



***Digital Education Revolution
Implementation Roadmap***

**Advice to the
Productivity Agenda Working Group
Schooling Sub-group**

**from the
Australian Information and Communications Technology in
Education Committee's (AICTEC)**

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1. Introduction

Through the Digital Education Revolution (DER), the Australian Government is working with jurisdictions and school sectors to support the development of technology enriched learning environments. The DER forms a key element of the broad education agenda and a wider strategy aimed at improving national productivity and workforce and social participation that is being pursued by the Council of Australian Governments (COAG) through its Productivity Agenda Working Group (PAWG). All state and territory governments have agreed to a national, coordinated and collaborative partnership approach to developing and implementing the DER. COAG¹ has charged the Australian Information and Communications Technology in Education Committee (AICTEC)² with providing advice on cross sectoral issues so that investments in the DER can benefit education as a whole and on strategies to integrate investments in ICT with wider educational objectives.

2. Purpose

This advice has been prepared by AICTEC, to assist the PAWG Schooling Sub-group in the development of an Implementation Roadmap for the DER. It has been informed by the vision for the DER and related initiatives set out in the DER Strategic Plan³, agreed by PAWG on 5 September 2008.

AICTEC believes the DER Implementation Roadmap should identify priority areas where a national, collaborative and cross-sectoral approach is required to underpin and facilitate the implementation of the DER and to drive substantive improvements in how technology is being used across Australian education and training to improve educational outcomes for students.

The Roadmap should provide a collaborative framework within which cooperative national and individual action can occur to deliver the shared vision for the DER. It should also provide the parameters within which individual stakeholders can make use of existing and new initiatives to contribute to the vision.

3. Fundamentals of the Digital Education Revolution Implementation Roadmap

Contexts for implementation

The objectives and priorities under the umbrella of the DER will be different for different jurisdictions, sectors, schools, teachers, students and parents, and will change over time – in some instances rapidly – with experience, growth of expertise and as educational and technological environments change and develop. Responsibility for achieving DER goals will depend on the goal and the stakeholders involved.

3.1 The Australian Government

Through its DER policy, the Australian Government has already committed more than \$2 billion to stimulate a quantum increase in access to and utilisation of ICT as a tool for improving education outcomes in a digital world and globalised economy.

3.2 COAG

COAG has charged its Productivity Agenda Working Group with overseeing implementation of the DER as a strategic means for progressing its productivity and participation agendas.

¹ DER Implementation Plan, endorsed by COAG on 26 March 2008.

² Information about AICTEC is available at www.aictec.edu.au.

³ *Success through partnership – Achieving a national vision for ICT in schools – Strategic Plan to guide the implementation of the Digital Education Revolution initiative and related initiatives*

COAG has set goals⁴ for early childhood development, schooling, skills and workforce development, Indigenous educational attainment and addressing the educational requirements of schools in low socio-economic status communities.

COAG has also agreed⁵ to the establishment of a national curriculum authority under Commonwealth legislation and accountable to all Australian governments. The Australian Curriculum, Assessment and Reporting Authority (ACARA) will bring together the national curriculum, assessment and data management, analysis and reporting at a national level. The legislation establishing ACARA passed both Houses of Parliament on 4 December 2008.

At the COAG meeting on 29 November 2008⁶, the Australian, State and Territory governments reiterated their agreement to work in partnership to lift the quality of education and training and target resources where they are most required. Under the new National Education Agreement, the Skills and Workforce Development Agreement and related National Partnership agreements, funding has been allocated to improve access to early childhood education, literacy and numeracy, principals' leadership and teacher quality, educational outcomes for disadvantaged school communities and the delivery of vocational education and training. Funding has also been allocated for legitimate additional costs of implementing the National Secondary School Computer Fund. The agreements set out shared national reform directions, specific deliverables and roles and responsibilities.

3.3 MCEETYA

MCEETYA Ministers strongly support the DER⁷ as a key strategic tool in raising Australia's education and training to world class standards. The *Joint Ministerial Statement on Information and Communications Technologies in Australian Education and Training: 2008-2011 (Joint Ministerial Statement)* endorsed by all Australian education and training Ministers in June 2008⁸ commits Ministers to national collaboration across jurisdictions and sectors, sharing resources and expertise, and leveraging existing initiatives.

The priorities set by MCEETYA⁹ in the areas of early childhood education, schooling and VET provide valuable context for DER implementation. These include national goals for schooling¹⁰, low socio-economic school (SES) communities, quality teaching, reducing Indigenous education disadvantage, the national training system, and national curriculum and reporting arrangements.

3.4 The education sectors

National collaboration since 2000 between the government, Catholic and Independent schools sectors has resulted in a national pool of digital resources, supportive infrastructure to facilitate distribution and sharing of digital resources, interoperability standards, strong partner relationships with the cultural sector and longitudinal research in the uptake of ICT in teaching and learning. The schools sector has made significant progress on defining standards in learning design, protocols for licensing third party digital resources for educational use and innovative search and discovery technologies and protocols. Considerable agreement was reached in defining the *Learning in an online world* strategy, framework and action plans.

Jurisdictional access to the existing pool of digital content and national infrastructure is facilitated either through local portals or directly. This national infrastructure enables the sharing of content and the opportunity to support collaborative development to support national

⁴ See COAG Communiqué for 26 March 2008 meeting and MCEETYA Communiqué from 17 April 2008.

⁵ See COAG Communiqué for 2 October 2008 meeting.

⁶ See COAG Communiqué for 29 November 2008 meeting.

⁷ See MCEETYA Communiqué from 17 April 2008.

⁸ http://www.mceetya.edu.au/verve/_resources/AICTEC_JMS_on_ICT_in_Aust_Ed_and_Training.pdf

⁹ See MCEETYA Communiqué from 17 April 2008.

¹⁰ http://www.mceetya.edu.au/mceetya/melbourne_declaration,25979.html

curriculum implementation. A system has been developed to create persistent identifiers that will support the efficient management and distribution of content. Jurisdictions are supporting the uptake of ICT in the classroom by providing professional development and software tools.

