



Teaching Teachers for the Future

Final Report

ICT Innovation Fund Project: Teaching Teachers for the Future

(Building the ICTE capacity of pre-service teachers in Australian Universities)

A.	EXECUTIVE SUMMARY	1
	Conclusions	2
	Recommendations.....	5
B.	MANAGEMENT OF THE PROJECT	8
	Project Leadership.....	8
	Governance.....	8
C.	PRODUCTS AND SERVICES	9
	Component 1: Build explicit ICTE dimensions to complement the National Professional Standards for Graduate Teachers	9
	Component 2: Develop high quality ICTE teacher education digital resources	15
	Component 3: Establish a National network of ICTE expertise to build capacity in graduates and improve teacher education programs, by seconding highly accomplished ICTE educators to work in universities	20
D.	EVALUATION OF TTF PROJECT	26
E.	FINANCIAL STATEMENTS.....	27
	ANNEXURES:.....	27
	Attachment 1: Signed Provisional Financial Acquittal Statement for Component 1	27
	Attachment 2: Signed Provisional Financial Acquittal Statement for Component 3	27
	Attachment 3: Full Evaluation Report and accompanying attachments.....	27
	APPENDIX 1—Project Summary from the TTF Implementation Plan	28
	APPENDIX 2—Action Plan.....	32
	APPENDIX 3—TTF Committees	36
	TTF Executive Committee	36
	TTF Steering Committee	39
	APPENDIX 4—Data Reflecting TTF Site Usage.....	45
	APPENDIX 5—Institutions’ Conclusions on the TTF project.....	47



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A. EXECUTIVE SUMMARY

The Teaching Teachers for the Future (Building the ICTE capacity of pre-service teachers in Australian Universities) (TTF) project is one of four initiatives funded through the Information and Communication Technology Innovation Fund (ICTIF). It has been a significant project that achieved and, in many instances, surpassed its objectives. The project summary from the TTF Implementation Plan is included as Appendix 1.

A significant outcome of the TTF project has been its demonstration of the value-adding potential of successful collaboration between three national organisations — the Australian Council of Deans of Education (ACDE) representing all institutions responsible for educating pre-service teachers, Education Services Australia (ESA) and the Australian Institute for Teaching and School Leadership (AITSL). This national capacity building is a significant outcome in the context of national reforms in education and curriculum, and professional teaching standards.

Practical support of education reforms at the national level was realised through the project's production of a range of resources, concepts and networks for professional development that will continue to impact on future curricula for teacher education as well as the skills and knowledge of future teachers.

The 15 month-long TTF project commenced in April 2011 and all the major outcomes have been achieved:

- An ICTE (ICT in Education) conceptual framework established to underpin all three components of the project
- ICTE dimensions (including elaborations and exemplars) developed that enable pre-service teachers to map their proficiency against the standards for graduate teachers
- Evidence folios and open source e-evidence guides for teacher education students
- A website for Component 1, hosted by the Australian Institute for Teaching and School Leadership
- Trial of the ICTE dimensions and evidence guides in teacher education programs requiring national accreditation
- Refinement of the ICTE dimensions as indicated by their use in Component 3
- An audit of existing digital resources
- Twelve digital resource packages that include exemplars of effective use of ICTE in four areas of the Australian Curriculum, for use by pre-service teachers
- Resource packages to pre-service teachers, educators and jurisdictions by the Project Reference Group and the DER Projects Steering Committee

- Hosting of the resource packages on the National Digital Learning Resource Network to ensure access after project completion
- Upgraded national education ICT infrastructure to provide pre-service teachers and teacher educators with 'anywhere, anytime' access to the National Digital Learning Resource Network and the Australian Curriculum
- Mapping of Current Curriculum and Pedagogy Practices in teacher education institutions
- Data collected for Project Evaluation and Reports
- Support provided for designated curriculum methods staff
- Revision of teacher education subject profiles in at least one Australian Curriculum subject area per institution
- ICTE resources embedded into learning and teaching modules.

In addition, The TTF project has:

1. for the first time, involved all 39 Australian teacher education institutions in a national project;
2. demonstrated an effective model for national organisations to work in partnership within the education sector;
3. develop a suite of quality resources encompassing the Australian Curriculum, National Professional Standards for Teachers, and ICT in education (ICTE);
4. fostered significant enhancement in the ICTE capacities of participating teacher educators, and;
5. on a national level, increased the confidence of pre-service teachers in using ICT in the classroom, and their confidence to facilitate student use of ICT.

This has been achieved through three integrated components, which are set out in the Conclusions.

Conclusions

Component 1, led by the Australian Institute for Teaching and School Leadership (AITSL) contributed:

- Validated ICT Statements for 31 of the 37 descriptors for the Graduate career stage of the National Professional Standards for Graduate Teachers
- Annotated Illustrations of Practice to assist with the interpretation of Standards: ten Graduate ICT Illustrations of Practice were developed as resource packages by the Australian Council for Computers in Education (ACCE) and Education Services Australia
- e-Evidence user guides to enable teacher education students to understand how they can use the resources developed through the TTF project, what each of the ICTE dimensions are, and the background regarding their development.

The Guide, ICT Statements and Annotated Illustrations of Practice are published at <http://www.teacherstandards.aitsl.edu.au>.

Various approaches to the use of the ICT Draft Statements were reported by pre-service teacher educators. Examples included:

- Using the Draft ICT Statements with students who use e-portfolios—the Statements were used as a frame for how to create their portfolio;
- Some institutions that are rewriting programs to meet Australian Qualification Framework standards are using ICT Statements to help review and structure courses and write pre-service teacher education program outcomes to match the Statements;
- Putting the ICT Statements at the forefront of managing e-learning programs
- Providing a basis for commencing discussions with staff.

Component 2, led by Education Services Australia (ESA) contributed:

A national audit of resources and twelve digital resource packages that demonstrate effective use of ICTE in the four first phase subjects of the Australian Curriculum. This TTF collection of national digital resources provides pre-service teachers, teacher educators and teachers with rich professional learning ‘anywhere, anytime’ packages and is located at <http://www.ttf.edu.au>.

The packages include clear links and references to the Australian Curriculum and the National Professional Standards for Teachers, as well as referencing a wide range of technologies. Each package is at least 30 screen pages in length and includes purposeful classroom footage and extensive references.

The digital resources have been created following the Technological Pedagogical and Content Knowledge (TPACK) learning framework, which links technology, pedagogy and content knowledge. TPACK provides an articulated schema for planning, applying and evaluating ICT in the classrooms. The resources were trialed in schools across Australia.

The resource packages were published in Semester 2, 2011. Evaluation data shows that teacher education institutions are successfully accessing the resources through the e-content portal. The addition of metadata records has enabled national distribution of the resources to jurisdictions and sectors through their portals. Materials have been, and will be, repurposed for use by other national projects.

