et al. 1999) strongly supports the notion that ICT competent teachers are fundamental to achieving the goals for students. However, the NEPMT report (MCEETYA 2000) stated that a problem was identified as part of their surveying of education systems as to the capacity of teachers to assess student ICT skills and knowledge due to the low level of teacher skills and knowledge. To overcome this problem, Meredyth et al. (1999) suggested, in part, that a regime should be established in school systems in which ICT skills are expected and are rewarded through standards for hiring, evaluating and promoting teachers.

The need for ICT competent teachers and school leaders is further expressed in *Learning in an Online World* (Commonwealth of Australia 1999). Two of the goals in the key action area of 'People' state that:

- All teachers will be competent users of information and communication technologies and able to apply these technologies to improve student learning.
- All educational leaders will understand how information and communication technologies impact on learning and will have the confidence and capabilities to lead and manage the changes required to maximise the benefits of these technologies in school education.

The report goes on to recommend a number of strategies to achieve these goals including the need to introduce strategic initiatives into teacher pre-service education to improve the ICT competence of commencing teachers and to develop teacher standards in using ICT in curriculum practice and incorporate teacher ICT standards into human resource management within education authorities and individual schools, including recruitment and promotion practices.

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## **Section 4**

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Proposal for National Sharing

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and Support through Online

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Networks and Services

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# 4 Proposal for National Sharing and Support through Online Networks and Services

The project contract refers to a proposal for ‘ways in which this work can be supported and shared at a national level through participation in online networks and services such as EdNA Online’. This includes the work completed on the project to date; any work undertaken to develop a national framework, the relevant standards and exemplars; and the broader initiatives and projects that support the concept of ICT-related standards for educators.

Given this broad definition of the work to be shared and supported, the following proposal addresses a wide range of strategies for the development of the framework at a national level. The researchers believe that this range of strategies is necessary because the actual task of sharing the work to date and supporting the development of a national framework is complex and involves many stakeholders. These include:

- Pre-service: teacher educators (foundation curriculum and professional studies staff) and pre-service teachers (of all levels Early Childhood, Primary and Secondary across all subject areas) both directly and through the relevant professional associations, e.g. the Australian Teacher Educators Association (ATEA), Australian Council of Deans of Education (ACDE), pre-service teachers;
- Schools: school leaders and teachers;
- Systems: government and non-government system administrators (curriculum, professional development and human resource people), teacher employers and teacher registration boards;
- Teacher professional associations: national KLA associations, National Education Forum (NEF), Australian Council for Computers in Education (ACCE), Australian College of Education, Australian Curriculum Studies Association, Australian Principals Association Professional Development Council and others; and
- Teacher Unions.

Discussions need to be held about the possibility of placing the development work under the auspices of MCEETYA through its ICT in Schools and Performance Measurement and Reporting Taskforces or other relevant MCEETYA taskforce. If this were to happen, it would be important that all stakeholders including professional associations, are properly engaged. Alternatively, ongoing work and development could remain independent of MCEETYA or AESOC’s work, but involve close liaison with relevant MCEETYA/AESOC work. There are advantages and disadvantages to any methods of proceeding with any development work that can be called ‘national’. Importantly, the process must involve active promotion of ICT standards in communities of teachers in concert with the broader ‘standards for teachers’ movement.

Similarly, the work focusing on teacher educators and pre-service teacher education students must involve significant dialogue with the broader community of teacher education. This area, ICT standards for teacher educators and the parallel institutional capabilities, might be one area where the Australian Council of Deans of Education could be asked to play a leading role. This role could include the collaborative development of draft standards nationally agreed and institutional capability statements.

Bringing together the diversity of views and needs of these stakeholders is a complex task. For example, the use of online networks, per se, would only be effective if they were a part of a broader strategy that involved active coordination, writing/development teams and face-to-face discussions and workshops, as well as online activity. The key online component would be a website to house the framework with links to and from key EdNA resources such as the *Gateways* (DETYA 1996) and *Leading Practice* (DETYA 2000) sites and to and from other national standards development projects.

Proposed strategies for support and sharing the work and to develop a framework at a national level include:

- The development of a website (under the auspices of EdNA) to house the framework and provides access to exemplars and other resources related to the refinement and use of the standards. The website should also provide access to EdNA (for example EdNA forums) or other tools needed for online events, activities and development tasks to support the work of the writing teams and exemplar working groups and to effectively engage stakeholders in the development process and subsequent use.
- The formation and support of writing teams (drawn from relevant stakeholders) for each of the following tasks:
  - The overall framework
  - Support Capability statements for
    - ~ systems and schools
    - ~ teacher education institutions
  - Examples of standards for
    - ~ beginning teachers
    - ~ teachers beginning to use
    - ~ accomplished teachers
    - ~ school leaders
    - ~ teacher educators.
- The formation and support of ‘exemplar’ working groups (drawn from relevant stakeholder groups). These groups would identify and connect with existing resources that might be useable in this project and modify existing exemplars or develop new exemplars so that the diversity of contexts, the levels of schooling and the full range of learning areas are represented in the database of exemplars.
- The organisation and support of local and national workshops, online events, activities and discussion groups that will provide the mechanisms for achieving the development of the framework and its subsequent use.
- The provision of ongoing support for the maintenance, review and refinement of the website and its resources to facilitate ongoing easy access and effective use by the wide variety of stakeholders.
- Employment of a coordinator to:
  - drive the above processes;
  - engage with the various major stakeholders in ways that strengthen their sense of ownership of the framework;
  - facilitate the work of the various writing teams and exemplar working groups; and
  - facilitate the development of a website and related resources.

Given the concurrency of the final stages of the Models of Professional Development (DETYA, 2001) project, consideration should be given to maximising outcomes of both projects by identifying synergies. For example, a major focus of the professional development (PD) networking could be participation in the various components above.

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## **Section 5**

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