The independent school sector recognises the importance of facilitating participation in a strategy which provides enhanced quality of service at a sustainable cost and continues to work to this end. There are many innovative ICT related activities taking place in independent schools and Independent Schools Council of Australia (ISCA) and state associations continue to encourage a collaborative, cross sectoral approach to sharing experiences, resources and professional development activities. The sector is aware of the need to keep individual schools well informed of initiatives and emerging opportunities, and will continue to provide forums for this information to be shared.

The Australian Catholic Education Network (to be known as *Catholic Network Australia*) has been in development since mid 2007. This involves bridging the existing wide area networks and providing a single network for all Australian Catholic schools to learn, collaborate, research and publish. The National Secondary Schools Computer Fund (NSSCF) and Fibre Connections to Schools (FCS) programs directly impact on this initiative.

The DER provides an opportunity to build on existing programs and develop approaches that will facilitate sharing and leveraging of expertise, resources and efforts across, and collaboration between, the government and non-government schools, VET and higher education sectors.

The increasing overlap and blurring of the schools, VET and higher education sectors will present new opportunities and challenges in areas such as interoperability, technical standards, digital architecture and sharing curriculum materials, tools and other resources.

Taking a holistic approach which actively pursues alignment between education sectors will support the broader goals of improving education outcomes, productivity and workforce participation. For example, the VET sector's national e-learning strategy, the Australian Flexible Learning Framework, has conducted an integrated program of initiatives since 2000, based on a model of national collaboration. There is clear potential to develop pathways connecting to, and learning from, the Framework's experiences in building staff capability, online content and services development, identification and establishment of standards, policy resolution and engagement of individual learners and industry. In particular VET is well advanced in its use of technology-enabled learning and its developmental work on e-standards for education and training. The Learning Object Repository Network (LORN) is another example of an opportunity for the DER to leverage work already done in the VET sector.

For the VET sector, particular challenges will include the diversity of delivery locations and the range of providers and participants. Learning anywhere, anytime is already an operational reality for the VET sector to meet the requirements of students in schools, on campus, working from home, in the field or on the job and flexible learning methods and wireless connectivity have significant roles to play. In this context, early attention should be given to mobile infrastructure (like PDAs and smart phones), virtual class room software and a widely accepted e-portfolio tool. Increasing engagement of the VET sector with the DER agenda being developed for the Teaching for the Digital Age will be important.

The Flexible Learning Advisory Group (FLAG) will guide the VET sector's Australian Flexible Learning Framework in its preparation of plans, strategies and processes to assist the VET sector to benefit from the DER through its support of a cross-sectoral approach to DER implementation.

The higher education sector has substantial expertise to offer in areas such as advanced and collaborative networking technologies and the development of repositories. Raising the priority and profile of DER-related issues in the highly decentralised higher education sector will be an important challenge for successful implementation of the DER.

Universities will be consulted on the implications of the DER for teacher education to equip pre-service teachers with the skills and capabilities to use ICT to appropriate effect both in and beyond the classroom. A challenge for universities in responding to this expectation will be to develop their *own, ongoing* capacities, not only in the education faculties but across all disciplines. A further challenge will be to ensure that academics effectively demonstrate ICT-enriched pedagogies in the relevant subject areas, particularly in light of the current ageing of the academic workforce, comparisons with other Australian professional groups and students' expectations. Universities are encouraged to participate in efforts to develop the online curriculum resources, tools and digital architecture identified elsewhere in this document and to review the implications for their own policies and protocols.

Innovative use of ICT in the early childhood education and care systems can support the delivery of nationally consistent childhood education, particularly given the diversity of delivery locations and providers in the early childhood education and care sector. Increased collaborative networking between the early childhood and schools sectors can support children's transitions to school and build educators' professional knowledge and skills. There is a developing trend towards a systemic approach to ICT in pre-school settings, including in regard to bridging to schools. Improving infrastructure and access to appropriate online learning resources will also increase the early childhood educator's toolkit for extending children's learning.

4. Principles that underpin the Digital Education Revolution implementation

- I. DER implementation and initiatives must support MCEETYA and COAG goals for improving learning outcomes and Australia's skills base.
- II. Teachers and educators require the pedagogical knowledge, confidence, skills, resources and support to creatively and effectively use online tools and systems to engage students.
- III. Repositories of relevant, suitable, exciting, culturally appropriate, discoverable and affordable materials must be available, especially in key learning areas such as English, mathematics, the sciences, history, languages and geography.
- IV. Program guidelines and implementation strategies for DER initiatives should incorporate maximum flexibility to produce the best outcomes both within and across the DER elements and also over the life of each initiative.
- V. States and territories, Catholic and independent schools, VET and higher education sectors should be able to develop a variety of models to manage their contribution and participation, to be agreed with the Australian Government.
- VI. There should be strong and ongoing communication between the Australian, state and territory governments, the Catholic and independent schools sectors, school communities and their representative bodies, the VET and higher education sectors of education and training, bodies charged with responsibility for implementing other elements of the wider Education Revolution agenda and the wider community.

Through the *Joint Ministerial Statement*, Ministers agreed to:

- ♦ National collaboration across Australian education and training jurisdictions and sectors to share resources and expertise, and to leverage existing initiatives while recognising the importance of innovation and experimentation.
- ♦ National, cross jurisdictional and cross sectoral approaches through the Australian ICT in Education Committee to address the ICT enablers of technology rich learning environments: developing educators' capabilities; access to computers and ICT equipment; secure and robust infrastructure, including broadband; systems and architectures that support access, transfer and sharing of information within and between institutions; and affordable access to appropriate online learning resources.

5. The links between the DER Strategic Plan, key policy frameworks and DER initiatives

5.1 DER vision statements

The vision guiding the DER is articulated in the DER Strategic Plan as four statements:

1. Students undertake challenging and stimulating learning activities supported by access to global information resources and powerful tools for information processing, communication and collaboration;
2. Teachers devise student centric programs of learning that address agreed curriculum standards and employ contemporary learning resources and activities;
3. Parents support students in their learning by monitoring programs and progress and by communicating with teachers online; and
4. The Australian, state and territory governments commit to national ICT infrastructure including access to broadband bandwidth, digital learning resources and activities, national curriculum and continuing professional development for teaching staff in best practice utilisation of technologies to improve learning and teaching outcomes.