Education Services Australia commissioned an external consultant to evaluate pre-service teacher and teacher educators’ access to, and use of these digital resources, and the effectiveness of the sample packages in the context of the Australian Curriculum. This external evaluation found that:

- The packages were highly valued providing a model that can be applied or repurposed for future resources demonstrating deep learning through ICT in the classroom.
- The packages’ strong connections with the Australian Curriculum and National Standards were positively received.
- Awareness of the packages and subsequent engagement by teacher educators was very high with the majority of teacher educators planning to use these resources in teaching pre-service teachers in 2012.

- Many institutions indicated their plans to engage with the TTF project, standards and curriculum in the 2012 academic year.
- Pre-service teachers found the packages accessible and clear, and the TPACK component useful, offering new ways to use ICTs or exposing them to ICT applications or technologies for the first time.
- The video samples in packages were most highly valued and several commented on revisiting or going to other packages to view the videos “to get good ideas”. Pre-service teachers are encouraged to reflect on and discuss their own practice through the use of ‘Questions for discussion’, which accompany each Illustration of Practice.

Component 3, led by the Australian Council of Deans of Education (ACDE), contributed:

The development and distribution of an Institutional Guide for institutions participating in the TTF project. The Guide included a work plan and position statements for TTF Program Coordinators and ICT Pedagogy Officers to assist institutions in their recruitment process.

The creation of effective networks within and between teacher education institutions that have and will continue to strengthen the implementation of the national reforms, and the ongoing capacity building and professional development of graduate teachers and teacher educators. These are significant outcomes and are evident in the results of the TPACK survey and ‘Most Significant Change’ stories analysed by the Research and Evaluation Working Group (REWG) and in the activities of the TTF National Support Network.

This component involved the appointment of full-time expert ICT Pedagogy Officers (ICTPOs) in each of the 39 national institutions, as well as the appointment of part-time TTF Project Coordinators from amongst their existing academic staff.

Using the TPACK model, each ICTPO completed a mapping of ICT with current curriculum and pedagogy practices on at least one subject area from the first phase of the Australian Curriculum. This involved a review of course description documents, learning outcomes, course materials and assessment items.

The mapping exercises in institutions contributed to revising one or two subject/unit profiles for the first Semester of 2012. Course profiles were mapped against the National Graduate Standards, and the ICTE dimensions are explicitly identified in assessment tasks. The ICTE resources developed in Component 2 were embedded into teaching and learning modules.

Another achievement of Component 3 is the cross-institutional cooperation strengthened by the online National Support Network (NSN), via its SharePoint site, and through local and national meetings of project participants. The level of collaboration between the 39 institutions is unprecedented, and the long-term benefits of the project will be borne out by increased capacities of graduate teachers in Phase 1 subjects in Australian classrooms.

The most recent national meeting in March 2012, focused on ensuring sustainability of outcomes including carrying forward the momentum generated by the TTF project and extending this work to continue in one other Phase 1 or Phase 2 subject.

Two TPACK surveys were undertaken to evaluate the impact of the TTF project which confirmed the interest of teacher education students in integrating technology, pedagogy and content in their teaching practice. However, comparisons across a small sample of universities did uncover marked differences in results between universities which invite further investigation. Individual survey analysis papers have been provided to each institution by Professor Glenn Finger of Griffith University and they are encouraged to consider the results in their own context.

In general, the TPACK surveys suggest that respondents were confident that ICT resources would support teaching and professional collaboration and would be useful relative to demonstrating some knowledge of a range of ICT or teaching strategies responsive to learning styles. They were also confident that ICT would support motivation and allow students to demonstrate what they had learnt. Respondents were most likely to consider ICT useful in supporting student engagement in independent learning or developing understanding of the world. They were least likely to be confident when it came to developing functional competencies or acquiring knowledge of global implications of ICT technologies or to consider it useful in relation to developing functional competencies or facilitating the integration of curriculum areas to construct multi-disciplinary knowledge.

Importantly, respondents were least likely to be confident in using ICT or less likely to believe in its usefulness in supporting teaching of Aboriginal and Torres Strait Islander students or in managing challenging student behaviours. This indicates one crucial area for further development given its implications for the use of ICT for education of students in rural and remote communities.

The TTF Project facilitated and promoted institution-led research and evaluation projects, research networks, and collaboration. This has increased national and international visibility and dissemination of the effective use of ICT in teaching.

Additionally, the 'Most Significant Change' analysis of impact in the institutions has been used as a qualitative evaluation tool to gather rich project data. These case studies demonstrate the increased ICTE capacities of teacher education institutions and provide a tool for assessing development through four categories of engagement with ICT.

Recommendations

These recommendations arise from teacher education institutions' Action Plans and the comprehensive evaluation of Components 1, 2 and 3. The recommendations are presented in more detail in the Action Plan at Appendix 2.

1. Recommendations for Universities

- 1.1 Each Faculty or School responsible for Teacher Education should develop, maintain and add to on a regular basis, an easily accessible repository of resources to enable all staff (and students) to access these resources as necessary.

- 1.2 Each Faculty or School responsible for Teacher Education should develop a leadership team to help staff to use these resources in a manner that is consistent with the TPACK model.
 - 1.3 Each Faculty or School responsible for Teacher Education should redesign certain key units to provide both a model of integrated ICTE strategies and a model of effective redesign processes to form the basis of a broader redesign initiative across the school/faculty.
 - 1.4 Each Faculty or School responsible for Teacher Education should develop institutional processes/systems to enable sustainable improvements in curriculum, pedagogy and assessment in relation to ICTE dimensions, and graduates that can demonstrate the ICTE dimensions of the National Standards for Graduate Teachers.
- 2. Recommendation for the Department for Education, Employment and Workplace Relations**
- 2.1 Future capacity building and change implementation projects in the use of ICT in education (ICTE), implementing the Australian Curriculum and National Professional Teacher Standards should emulate the collaborative model tested and proven to be very successful in the TTF project.
- 3. Recommendations for the Australian Council of Deans of Education (ACDE)**
- 3.1 ACDE should assume responsibility for sustaining facilitation of a collaborative national support network of ICTE experts across Australian teacher education institutions. As part of this responsibility ACDE will encourage and support:
 - 3.1.1 Each Faculty or School responsible for Teacher Education should develop and share exemplary ICTE pedagogy in one additional Australian curriculum area and in one cross-curriculum priority and generic capability statement.
 - 3.1.2 The development of informal State and Territory networks to ensure ICTE elements of the Australian Curriculum include local content and technological priorities.
 - 3.1.3 Collaborative research in areas of need identified by the TTF Project Evaluation.
- 4. Recommendation for expression of the ICT statements**
- 4.1 Consideration should be given to preparing Holistic Statements against the National Professional Standards for Teachers rather than against Focus Areas within Standards.
- 5. Recommendation for developing future online professional learning resources**

- 5.1 Consideration should be given to the development of a suite of resource packages to support Phase 2 of the Australian Curriculum, utilising reviewed model of existing TTF resource packages.

B. MANAGEMENT OF THE PROJECT

Project Leadership

Education Services Australia (ESA) assumed the role of Project Lead organisation after the 28 January 2011 announcement that the Australian Learning and Teaching Council (ALTC) would be closed at the end of 2011. ESA took on the responsibilities for reporting progress to, and accepting funding from DEEWR; appointment of a Project Director, and overall management of the project. The Australian Council of Deans of Education (ACDE) supported ESA in some project management functions, including the preparation of progress reports, financial management and administration of committees. ALTC continued to provide significant leadership and project management expertise up until its closure, with Professor Christine Ewan and Ms Solveig Dewhurst maintaining their links to the project on a part-time consultancy basis thereafter.

Governance

The Project was managed by two Committees:

1. The Executive Committee with responsibilities to provide overall performance monitoring of each component, project management, risk assessment and risk management, reporting to DEEWR and dispute resolution. The Executive Committee met formally nine times over the life of the Project.
2. The Steering Committee with responsibilities to monitor the performance and progress towards, and delivery of major activities and milestones within each component. It also oversaw the work of the Research and Evaluation Working Group (REWG). Towards the end of the project the Committee worked to develop strategies for sustaining the achievements of the project beyond the cessation of central funding. The Steering Committee met 11 times over the life of the Project.

Components 1 and 2 convened project reference groups whilst Component 3 utilised the Steering Committee for expert advice and guidance on the development and support of the National Support Network (NSN).

Detailed descriptions of the work of the TTF Executive and Steering Committees is provided in Appendix 3.

C. PRODUCTS AND SERVICES

Component 1: Build explicit ICTE dimensions to complement the National Professional Standards for Graduate Teachers

At the third National Support Network workshop on 15 and 16 March 2012, AITSL showcased the resources developed through Component 1 of the TTF project. This included showcasing the deliverables of the TTF project to program participants including the Standards, website, hot topics, e-Evidence user guide and ICTE Dimensions. The workshop was an excellent opportunity to share valuable resources such as the Illustrations of Practice developed through the TTF project and the collaboration across the components of the TTF project. The workshop also provided the opportunity for AITSL to hear first-hand how the deliverables are being used by project partners within their institutions. It also provided the opportunity for partners to discuss and express their satisfaction at being able to use the Illustrations of Practice for professional learning and professional conversations.

Component 1 had six main tasks for completion, each of which is presented below:

1. The ICTE conceptual framework which underpins all three components

The National Professional Standards for Teachers were endorsed by Education Ministers in December 2010 and released in February 2011.

The Standards define the work of teachers and make explicit the elements of high-quality, effective teaching in 21st-century schools resulting in improved educational outcomes for students. The Standards do this by providing a framework that makes clear the knowledge, practice and professional engagement required across teachers' careers. They present a common understanding and language for discourse between teachers, teacher educators, teacher organisations, professional associations and the public.

The National Professional Standards for Teachers is organised into four career stages and guides the preparation, support and development of teachers. The stages reflect the continuum of a teacher's developing professional expertise from undergraduate preparation through to being an exemplary classroom practitioner and a leader in the profession.

Graduate teachers have completed a qualification that meets the requirements of a nationally accredited program of initial teacher education. The award of this qualification means that they have met the Graduate Standards. On successful completion of their initial teacher education, graduate teachers possess the requisite knowledge and skills to plan for and manage learning programs for students.

1.1 Development process

Work on developing the National Professional Standards commenced in January 2009. This was a rigorous national process drawing on existing standards and external research as well as expert knowledge from key educationalists across Australia.

The consultation phase which followed the drafting of the Standards was similarly extensive and involved all key education stakeholders, including but not limited to teachers, teachers associations, professional subject associations, and teacher educators. Between March and May 2010 stakeholder consultations were conducted within jurisdictions using the arrangements determined by jurisdictional authorities, major employing authorities and teacher regulatory authorities. The Australian Government conducted consultations with national stakeholders.

In addition to the feedback provided at consultation workshops across the country, more than 120 written submissions were received from the federal, state and territory governments and their regulatory authorities, education unions, professional peak bodies and individual schools and teachers. All feedback submitted was considered in redrafting the Standards.

The refined draft of the Standards was then subjected to a rigorous psychometric validation process conducted through the University of New England. It incorporated two online national surveys and focus group workshops held in every state and territory, and involved thousands of teachers and hundreds of schools across the nation.

2. The ICTE dimensions (including elaborations and exemplars) that enable pre-service teachers to map their proficiency against the standards for graduate teachers

The nomenclature of the ICTE dimensions changed to align with AITSL's broader work on developing materials to support the implementation of the National Professional Standards for Teachers:

- ICT Elaborations are now referred to as ICT Statements
- Exemplars have become Illustrations of Practice

The content of the ICTE dimensions remain unchanged.

2.2 ICT Statements

ICT Statements provide further detail about the implications and opportunities for effective use of ICT within the acts of teaching described in the descriptors, and develop a common and deeper understanding of what the Standards could look like in the context of ICT in education. In total, **32 ICT Statements** were developed for the 37 descriptors housed within the Graduate career stage.

ICT Statements were originally drafted by AITSL's subcontractors Croger Associates and were provided to an expert focus group of ICT practitioners, nominated by the Australian Council for Computers in Education (ACCE). Participants were nominated from all states and territories and a range of roles and professional experience was represented. Participants were also able to provide feedback on the draft ICT Statements through Component 3's NSN SharePoint. Following advice from the focus group, the ICT Statements were refined by AITSL's subcontractors and reviewed by an independent ICT expert before being passed to Component 3's institutions for trialling.

2.3 Illustrations of Practice

Illustrations of Practice bring the Standards to life and describe what teacher practice at each career stage looks like in a range of contexts to help teachers situate their own practice within the Standards. They articulate what is required in order to meet the Standards, make links to the Australian Curriculum where relevant, and encourage teachers to reflect on their own practice. The Illustrations of Practice developed through the TTF project are specific to the Graduate career stage. Ten Graduate ICT Illustrations of Practice were developed as part of the TTF project by ACCE and Education Services Australia (ESA).

Three Illustrations of Practice were developed by ACCE, and were reviewed at each drafting phase by a focus group of 45 teachers, teacher educators, school leaders and regulatory authority representatives to ensure they were robust and fit for purpose. This focus group was formed by AITSL as part of its overarching supporting documentation quality assurance process. In addition, AITSL was able to access ESA's footage of pre-service teachers enacting TTF resource packages from Component 2 and repurpose it to meet the specification of an Illustration of Practice. Together AITSL and ESA repurposed footage to make seven additional illustrations which effectively make the connection between the teacher quality focus of Component 1 and the technological, pedagogical content knowledge exemplified through the resource packages of Component 2.