5.2 DER funding elements

This vision is reflected in the following four agreed DER policy areas identified for national coordinated and cross-sectoral collaboration. While initial funding for the DER has been provided by the Australian Government, state and territory governments and the independent and Catholic school sectors also have their own separate but related policy and program commitments. Listed below are four key funding elements of the Australian Government's investment in the DER.

1. **National Secondary School Computer Fund**
through the *National Secondary School Computer Fund*, the Australian Government is providing new or upgraded ICT for secondary school students in Years 9 to 12. Schools will be able to apply for up to \$1 million over the life of the Fund dependent on enrolment and need and they will be able to purchase in the first instance computers and subsequently interactive whiteboards, data projectors, digital cameras and other technologies. To support a national move to a computers to student ratio of 1:1 by 2011, the Australian Government has provided additional funds for costs associated with the implementation of the Fund.
2. **Supporting the provision of high-speed broadband connections**
through the *Fibre Connections to Schools* initiative, the Australian Government has committed \$100 million to contribute to the provision of fibre to school premises at speeds of up to 100 megabits per second and to support schools in remote regions to receive a standard of service as close as possible to that provided by the National Broadband Network download speed of 12 megabits per second.
3. **Online curriculum resources and digital architecture**
building on existing work, the Australian Government has committed \$32.6 million to work with state and territory school authorities and the Catholic and independent schools sectors to:
 - develop curriculum resources and learning tools, focusing on the key learning areas in alignment with the national curriculum as it is developed and in accordance with agreed quality and technical standards;
 - provide affordable access to, and promote the usability and discoverability of, high quality learning resources, lesson and course plans from digital

repositories, from schools and academic institutions as well as from cultural and scientific organisations; and

- support the development of learning tools, policies, protocols, infrastructure and standards required to enable schools to safely and seamlessly communicate, collaborate and access and use resources across school, system and jurisdictional boundaries.

4. **Support for teachers to make effective use of ICT in teaching and learning**

through the *Teaching for the Digital Age* initiative, the Australian Government will work with:

- State and territory governments, teacher and educator employers and teachers' professional organisations to ensure they progressively offer professional learning opportunities for existing teachers to upgrade or develop proficiency in the effective and innovative/creative educational use of ICT; and
- the AESOC¹¹ working group led by Victoria that is developing a national accreditation system for teacher education courses. AICTEC's Teaching for the Digital Age Advisory Group (TDAAG) will provide advice to ensure that the national graduate teacher standards include rigorous requirements regarding the use of technology in teaching.

5.3 DER strands of change for national action

The DER Strategic Plan identified four strands of change requiring joint national action: leadership, infrastructure, learning resources and teacher capability. Significant initiatives that will support each strand at the national, Australian Government and school systems levels are listed below.

A. Leadership

Ensure that schools have a coordinated plan for the provision of infrastructure, learning resources and teacher capability to address the educational challenges of the 21st century.

It will also be important that school leaders are equipped to plan and lead change that delivers digital learning to students in all areas and that they understand the potential of ICT and the impact on learning of implementing a coordinated plan.

National/Cross-sectoral

- ◆ Joint Ministerial Statement on ICT in Education and Training 2008-11
- ◆ The National Declaration on Educational Goals for Young Australians (the Melbourne Declaration)¹²
- ◆ National Curriculum by 2010
- ◆ Establishment in 2009 of the Australian Curriculum, Assessment and Reporting Authority (ACARA)
- ◆ MCEETYA – Draft *Digital Education Making Change Happen*
- ◆ AICTEC's ongoing work program, including work of AICTEC Advisory Group: Teaching for the Digital Age (TDAAG)

Australian Government initiatives

- ◆ DER policy and funding support
- ◆ Support for schools initiatives
- ◆ Support for teachers initiatives

State/Territory Government initiatives

- ◆ State/Territory initiatives on e-learning planning and school transformation

¹¹ AESOC is the Australian Education Systems Officials Committee that supports MCEETYA.

¹² http://www.mceetya.edu.au/mceetya/melbourne_declaration,25979.html

B. Infrastructure

Access to digital learning resources and tools for processing information, for communication and collaboration.

National/Cross-sectoral

- ◆ MCEETYA Charter of Principles for Cross-Sectoral Collaboration on Interoperability Across the Australian Education and Training Sectors
- ◆ AICTEC Learner Identity Management Charter of Principles
- ◆ AICTEC's ongoing work program, including work of AICTEC Advisory Groups: Intellectual Property and Privacy in Technologies Advisory Group (IPPTAG) and National Interoperability and Digital Architecture Advisory Group (NIDAAG)

Australian Government initiatives

- ◆ Online curriculum tools, resources and digital architecture
- ◆ NSSCF
- ◆ FCS

State/Territory Government initiatives

- ◆ State/Territory school system initiatives on learning management systems, e-portfolios, collaboration and communication spaces

C. Learning Resources

Resources that stimulate, challenge and assist students in achieving desired learning outcomes, including collaborative and interactive activities as well as instructional and reference materials.

Work in this area should, where suitable, leverage the existing bank of digital resources and expertise.

National/Cross-sectoral

- ◆ The National Declaration on Educational Goals for Young Australians (the Melbourne Declaration)¹³
- ◆ National Curriculum by 2010
- ◆ Establishment in 2009 of the Australian Curriculum, Assessment and Reporting Authority (ACARA)
- ◆ FLAG
- ◆ AICTEC's ongoing work program, including work of AICTEC Advisory Groups: IPPTAG and NIDAAG
- ◆ MCEETYA companies, such as The Curriculum Corporation and *education.au Ltd*

Australian Government initiatives

- ◆ Online curriculum tools, resources and supporting technical frameworks

State/Territory Governments initiatives

- State/Territory school system initiatives on digital education resources

D. Teacher Capability

Teachers have the skills and tools to design and deliver learning programs that meet students' requirements and harness the resources of the digital revolution. As part of this, teachers and pre-service teachers will require a good understanding of how the integration of ICT can support changed pedagogies and improve learning, as well as ICT skills.