2.4 Project alignment

AITSL attended the ESA Reference Group meeting on 1 April 2011 to provide guidance on the development of ICTE exemplar packages (Component 2), which will be linked to the Standards website. A written review was submitted to ESA on three draft packages from the perspective of mapping the resources to the National Professional Standards for Teachers, and feedback was also given on discipline and phase of schooling content from a registered teacher. AITSL's involvement on the ESA Reference Group was to ensure alignment with the two components of the project and to make certain the resource packages exemplify the ICTE dimensions. Later in the project, this relationship allowed AITSL to be able to partner with ESA to utilise their rich footage of pre-service teachers using Component 2 resource packages and repurpose to be Illustrations of Practice.

3. Accompanying evidence folios and open source e-evidence guides for teacher education students

AITSL developed an e-Evidence user guide to complement the ICTE dimensions developed through the TTF project. The e-Evidence user guide enables teacher education students to understand how they can use the resources developed through the TTF project, what each of the ICTE dimensions are and the background regarding their development.

For instance, ICT proficiencies can be mapped against the ICT Statements to allow pre-service teachers to understand what is expected of them upon graduation from an initial teacher education program, and identify priorities for further professional learning. Illustrations of Practice can provide pre-service teachers with more information as to

what the ICT Statements look like in a range of contexts. Pre-service teachers are encouraged to reflect on and discuss their own practice through the use of 'Questions for discussion' which accompany each Illustration of Practice.

AITSL drafted the e-Evidence user guide following advice from its consultants and a teaching profession focus group.

4. A website for Component 1

Phase one of the National Professional Standards for Teachers website, developed by ESA, was launched on 12 May 2011 to coincide with its bi-annual National Stakeholder Forum. The website housed the National Professional Standards for Teachers.

Phase two of the Teacher Standards website was launched in February 2012 at AITSL's Professional Learning Convention alongside supporting documentation to assist implementation of the Standards through 2012 and 2013. This can be viewed at <http://www.teacherstandards.aitsl.edu.au/>. Phase Two established the front and back end system in which the ICTE dimensions are held and used. The site has Web 2.0 functionality, is integrated with social media sites, allows users to comment and discuss the usefulness of the resources, and enables searching for Illustrations of Practice by a number of search and browse features. The site is intended to become a community of collaboration and provide access to these resources 'anywhere, anytime'. Future development will also see functionality established to enable teachers to upload their own Illustrations of Practice.

The National Professional Standards for Teachers website houses all Component 1 deliverables and allows these to be available after completion of the TTF Project. The site includes a description of the TTF Project; the ICT Statements; the e-Evidence user guide; four of the ten Illustrations of Practice developed as part of the project, and a link to ACCE's website as AITSL's project partners.

The website was developed to ensure multiple points of entry for users looking for materials to assist their understanding of the Standards. The TTF Graduate Illustrations of Practice can therefore be located through a homepage banner, under descriptors within the Standards (those with related illustrations will have a 'Show Illustrations' icon), and through the Illustrations of Practice tab with searching enabled by career stage or by Standard.

AITSL will continue to develop resources to support implementation of the Standards and build its repository of illustrations to help users situate their practice at each career stage and understand what the Standards look like in a range of contexts, including using ICT.

5. Trial of the ICTE dimensions and evidence guides in teacher education programs requiring national accreditation

At the second National Support Network meeting on 3 June 2011, AITSL outlined to ICTPOs and project partners the elements of the trial and processes for evaluation. The third National Support Network meeting on 15 and 16 March 2012 demonstrated the ICTE dimensions produced through Component 1 of the TTF project.

ICTPOs have trialled the ICT Statements in their institutions which provide a framework for embedding effective use of ICT into the professional practice of pre-service teachers, teacher educators and supervising teachers in schools. The change in nomenclature of the ICTE dimensions was communicated to ICTPOs via the SharePoint and email communication channels. AITSL reiterated that the content of the ICTE dimensions remains unchanged.

The expert focus group used the ICTE dimensions in their settings and they were surveyed alongside ICTPOs as part of AITSL's evaluation strategy. This evaluation ascertained how effective the ICTE dimensions were in assisting pre-service teachers with their interpretation of the Graduate Standards, and how effective the dimensions were in mapping ICTE proficiencies against the Standards.

In-depth interviews with a selected group of ICTPOs took place to build a deeper narrative about the ways in which the ICTE dimensions were used to support the building of ICT capacities in a range of institutional environments. AITSL worked with Component 3 to seek participants for the interviews.

As the first part of AITSL's evaluation strategy, ICTPOs completed a survey in October requesting feedback on the effectiveness of the ICTE dimensions in assisting pre-service teachers with their interpretation of the Graduate Standards, and how effective the dimensions were in mapping ICTE proficiencies against the Standards. AITSL's subcontractors drafted the survey items and Component 1 partnered with Component 2 in conducting the survey to minimise the workload impact on ICTPOs.

The expert teachers involved in the TTF focus group were surveyed in late 2011. These teachers are expert practitioners from a wide range of contexts, institutions and locations across Australia and assisted in ascertaining how effectively each of the components of the ICTE dimensions align with each other to ensure a robust package of compatible resources.

6. Refinement of the ICTE dimensions as indicated by their use in Component 3

The ICTE dimensions comprise the ICT Statements and ICT Illustrations of Practice. To develop the dimensions, AITSL worked in combination with the Australian Council for Computers in Education (ACCE), an expert focus group, the Research and Evaluation Working Group (REWG), the ICT Pedagogy Officers, the Steering Committee and its subcontractors to develop, test, trial and refine the ICTE dimensions. These are all published on the AITSL website.

6.1 ICT Statements

The ICT Statements were developed by AITSL's subcontractors Croger Associates Pty Ltd. The Statements underwent an extensive quality assurance process of two phases which in phase 1 included:

- review of the first draft by the expert focus group comprised of ICT experts in the field
- review via the NSN SharePoint by the Standards' Forum Group comprised of ICT experts in the field

- redrafting by AITSL's subcontractors following the comments by experts in the field
- review by an independent ICT expert consultant to ensure a valid and consistent alignment between the Graduate Standards and the TPACK model
- further redrafting by the AITSL subcontractors following the comments by experts in the field
- mapping of pre-survey questions with the REWG against the Standards to demonstrate the relationship between the behaviours, skills and knowledge that the survey is intending to identify and the themes of the seven Standards. The mapping exercise did not form part of the survey itself and was not viewed by survey participants.

The finalised ICT Statements from phase one were provided to the ICTPOs for use within their institutions with their pre-service teachers as part of Component 3. This involved reporting, recommendations and evaluation between AITSL and the institutions' ICTPOs during 2011.

In phase 2 of quality assurance, AITSL and its subcontractors developed post-survey questions to evaluate the effectiveness of the ICTE dimensions following data collected about students' pre-project ICTE capacities. ICTPOs were surveyed to gauge usefulness and applicability of the ICT Statements within their context. This survey had a 100% response rate from ICTPOs with feedback creating further suggestions for redrafting by AITSL's subcontractors. AITSL quality assured these internally and made decisions regarding the suggested changes as to the redrafting of ICT Statements. The ICT Statements can now be found on the AITSL Teacher Standards website.

6.2 Illustrations of Practice

The Illustrations of Practice were developed by the Australian Council for Computers in Education (ACCE) and later in the project by Education Services Australia. The development timeline for these resources was altered to align with AITSL's supporting documentation project and to allow them to benefit from AITSL's rigorous quality assurance processes.

The expert focus group originally provided advice to AITSL on what one might expect to see in an Illustration of Practice at the Graduate career stage, which provided a reference for AITSL in understanding the elements of an effective ICT illustration. ACCE attended an AITSL training day on 12 August 2011 to workshop the development process of Illustrations of Practice, and the drafting process occurred from August to with ACCE's project team in close contact with AITSL.

Both during and following the drafting phase, ACCE's Illustrations of Practice underwent an extensive quality assurance process which included feedback from a focus group of 45 members of the teaching profession, who met four times in the last half of 2011; the Australian Curriculum, Assessment and Reporting Authority (ACARA); advice from a high-level internal governance committee, featuring AITSL Board representation; and a review by the expert focus group and AITSL's subcontractors. This quality assurance process was intended to ensure alignment between the acts of professional knowledge, practice or engagement contained within the Illustration to the Graduate Standards and

relevant ICT Statements, and to ensure that they are robust and fit for purpose in helping users understand what the Standards look like in a particular context.

Illustrations of Practice developed by ESA were initially subject to Component 2's quality assurance process and were then repurposed into Illustrations of Practice by AITSL's production team. These resources were then subsumed into the quality assurance processes that took place internally at AITSL from January until their launch online on 23 February 2012.

Component 2: Develop high quality ICTE teacher education digital resources

The resources produced under Component 2 have been effective in developing pre-service teachers' awareness and use of TPACK principles of technology, pedagogy and content knowledge applied to the Australian Curriculum; and for increased pre-service teacher awareness of National Teacher Professional Standards—Graduate.

The independent evaluator, Dr Bernard Holkner, former Fellow of the Monash University Centre for Educational Multimedia, developed the evaluation report (Attachment 2 to the TTF Evaluation Report) on TTF Component 2 activity. Data collected in November and December 2011 for the evaluation report shows that approximately 3,000 people connected to the project have looked at the material. This is a lower number than the data subsequently provided by the April 2012 Google Analytics report. Reports from the institutions indicated that many of them planned to use the TTF resources in Semester 1 of 2012.

1. Development of twelve digital resource packages that include exemplars of effective use of ICTE in four areas of the Australian Curriculum, for use by pre-service teachers

ESA worked closely with nominees of the Deans of Education to ensure the resources for the project met the needs of the higher education institutions. These requirements were outlined at the first Component 2 reference group meeting held on 18 December 2010. The Component 3 representatives also provided a brief to include several elements within the resources created in Component 2. The TTF Component 2 resources aimed to:

- model rich examples of Technology Pedagogy and Content Knowledge (TPACK) in action, as exemplified by the video clip "Possum Magic";
- focus on the Australian Curriculum content first and the pedagogy of the discipline second;
- show constructivist pedagogy for the pre-service teachers as well as support pre-service teachers to understand the graduate dimensions of the National Professional Standards for Teachers;
- demonstrate the capacity of web 2.0 technologies that allow students to be authors and creators of content;
- engage lower-end users of ICT among HEI teaching staff by demonstrating the rich potential of ICT to create new knowledge and capacity among learners;

- be available as ‘anywhere, anytime’ resources, and;
- be available as both a sequential and complete learning package and for a ‘dip in and out’ approach to allow HEI teaching staff to deconstruct in a tutorial or method lecture.

Using ESA’s project management processes and networks, a group of writers was commissioned to commence writing in February 2011. Between March and August 2011 the materials went through a series of developmental stages, all of which were outlined in the relevant project reports and updates. During the development and roll out of Component 2, the project team ensured that stakeholder representatives were involved in each of the content review and approval steps. This ensured ownership of the materials by the HEIs and rigour around the content development of the resources.

Twelve digital resource packages that demonstrate effective use of ICT in education across four areas of the Australian Curriculum were developed and published. The resources were reviewed by a wide range of stakeholders, including nominees from: HEIs, teacher professional subject associations, subject matter experts, representatives of the Australian Institute for Teaching and School Leadership (AITSL) and the Australian Curriculum, Assessment and Reporting Authority (ACARA). The relevant packages have also been reviewed by an Indigenous education expert. A consultant technology expert provided additional information within the resources to scaffold pre-service teachers’ understanding of technology in education. Three academic nominees of the Australian Council of Deans of Education (ACDE) contributed to the selection of the website design and provided sign-off prior to the full site build stage.

The twelve resource packages are housed on one site, but are available for both pre-service and practising teachers through the e-Content portal and existing jurisdiction teacher portals. The primary audience for the packages is pre-service teachers in the 39 participating higher education institutions, however other audiences such as Australian academic staff and in-service teachers may also access the resources to support them in their professional-practice alignment with AITSL National Professional Standards for Teachers—Graduate as well as the Australian Curriculum.

The site provides information about the TPACK Framework and also a project overview linked from the website homepage. The packages include direct links to additional resources and references to one level of the Australian Curriculum and the National Professional Standards for Teachers—Graduate. Each resource package contains and provides:

- information about a range of relevant technologies;
- guidance around cyber safety;
- hints and tips for using technology;
- information about teacher capacity-building opportunities;
- jurisdiction ICT standards information;
- some 30 screen pages of content;

- segments of purpose-created film with specific footage related to the content topic;
- context in the TPACK framework;
- extensive pedagogical and content references, and;
- a lesson plan that reflects and demonstrates the resource content.

Google Analytics data indicates the resources have been well received by the target audience. There were 10,095 total visits, including 5,473 unique visitors and 88,478 page views (see Appendix 4 for the full data). The complexity of the project and the very short timeline from project start to publication were a challenge for the developers. The support and engagement of members of the TTF project in the review phase was an important factor in the Component 2 team meeting the publication date.

2. An audit of existing content which may be included in the resource packages

An audit of existing content and resources took place in December 2010 where the 39 HEIs were invited to identify existing relevant resources already in use at their institution. Responses were returned to Education Services Australia in January and an analysis took place in February 2011. Twenty nine of the 39 HEIs responded with either work samples or an indication of inability to contribute to the project. Resources from the HEIs could not be used because their existing Intellectual Property permissions did not provide Australia-wide clearance; notwithstanding that, a number of the identified resources would have been suitable for re-purposing and adapting for the TTF.