¹³ http://www.mceetya.edu.au/mceetya/melbourne_declaration,25979.html

National/Cross-Sectoral

- Support for initiatives to attract, train, place, develop and retain quality teachers and school leaders through the 'Smarter Schools Quality Teaching National Partnership', including the 'New Pathway into Teaching for Top Graduates'
- MCEETYA work on teaching quality and standards, including to develop a national accreditation system for teacher education courses
- AICTEC's ongoing work program, including work of AICTEC Teaching in the Digital Age Advisory and Reference Groups

Australian Government initiatives

- Funding for ICT-related professional development for teachers through the Australian Government Quality Teaching Program (AGQTP; under both the state/territory and national projects elements)

State/Territory Governments initiatives

- State/Territory school system initiatives on planning and teacher professional development.

5.4 Interdependencies in the DER

The following diagram illustrates the relationships and interdependencies of component parts of the DER and key strategic national education policies and agreements aimed at improving education outcomes across Australia.

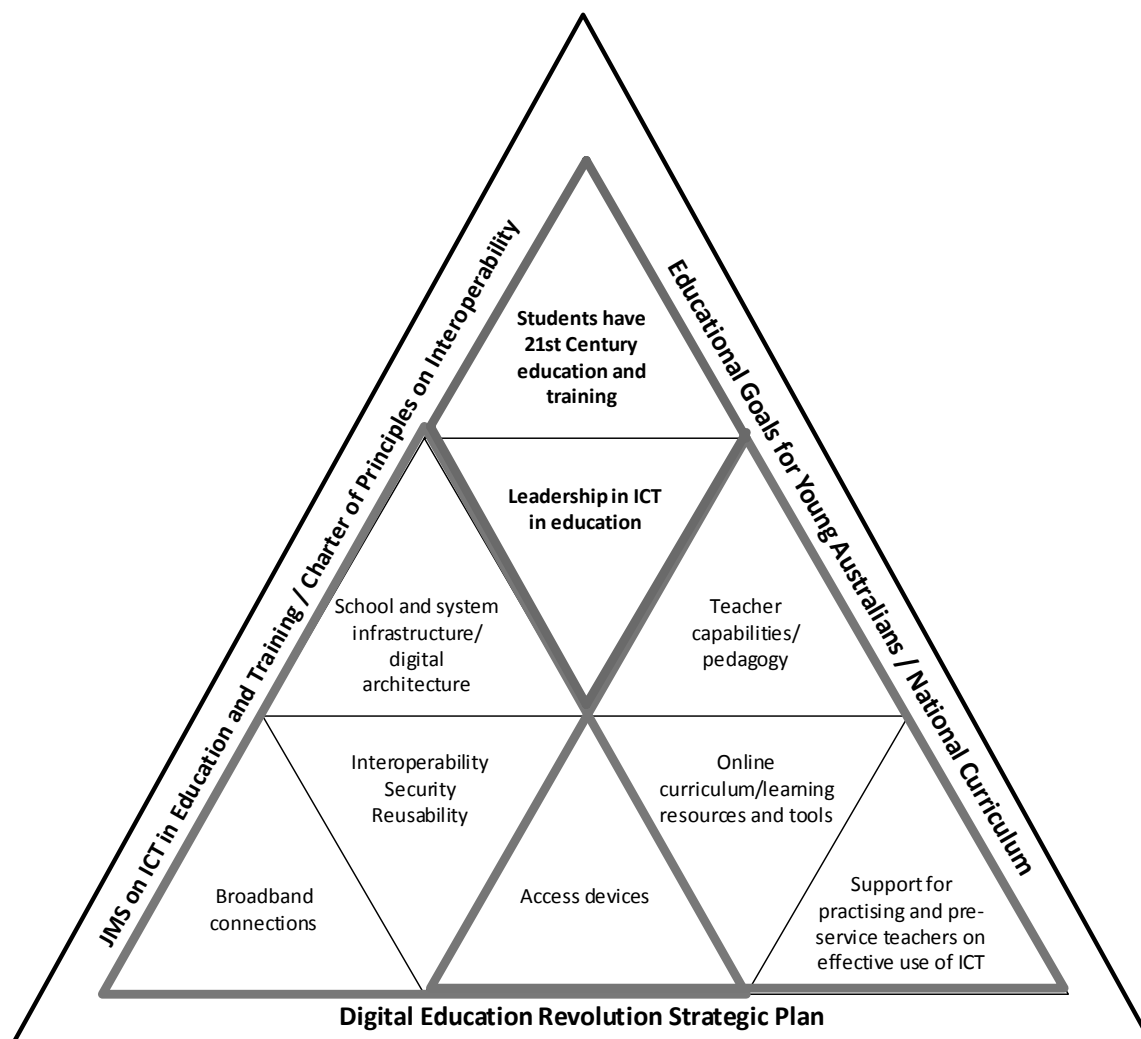
Education systems are responsible for ensuring that every student's learning environment is ICT rich and that ICT investments are directed toward improving educational outcomes. As outlined above, the DER Strategic Plan calls for a combined effort on:

- Leadership (to guide implementation)
- Infrastructure (to technically enable the DER)
- Learning resources (to underpin ICT-rich teaching and learning)
- Teacher capability (to enrich pedagogy)

Achievements in one area will be prerequisites for progress in the other areas and will influence what can be done and the quality of outcomes. Simultaneous and in-tandem progress on multiple fronts is required to help build momentum and to maximise the value that can be gained through collaboration. This collaboration will result in the creation of new opportunities, as well as build on and complement expertise gained in existing programs within jurisdictions.

To maximise improvements to learning and teaching outcomes, the component parts of the DER and national collaboration should be 'framed' by, and provide practical support for the delivery of, national education and training policies and frameworks, including in areas such as the national curriculum, reporting and assessment arrangements, and the establishment of professional standards for teachers.

Diagram 1: Interdependencies of the Digital Education Revolution



JMS = *Joint Ministerial Statement on Information and Communications Technologies in Australian Education and Training: 2008-2011*

6. Strategies and timelines for implementation

To achieve the outcomes and implement the strategies set out in the DER Strategic Plan (see Table 1, columns 1-4), the Australian, state and territory governments, the Catholic and independent school sectors, the VET and higher education sectors, and other stakeholders will need to work individually, cooperatively and collaboratively to develop plans and initiatives that are built on the principles set out in section 2 of this advice. These contributions should be developed in accordance with the DER Strategic Plan and Implementation Roadmap and the associated planning should:

- Identify groups accountable for achieving or monitoring progress;
- Identify objectives for which each group is accountable and select performance measures;
- Map existing activities and gather baseline performance data;
- Identify gaps;
- Propose solutions including opportunities for leveraging existing activities to fill gaps; and
- Monitor progress and redirect efforts as required.

Work is already well underway on many of the fronts highlighted in Diagram 1, Interdependencies of the DER. AICTEC's focus is on facilitating a national, cross-sectoral approach and collaboration in areas that will underpin the actions of individual jurisdictions and education sectors.

Column 5 of Table 1 sets out indicative outcomes for a number of areas that AICTEC is monitoring, intending to provide advice on, and/or has work underway on priority projects. These indicative outcomes, and the strategies (column 4) for achieving the desirable outcomes listed in column 3, will continue to be reviewed and further developed by the responsible parties as component implementation plans and a strategy for monitoring and evaluation are further developed.

Table 1: Indicative outcomes from Digital Education Revolution initiatives

* Words in blue are suggested changes to the DER Strategic Plan.

	Program elements	Desirable Outcomes	Strategies for joint national action	Indicative outcomes from specific DER initiatives
Leadership	Leadership Development	School principals and leadership teams are equipped to plan and lead change that delivers digital learning to all students in all areas of learning	<ul style="list-style-type: none"> ◦ School sector leadership development programs 	Teaching for the Digital Age – <ul style="list-style-type: none"> ◦ Schools develop and implement ICT plans to support ICT integration ◦ School leaders develop pedagogical understandings about how ICT enables improved teaching and enhances student outcomes ◦ School leaders engage in professional learning about effective, innovative inclusion of digital learning, tools and resources in teaching to enhance student learning outcomes ◦
	eLearning Planning	All schools have a digital learning plan covering, but not limited to, infrastructure, learning resources and teacher capability	<ul style="list-style-type: none"> ◦ School system planning guides and requirements ◦ MCEETYA ICT planning Framework ◦ DER ICT in Schools Guide 	Teaching for the Digital Age – <ul style="list-style-type: none"> ◦ Schools develop plans to support ICT integration

	Program elements	Desirable Outcomes	Strategies for joint national action	Indicative outcomes from specific DER initiatives
Infrastructure	Access devices	Every student has access to digital resources and tools to enable 21 st Century learning across the curriculum	<ul style="list-style-type: none"> ◦ National Secondary School Computer Fund supports access for all students in years 9-12 ◦ Jurisdiction ICT provisioning ◦ Possible national sharing of ICT purchases and purchasing power 	NSSCF – <ul style="list-style-type: none"> ◦ Every secondary school in Australia has provision for each student in Years 9-12 to have access to ICT to enable students to engage with educational tools of the 21st Century ◦ The ICT requirements of Australian secondary schools are identified and, through meeting these requirements, equity of access is provided to students in years 9-12
	Interoperability	Agreement across Commonwealth, States, Territories and school sectors on a co-ordinated approach for managing digital information, resources and tools	<ul style="list-style-type: none"> ◦ An agreed national interoperability framework based on international and national standards used for the exchange of data and resources between jurisdictions ◦ AICTEC sponsored interoperability initiatives ◦ DER funding for Interoperability Projects 	Online curriculum resources and digital architecture – <ul style="list-style-type: none"> ◦ Learning resources from digital repositories are accessible to, and discoverable by, teachers and students ◦ Standards, protocols (eg managing identities) and tools are developed and agreed to enable teachers and students to safely and seamlessly communicate, collaborate and access and share information across schools, systems and jurisdictions ◦ Students are provided with rich experiences in safe and secure environments so they can engage with other schools and external experts ◦ School systems develop and implement a co-ordinated approach to managing digital information, resources and communication
	Connectivity	Schools are provided with affordable high speed broadband connections with associated low download costs	<ul style="list-style-type: none"> ◦ Fibre Connections to Schools (FCS) initiative ◦ School sector connectivity initiatives ◦ Local area networks 	Fibre Connections to Schools (FCS) – <ul style="list-style-type: none"> ◦ increased proportion of schools provided with fibre ◦ increase in the standard of broadband service to schools in remote regions to up to 12 Megabits per second Teaching for the Digital Age – <ul style="list-style-type: none"> ◦ School communities safely and seamlessly communicate, collaborate and access and use information across schools, systems and jurisdictions enabled by development of nationally agreed standards, protocols and tools ◦
	Access Portals	Students, teachers and parents have access to digital resources, information and tools and agreed performance data anywhere, anytime	<ul style="list-style-type: none"> ◦ DER parent portal initiative ◦ Jurisdiction, sector and school provision of portals 	Online curriculum resources and digital architecture – <ul style="list-style-type: none"> ◦ Learning resources from digital repositories are accessible to, and discoverable by, teachers and students