The Jurisdiction ICT Contact Liaison Officers were briefed about the project in February 2011. New South Wales, Victoria and Tasmania offered links to materials in the jurisdictions for inclusion in the project however none of these resources modelled the TPACK framework and therefore were not appropriate for this project. The majority of the materials audited were located within the focus of technology without the content knowledge and pedagogy intersection that underpinned the project.

3. Review of the resource packages to pre-service teachers, educators and jurisdictions by the Project Reference Group and the DER Projects Steering Committee

Component 2 of the TTF project was, and continues to be supported by ongoing and useful Stakeholder engagement:

3.1 Jurisdiction and sector involvement

The Component 2 team ensured contributions to the project came from across Australia. The diversity of states and sectors are represented in the development of the project, for example, resource writers came from HEIs and schools in New South Wales, Queensland and Victoria. Schools used in the original footage came from these three states and also Tasmania. Members of the Project Reference Group came from HEIs in Western Australia, New South Wales, Victoria and South Australia. Reviewers were sourced from all over the country. The pre-service teachers involved in the trial and the field study schools again were selected from all states, and metropolitan and regional

towns. Government, Catholic and independent schools are all represented in the footage collected for the project.

3.2 Component 2 Project Reference Group

The Component 2 Project Reference Group (PRG) provided the resource packages to many stakeholders for review. Reviewers included pre-service teachers, higher education institution educators, subject matter experts and jurisdictions. The Deans of Education selected the Australian Curriculum topic areas addressed in the packages. The PRG provided advice and feedback through three iterations of the manuscripts' development and review process.

3.3 Review and publication of the resource packages

The draft twelve packages were submitted to Education Services Australia by the resource writers in May 2011. The manuscript review process included two rounds of drafts for review and more than 80 reviewers contributed to this work. These people were drawn from:

- Project Reference Group members
- other university experts identified by the Project Reference Group,
- ICT Pedagogy Officers and TTF Coordinators,
- subject matter experts sourced by Education Services Australia,
- classroom mentor teachers,
- an Indigenous expert,
- pre-service teachers,
- Education Services Australia in-house experts, and
- Representatives of ACARA and AITSL.

As a consequence of this review, several packages required refinement. One package was held up due to Intellectual Property restrictions and a need to re-film the centre-piece footage. Eight of the 12 resources were published in time for the commencement of the second academic semester in 2011 and each Australian Curriculum Phase 1 discipline had at least one published package. The final four resources were completed and published during the semester, two of which were History packages as fewer HEIs focused on History as a nominated TTF focus area.

3.4 Academic review

Education Services Australia completed a final comprehensive review process. Each of the four academic members of the Component 2 Project Reference Group also conducted a final review of the materials. These four academic nominees of the Deans of Education, one for each Australian Curriculum discipline area, contributed to the content sign-off process prior to their publication. In addition, Professor Peter Albion, a TPACK expert from the University of Southern Queensland, reviewed one package from each subject area and approved the way the materials addressed the TPACK concept.

3.5 Intellectual Property and Editorial processes

Before publication, Education Services Australia completed a comprehensive editorial process and Intellectual Property review, the final steps of which also included an evaluation of web compliance and content proof reading.

4. Hosting of the resource packages on the National Digital Learning Resource Network and the Australian Curriculum

Development of all TTF resource packages included a plan to enable direct hosting and access through the National Digital Learning Resources Network (NDLRN). This occurred at the end stage of the project via the creation of a series of Metadata Exchange (MEX) records for each individual package and for the whole site. Metadata is fundamental to the discovery of digital content; it enables harvesting and sharing of all associated websites and other digital curriculum resources from the project. This makes the materials easily searchable and discoverable by the end user from their existing jurisdiction portal. The creation of an accurate metadata record by the content provider also enables the metadata to be reused in jurisdiction learning management systems.

5. Upgrade of the national education ICT infrastructure to provide pre-service teachers and teacher educators with 'anywhere, anytime' access to the National Digital Learning Resource Network and the Australian Curriculum

Education Services Australia proposed a technical solution to simplify registration and access to the HEI e-Content portal, allowing all pre-service teachers and HEI staff to register via their institutional email address. The e-Content solution infrastructure work commenced in April 2011 and was completed in time for publication.

The completion of the 12 resource packages was promoted to the entire Component 3 ICT Pedagogy Officers and TTF Project Coordinators within the 39 institutions via the National Support Network SharePoint site and email lists. Any queries regarding access to the resources were resolved within 24 hours. ESA established a phone line 'help desk' for this purpose as well as providing a detailed guide for users with simple screen grabs and point by point access information.

6. Additional resources developed by Education Services Australia

The Component 2 Project Reference Group (PRG) responded to several drafts of a trial strategy for the Component 2 resource packages and approved these activities in October 2011. As outlined in project reports for October-November 2011, nominated pre-service teachers delivered a lesson from the resource packages in a classroom where they had completed a field study placement. These materials were published before the third NSN Workshop on 15–16 March 2012.

In total, 17 videos have been recorded of pre-service teachers from around Australia using the TPACK principles in a classroom. These videos also include interviews with the participants about what they learnt from the experience. The footage of pre-service teachers in action has been provided to AITSL who repurposed and made it available on the *Illustration of Practice* website. A final clip will be added to the *Teaching Teachers for the Future* website based upon the presentations at the March 2012 NSN workshop

by Professor Punya Mishra and Associate Professor Matthew Koehler of Michigan State University, the authors of the TPACK framework.

Component 3: Establish a National network of ICTE expertise to build capacity in graduates and improve teacher education programs, by seconding highly accomplished ICTE educators to work in universities

This Component focussed on driving change in teacher education institutions in order to impact upon building the ICTE capacity of pre-service teachers. The direct links to the outputs from Components 1 and 2 provided timely contributions to the changes underway in the sector. Five key tasks were laid out for each institution and the approaches and achievements of these are addressed in items 1 to 5 below.

Though the focus was on individual institutions' own circumstances and ICTE priorities, an important element underpinning this work was the National Support Network (NSN). The level of collaboration between institutions in the TTF project greatly surpassed any project yet attempted in Australian teacher education. The strategic decision to provide the same level of funding to each institution has been an important factor in the success of the NSN by promoting a sense of equality and collective contributions to the overall project. Of even greater significance has been the commitment and unyielding dedication exhibited by every TTF Project Coordinator (TTFPC) and ICT Pedagogy Officer (ICTPO) to share their work and recognise each other's successes. Even so, without the leadership provided by Professor Geoff Romeo of the Australian Catholic University and Associate Professor Margaret Lloyd of Queensland University of Technology, it is doubtful whether the enthusiasm and discipline of the Network would have been so profound.

1. Mapping Current Curriculum and Pedagogy Practices

Activities typically occurred within four phases.