	Program elements	Desirable Outcomes	Strategies for joint national action	Indicative outcomes from specific DER initiatives
Learning resources	New content creation	New curriculum resources for teachers, parents and students in areas of identified need	<ul style="list-style-type: none"> ◦ Collaborative content creation supported by Commonwealth, state and territory funds ◦ Content developed and procured by schools and school sectors 	Online curriculum resources and digital architecture – <ul style="list-style-type: none"> ◦ High quality curriculum resources are developed in the key learning areas of English, mathematics, the sciences, history, languages and geography, in alignment with the national curriculum and in accordance with agreed quality and technical standards
	Access to existing resources	National access to distributed pool of high quality resources from school sectors, cultural, scientific and academic institutions without incurring further download and copyright charges. Teachers routinely share resources and best practices	<ul style="list-style-type: none"> ◦ DER funded content in new priority areas ◦ School system content cleared for sharing ◦ Online resources from partner organisations ◦ Education friendly copyright arrangements 	Online curriculum resources and digital architecture – <ul style="list-style-type: none"> ◦ Learning resources from digital repositories are accessible to, and discoverable by, teachers and students
Teacher capability	Pre-service training	All new pre-service teachers achieve competence in the use of ICT before they graduate including how ICT can effectively support improved student outcomes	<ul style="list-style-type: none"> ◦ DER consultation with Deputy Vice Chancellors (Academic) and Deans of Education re pre-service ICT capability standards ◦ Access to ICT tools for pre-service teachers 	Teaching for the Digital Age – <ul style="list-style-type: none"> ◦ All graduate teachers entering the profession have the knowledge, resources, skill and capabilities which allow them to meet national standards in ICT
	In-service Professional Development	In-service teachers are progressively trained to upgrade or develop competence in the educational use of ICT and routinely engage in sharing professional knowledge	<ul style="list-style-type: none"> ◦ Australian Government Quality Teacher Program (AGQTP) funding targeted at ICT in pedagogical practice capability ◦ School system capability benchmarking and professional development programs ◦ Knowledge building and sharing systems for teachers 	Teaching for the Digital Age – <ul style="list-style-type: none"> ◦ Teachers and school leaders contribute to early career teachers' disposition, knowledge, skills and capabilities to meet national standards in ICT ◦ Teachers and school leaders engage in professional learning about effective innovative inclusion of digital learning, tools and resources in teaching to enhance student learning outcomes ◦ Teachers and school leaders are supported to develop pedagogical understandings about how ICT enables improved teaching and enhances student outcomes ◦ Teacher registration and accreditation authorities incorporate the capacity to use ICT to enhance teaching and learning as a requirement for registration ◦ School systems are supported to incorporate into teacher standards an expectation of how ICT enhances teaching and learning practices

Diagram 2: Timeline for funding associated with Australian Government Digital Education Revolution initiatives – DRAFT

	DIGITAL EDUCATION REVOLUTION STARTED					AICTEC Advisory and other Group(s) dealing with related issues:	
Teaching	Teaching for Digital Age Advisory Group and Reference Group established Development & delivery of online PD resources (AGQTP national) ACER Symposia	AGQTP (state/territory) - ICT PD for teachers AGNAQS mentoring & master classes Development & delivery of ICT in pedagogical practice PD workshops (AGQTP national)	Ongoing collaboration strategies to support teachers to effectively integrate ICT into pedagogical practices		Teachers make innovative & effective use of ICT in pedagogy		TDAAG, IPPTAG
Online Curriculum Resources and Tools	Review of online curriculum resources and future needs Develop framework to progress interoperability across IT systems	Priorities for the development & coordination of online resources aligned with evolving national curriculum & DER National guidelines, standards and tools for the delivery of online curriculum	Coordination of the development, delivery & discoverability, by teachers & students, of resources, tools & services for online curriculum & learning				IPPTAG, NIDAAG
Fibre Connections to Schools	National baseline of school connectivity National vision of connectivity for Australian schools High level strategies to improve schools' connectivity Investment principles for fibre connections to schools	Fibre connections to schools program guidelines Initial proposals Final proposals Investments announced, contracts established	Contract management and program monitoring and evaluation		Improved connectivity of schools, including possible schools networks		IPPTAG, NIDAAG, LIMF Reference Group
NSSCF	Survey to identify computer to student ratio completed R1 opened to schools 1:8 or worse R2 opened to all schools to go to 1:2 Years 9-12 across Australia 1:2 ratio	National Secondary School Computer Fund Continues			Every secondary school in Australia has provision for every student in Years 9-12 to have access to a computer (1:1)		IPPTAG, NIDAAG, LIMF Reference Group
	2008	2009	2010	2011	2012		

DER: Digital Education Revolution
 PD: professional development
 LIMF Reference Group: Learner Identity Management Framework Reference Group

7. Evaluation and monitoring strategies

An evaluation and monitoring plan is required to track progress in implementing the DER and to assess its effectiveness and efficiency. It will also provide evidence and guidance on necessary changes in approach and/or priorities. It may be appropriate for PAWG to review progress against some elements of the DER each year, while a more comprehensive evaluation will not be possible for a number of years and should take into account the inherent time lags between access, take-up and measurable outcomes, and data collection issues.

The MCEETYA publication *Digital education - making change happen* provides useful advice on how the integration of ICT in teaching, learning and administration can be gauged at the school and system level.

Evaluation of the DER implementation strategy as a whole is also required.

AICTEC suggests that, while strategies for individual DER initiatives will be developed in accordance with normal public accountability requirements, an overarching monitoring and evaluation strategy be developed for the DER in 2009. To assist the Schooling Sub-group, AICTEC will convene a workshop of key stakeholders and advisers in early 2009, following COAG's agreement to the DER Strategic Plan and Implementation Roadmap, to inform development of advice on an evaluation methodology for the DER.

8. Communication strategies

Communication and consultation are a shared responsibility, with the DER partners responsible for ensuring that their constituencies are appropriately involved and informed.

The involvement of the non-government schools, VET and higher education sectors, through AICTEC, its Advisory Groups and other direct consultations, is critical to successful implementation of the DER. The DER should leverage from activities in all of these sectors, and the DER's impact on these sectors is potentially significant. This participation provides both timely advice to DER decision makers in the government systems and a conduit for collaborative activities. It also helps ensure the constituents in each of these sectors are well informed and able to engage in evolving opportunities.

To date, communication and consultation has been predominantly focused on the NSSCF and FCS elements of the DER. Following COAG's agreement to the DER Strategic Plan and Implementation Roadmap, a broad DER communication plan should be developed to support:

- consultation and communication activities that appropriately target and engage stakeholders;
- consistency of messages among partners;
- transparency in decision making; and
- complementary effort to reduce duplication and maximise impact of communication activities.

Strategies to inform and engage students, parents and school communities, in particular teachers, principals and other school leaders, should be included in this plan. Consensus is required amongst stakeholders about what will be delivered and supported and who will be accountable for which outcomes before a comprehensive communication plan can be agreed.

9. Stakeholders involved in Digital Education Revolution implementation

This section lists the agencies with a significant stake in the DER implementation and the next section describes governance arrangements involving many of the same stakeholders.