Firstly, a broad mapping of current curriculum and pedagogy practices through the review of course description documents, learning outcomes, course materials and assessment items. Audits were conducted of all undergraduate teacher education units; these began with a review of unit outlines and then with interviews of unit coordinators. Almost all ICTPOs had completed the broad mapping and early audit of curriculum courses by June 2011. The second NSN Workshop on 3 June 2011 provided an opportunity for TTFPCs to share the progress that had been made on this task with other institutions' academics from the same discipline.

Many institutions reported that, prior to the TTF project, there had been little identification of where and how ICTs were embedded or included as curriculum in teacher education courses. Schools of Education would often run discrete ICT in Education specialist units but the intent of this project, using the TPACK approach, was to integrate ICTs within and across curricula as a way of replacing the specialist ICT units. Outside of the specialist units, approaches to the uses of ICT were described as being largely dependent upon the inclination and experience of individual staff.

Secondly, current curriculum and pedagogy practices were mapped against best practice. Resulting from the audit, each unit was mapped against the ICTE dimensions of the Graduate Teacher standards provided by AITSL through Component 1 of the TTF project.

Thirdly, the learning points from the second phase were analysed to determine how subsequent tasks, such as revising subject profiles and embedding ICTE resources into learning and teaching modules, should proceed.

Fourthly, through evaluation of new course delivery and use of ICTE resources, institutions are now formalising changes to their processes for planning future units of study. Planning documents have or are being altered to include stipulations that course writers identify how TPACK principles and the ICTE dimensions are being included in unit design, delivery and assessment. Some Schools of Education have set up Performance Management processes to ensure there is accountability for ICTE implementation in courses. Further, at the institutional level reporting processes have been set up to ensure accountability by Schools of Education.

2. Collecting data for Project Evaluation and Reports

The Research and Evaluation Working Group (REWG) led the data collection coordination for project evaluation activities. Each institution contributed to the three elements of the evaluation strategy devised by the REWG. First, institutions secured ethics approval and locally administered the pre and post-project TPACK surveys tracking pre-service teacher students' confidence in using, and perceptions of usefulness of, ICT in education. The second element used the *Most Significant Change* (MSC) methodology to develop a qualitative 'story' of change in their institution. This involved focus groups and interviews to identify and understand the most significant impact of the TTF project. Lastly, every institution was required to register their intentions towards local research activities in order to avoid repetition and to ensure the integrity of the TTF brand.

Through triangulating the results of these three research activities, each institution was encouraged to analyse its own effectiveness in developing the ICTE capacity of pre-service teachers. This exercise was important in formulating institutions' Action Plans.

Institutions have also been contributing to wider teacher education research initiatives in order to spread the messages of the TTF project. Twenty five papers have been submitted ahead of the Australian Computers in Education Conference on 2 – 5 October 2012, at which the TTF Project will form a strand thereby allowing project participants to present their work and continue their networking from the TTF project.

3. Providing support for designated curriculum methods staff

A wide range of approaches was used within and across institutions to best utilise the skills and experiences of the ICT Pedagogy Officers amongst curriculum methods staff. Almost all ICTPOs held workshops and undertook one-on-one coaching sessions. One-on-one meetings with Course Coordinators and Program Leaders often occurred by approaching staff strategically and also in response to enquiries and requests for assistance. It is standard practice to maintain contact with Course Coordinators and

sessional teachers to evaluate and modify or extend newly implemented and trialled activities.

In many larger institutions, ICTPOs were able to draw upon the ICTE expertise of permanent academic staff to enable support to be provided beyond the focus subjects. Where this took place, institutions reported that an institutional culture of peer-supported professional development was engendered.

In all institutions, TTF Project Coordinators were involved in the running of workshops. However, after the TTF project is finalised it will not be feasible to continue the intensive one-to-one mentoring carried out by ICTPOs although the workshops and presentations for staff will continue, albeit at a reduced rate, in many institutions. In many cases, resources and guides for curriculum methods staff have been developed and stored on shared systems.

It is notable that many TTFPCs reported that the TTF project brought senior staff focus to ICTE in their Faculty/School of Education. By raising the profile of ICTE and demonstrating positive impact, many TTFPCs expressed confidence that the experiences of the TTF Project would influence priorities towards academic staff professional development both now and into the future.

4. Supporting the revision of subject profiles

Following the first two phases of the mapping exercise, the incorporation of Illustrations of Practice for Graduate Teachers into refined focus subject profiles were initiated. ICTPOs supported the revision of subject profiles for institutions' focus subjects, and Action Plans show how this process will flow into other disciplines in 2012 and 2013. As this process continues, institutions are encouraged to use the results of the TPACK surveys and Most Significant Change (MSC) work to devise methods of improving the confidence of pre-service teachers to use ICT in the classroom.

Many institutions have reported that all of their units will be mapped against the Australian Curriculum as soon as this becomes a requirement in their State or Territory. In these cases, non-subject focus education units have undergone revision of content including adding ICT references, ICT resources and ICT components to assessment tasks. For example, in an institution focussing on Mathematics and Science, an English Education unit was revised to require pre-service teachers to incorporate an explanation of how to teach with a Web 2.0 tool in their assessment tasks, and one Teaching and Learning unit required pre-service teachers to incorporate Lucidchart¹ in their assessment tasks. In both cases the teacher educators modelled these uses of ICT tools and included them in the curriculum. The proposed Stage 2 of the TTF Project will assist in the exposition of State jurisdictions' interpretations of national accreditation requirements.

5. The embedding of ICTE resources into learning and teaching modules

¹ Lucidchart is a web-based diagramming software which allows users to collaborate and work together in real time to create flowcharts, organisational charts, website wireframes, uml designs, mind maps, software prototypes and many other diagram types.

This task, too, flowed from the second phase of the mapping exercise, as well as the development of ICTE resources under Component 2. As is the case with the task of revising subject profiles, institutions report that the work of embedding ICTE resources into learning and teaching modules is far advanced in subject focus areas but progress in other subjects needs to be made. This demonstrates the success of the project in acting as a catalyst for deeper change across Schools of Education. However, institutions also report the challenges they face in continuing the process due to competing time pressures on staff resources, especially in Phase 2 and 3 subjects in the Australian Curriculum.

One institution reported that many of its pre-service teachers find that when they attend their professional experience in their allocated school, there are not the facilities to allow them to practise their new skills. This particular institution has instructed the Teacher Resource Centre at the Central Library to include digital technology resources, which can be borrowed by students for use during their professional experience. This also served to expose the in-service teacher in the school to new technologies for their own classrooms.

Conversely, many institutions discovered that the contemporaneity of their technological resources lags behind those in local schools. This prompted a widespread investment in hardware and software to ensure pre-service teachers are better able to utilise the latest technologies. For example, one institution purchased 30 iPads, 15 SMART Boards and six SMART tables.