Table 2: Digital Education Revolution Stakeholder groups

	DER element	Stakeholder groups
Leadership	Overall	<ul style="list-style-type: none"> ○ DER governance stakeholders, as described below ○ Australian, state and territory governments ○ Students ○ National parents organisations and school governing bodies ○ National associations representing teachers and school leaders ○ Indigenous education representatives ○ Peak Catholic education associations ○ Peak Independent schools associations ○ Peak Vocational Education and Training representatives ○ Peak university and teacher education bodies ○ Education Chief Information Officers' (CIOs) Group ○ Australian Government departments ○ Peak early childhood education organisations and teachers' associations ○ Cultural, scientific and research institutions ○ Education and ICT in education academics and researchers
Infrastructure	Fibre Connections to Schools	<ul style="list-style-type: none"> ○ School authorities in each jurisdiction and sector ○ Industry and broadband service providers ○ AICTEC ○ Education CIO's Group
	Interoperability, integrated learning environments, repositories and copyright (digital architecture)	<ul style="list-style-type: none"> ○ School authorities in each jurisdiction and sector ○ AICTEC Intellectual Property and Privacy in Technology Advisory Group (IPPTAG) ○ AICTEC National Interoperability and Digital Architecture Advisory Group (NIDAAG) and Reference Group ○ Education CIOs Group ○ Online curriculum developers, service providers and industry ○ Relevant ICT standards bodies
	NSSCF	<ul style="list-style-type: none"> ○ Education CIOs Group ○ NSSCF assessment authorities ○ AICTEC

	DER element	Stakeholder groups
Learning resources	Online curriculum resources	<ul style="list-style-type: none"> ○ School authorities in each jurisdiction and sector ○ National Curriculum Board ○ Online curriculum developers, service providers and industry ○ Relevant ICT standards bodies ○ AICTEC Intellectual Property and Privacy in Technology Advisory Group (IPPTAG) ○ AICTEC National Interoperability and Digital Architecture Advisory Group (NIDAAG) and Reference Group ○ Education CIOs Group
Teacher capability	Teaching capabilities	<ul style="list-style-type: none"> ○ AICTEC Teaching for the Digital Age Advisory Group membership: <ul style="list-style-type: none"> ○ Government school systems ○ Catholic and independent sectors ○ Australian Government schools policy and associated Reference Group ○ AICTEC Intellectual Property and Privacy in Technology Advisory Group (IPPTAG) ○ Education CIOs Group ○ Teaching Australia ○ Teacher institutes and professional associations ○ Education Unions ○ Teacher Registration Authorities ○ Boards of Study ○ Deans of Education ○ Parents, students and the community ○ Teacher employers ○ Deputy Vice-Chancellors (Academic)

10. Governance

The success of the DER is dependent on effective collaboration, cooperation and strategic partnerships among key stakeholders. Governance arrangements should support:

- strong relationships that ensure ongoing commitment, goodwill and understanding of key expectations, roles and obligations of the parties involved;
- prudent decision making and effective stewardship to achieve maximum benefit and outcomes from DER investment; and
- transparency and accountability.

COAG has agreed that the Australian Government will “work in partnership with State and Territory governments and education authorities and Catholic and Independent schools sectors, and cooperatively with the higher education and vocational and technical education sectors to implement the DER”¹⁴. This is put into effect by the following arrangements:

¹⁴ DER Implementation Plan, endorsed by COAG on 26 March 2008.

- PAWG oversees the implementation of the DER, with advice from its Schooling Sub-group. The Schooling Sub-group can convene advisory groups as and when warranted to deal with particular issues.
- MCEETYA works closely with the PAWG in implementing the DER.
- AICTEC provides¹⁵ advice both on cross sectoral issues so that investments in the DER can benefit education as a whole and on strategies to integrate investments in ICT with wider educational objectives. AICTEC will convene cross-sectoral advisory groups that include people with relevant expertise and call on others for advice, as required. It will ensure that its advice takes into account the views of stakeholders as well as work by COAG and MCEETYA on related aspects of the Education Revolution agenda, for example early childhood development, literacy and numeracy, quality teaching, national curriculum, assessment and reporting, social disadvantage, Indigenous needs, skills and workforce development and parent and community involvement.
 - AICTEC's membership covers all jurisdictions and school and educational sectors. It is advised on matters relating to the use of ICT in the vocational education and training sector by the Flexible Learning Advisory Group (FLAG).
 - AICTEC's role is primarily one of providing advice to MCEETYA, MCVTE, COAG and relevant sub-groups. It will also provide recommendations to the Australian Government on priorities for utilising the DER funding allocated to support online curriculum resources and digital architecture. AICTEC will liaise closely with MCEETYA and COAG sub-groups to facilitate complementary development of related initiatives.
 - AICTEC members proactively contribute to the development of AICTEC's advice to ensure that the views and requirements of their constituencies have been taken into consideration. AICTEC members ensure that their nominating authority is apprised of the advice that AICTEC provides.
- FLAG will work closely with AICTEC on issues relating to implementing the DER. FLAG's role will include providing advice to MCVTE on DER implementation issues of relevance to the VET sector.
- National decision making will continue to be the responsibility of COAG, MCEETYA, MCVTE and the Australian Government, as appropriate.
- Cross sectoral, sectoral and jurisdictional decision making continues to be the joint or separate responsibility of Australian, state and territory governments, the Catholic and independent schools sectors and state and territory VET and university authorities, as appropriate.

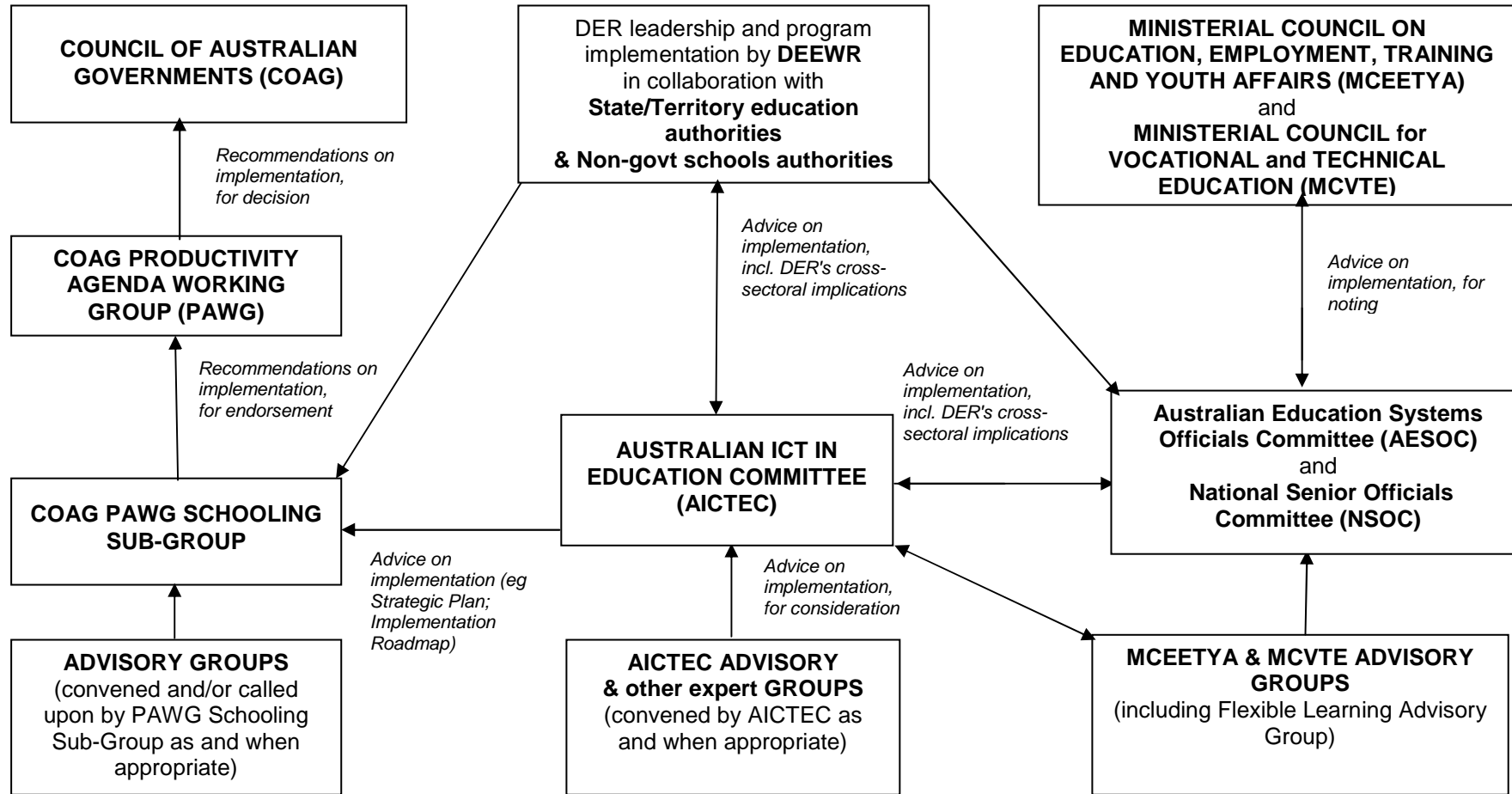
Diagram 3 below provides an overview of these governance and advisory arrangements.

Partnerships will also be progressed through ongoing, formal and informal liaison, allowing for variation where appropriate in the roles of the Australian, state and territory governments in the implementation of the various elements of the policy.

Decisions on some issues, such as funding and procurement, will remain the responsibility of the relevant governments in accordance with agreements by COAG and its Ministerial Councils and may be addressed through individual jurisdictional and school system arrangements. For example, jurisdictions' guidelines for schools' ICT plans may provide guidance, in accordance with agreements made through an environment protection authority, on how a school can deal strategically with e-waste and/or use of ICT to reduce its carbon footprint.

¹⁵ DER Implementation Plan, endorsed by COAG on 26 March 2008.

Diagram 3: Digital Education Revolution – Roles and Responsibilities



11. Risk Management

Major areas of risk:

- lack of collaboration will jeopardise successful implementation of a nationally consistent framework for the management of online information and communication.
- sustained commitment will be required to bringing online curriculum and supporting systems at all levels into alignment with the agreed national framework, acknowledging that this will take time, given pre-existing investments. Extensive consultation will assist with managing any potential risk of inadequate implementation planning and will ensure that funding is invested appropriately to deliver the maximum benefit.
- the work of previous initiatives is ignored and the work and skills vested are lost to the future initiatives. Where appropriate, new initiatives should leverage existing intellectual property to capitalise on national agreements on interoperability issues, infrastructure and the shared content pool.
- an agreed national approach will only occur if those responsible for making key system design decisions are engaged in the design of the national framework and are convinced of the benefits that such a framework will bring to their schools and systems.
- ongoing discussions about the additional costs associated with the implementation of the NSSCF will impact on implementation. This risk is being managed through the maintenance of a strong working relationship and consultation process between the Australian Government and all education jurisdictions across Australia.
- stakeholders, schools and the public may not receive sufficient, accurate and timely information about the NSSCF. This risk is being managed by having accurate and timely information available on the Digital Education Revolution website¹⁶ and maintaining open and collaborative communication with all education jurisdictions.
- computers purchased with NSSCF funds will be under-utilised due to lack of support or teacher confidence. It will be addressed through ensuring all schools undertake appropriate planning and teachers have access to appropriate professional development.
- the public will view the initiative as under-delivering because the messages about 1:1 access to computers have not been realised. This will be addressed by clarifying the vision and objectives of the NSSCF in educational terms and communicating this to stakeholders and the general public.

12. Implementation Roadmap Review

The Australian, state and territory governments and the non-government schools sectors are finalising agreements on DER funding. Once finalised, these agreements will provide the framework for longer term planning and implementation of the DER.

The DER Implementation Plan endorsed by COAG on 26 March 2008 indicated that the DER "Implementation Roadmap should be reviewed annually to ensure maximum benefit through funded initiatives and partnerships".

The draft DER Strategic Plan submitted by PAWG to COAG notes that the Strategic Plan will be revised by the end of June 2009, at which point it may be appropriate to consider annual implementation plans which would detail actions and commitments by DER partners.

This would be an appropriate time to review progress against the Implementation Plans for DER. In this context, AICTEC will continue to provide strategic policy advice on DER implementation **and** related ICT issues.

¹⁶ <http://www.digitaleducationrevolution.gov.au/>