All institutions developed ways of storing and sharing good practice and professional development aids in the use of ICTE. For instance, Blackboard™ platforms are commonly used by higher education institutions to house digital content and manage the online teaching and learning spaces for teacher education. Blending digital resources into existing systems allows them to be more readily available to staff and to stimulate the creation of new resources for those sites.

6. Other activities undertaken in institutions to develop ICTE capabilities of pre-service teachers

There are a multitude of innovative approaches introduced by ICTPOs and TTFPCs to capitalise on the focus the TTF project has brought to developing ICTE skills in pre-service teachers.

In Western Australia there were four meetings for those involved in the TTF project, held at a different institution each time, which led to a valuable cross-fertilisation of ideas and practice. For example, the use of Wikispaces to host e-portfolios at one WA university led to an investigation of that approach at another. Indeed, many institutions are now developing their use of e-portfolios and emphasising the showcasing therein of pre-service teachers' best work with ICT in the classroom. E-portfolios will be used by graduate teachers to demonstrate achievement of the AITSL Graduate Standards and presented to potential future employers.

As described in item 5 above the TTF project prompted a proliferation of new hardware and software in institutions. Allied to this, institutions now encourage students to bring their own web-enabled device (ie mobile phone, tablet, laptop and iPod touch) and

provide opportunity for these devices to be used to increase interactivity and personalised learning experiences in traditional lecture and tutorial sessions. This approach serves to heighten pre-service teachers' appreciation and understanding of how ICT can be seamlessly and effectively integrated into learning environments.

Institutions' final reports indicate that investment in ICT infrastructure is already leading to further dividends in the form of new skills and awareness amongst academic teaching staff. Increased opportunities for training in the use of ICT, for instance SMART boards and iPad applications, has been reported. This, in turn, raises the standard by which academic staff are expected and motivated to embed ICT in their units. The investment in (and repurposing of) ICT infrastructure is a clear added benefit of the TTF project which will benefit pre-service teachers for years to come.

The strength of the TPACK model is its recognition of technology, pedagogy and content knowledge as intertwined, but there is an acknowledgement that some pre-service teachers do not possess the necessary ICT skills to fully utilise these three dimensions together. Institutions thus report that they found supplementary training to be useful. Training modes such as weekly virtual and face-to-face seminars reportedly prove popular and effective in increasing the ICT confidence and skills of pre-service teachers, while not detracting from the imperative that technology is to be used with complementary pedagogical techniques and subject content.

Institutions report that a further added benefit of the TTF project is the connections with schools fostered by ICT Pedagogy Officers. Some ICTPOs were seconded directly from schools while many others had fairly recently been practising teachers. Almost all ICTPOs had links to schools which were beneficial in developing partnerships between institutions and local schools to the extent that these relationships will continue to prosper. These links are manifested in practical demonstrations such as schools hosting professional experience placements for pre-service teachers with a high aptitude for ICTE, so that in-service teachers can learn from this knowledge and pre-service teachers benefit from more classroom experience.

7. Institutions' conclusions on the TTF project

Institutions' final project reports include their overall assessments of the achievements and limitations of the TTF project. The overwhelming message is that funding the positions of TTFPCs and ICTPOs in each participating institution created the space and focus on ICTE to allow unprecedented developmental change to occur. That this project took place on a national scale is also acknowledged as adding focus within and across institutions. The links to ESA's digital resources and the National Professional Standards for Graduate Teachers have been crucial.

Despite the vast majority of comments being positive about the impact of the project, some institutions identified limitations. The delay in signing contracts and releasing funding caused by the closure of the Australian Learning and Teaching Council (ALTC) was well handled but led to inevitable frustration. That a project on this scale succeeded in spite of this administrative issue is a testament to the leadership of the Australian Council of Deans of Education which ensured that the goodwill of Schools of Education lasted throughout the four month-long delay. The continuation of key ALTC staff with the

project after its closure was paramount in ensuring the project's momentum and 'corporate knowledge' retention.

Some institutions expressed their view that the project was too short to demonstrate sustainable change across the sector. Though sector-wide change was not an expressed aim of the TTF project, 12 months is barely sufficient time to demonstrate ICTE developments in Schools of Education and generate forward momentum towards systemic change. This momentum must be capitalised upon but, without central leadership, the risk that change will be staggered and piecemeal is high.

Other limitations documented by TTFPCs relate to institutions' own internal capacities (especially in terms of access to the latest technologies) and staff dynamics. For instance, a minority of academic staff in some institutions have been reluctant to recognise the relevance of TPACK in their topic and model its use in teaching. Through initiatives such as changes to course approvals processes and demonstrations of achievement of graduate National Professional Standards, these reluctances will be overcome.

A representative selection of TTFPCs' concluding remarks are included in Appendix 5 of this report.

D. EVALUATION OF TTF PROJECT

Each Component of the Project undertook a planned evaluation program. The full Evaluation Report is attached as a separate document for ease of reference. The Executive Summary of the Evaluation Report is incorporated within the Executive Summary of this Final Report and the full report is appended as an annexure.

An additional Component 3 achievement to those listed in the Component's Evaluation Report is the cross-institutional cooperation strengthened by the online National Support Network (NSN), via its SharePoint site, and through local and national meetings of project participants. The level of collaboration between the 39 institutions is unprecedented, and the long-term benefits of the project will be borne out by increased capacities of graduate teachers in Phase 1 subjects in Australian classrooms.

The most recent national meeting of all 39 teacher education institutions, in March 2012, had a focus on ensuring sustainability of outcomes, including carrying forward the momentum generated by the TTF project and extending this work to continue in one other Phase 1 or Phase 2 subject.

E. FINANCIAL STATEMENTS

On 16 May 2012 AITSL conducted an audit of the AITSL Project Accounts. The signed Provisional Financial Acquittal Statement is included as Attachment 1. It should be noted that this period does not include invoice to ESA for final payment.

On 17 May 2012 Milura Financial Services conducted an audit ESA's part of the TTF Project; the Head Contract and Component 2, up to 4 May. It should be noted that this period does not include final payments to AITSL and ACDE which will be processed after 31 May.

On 10 May 2012 Kim Hanna FCA of Houston & Hanna Chartered Accountants conducted an audit of the ACDE TTF Project Accounts up to 4 May. The signed Provisional Financial Acquittal Statement is included as Attachment 2. It should be noted that this period includes the most recent payment from Education Services Australia for completion of the third Progress Report but does not include the corresponding payments to institutions, which were processed on 15 May.

A full financial acquittal statement will be provided with the final version of this Report, as per clause 12 of the Head Contract between DEEWR and ESA.

ANNEXURES:

Attachment 1: Signed Provisional Financial Acquittal Statement for Component 1

Attachment 2: Signed Provisional Financial Acquittal Statement for Component 3

Attachment 3: Full Evaluation Report and accompanying attachments

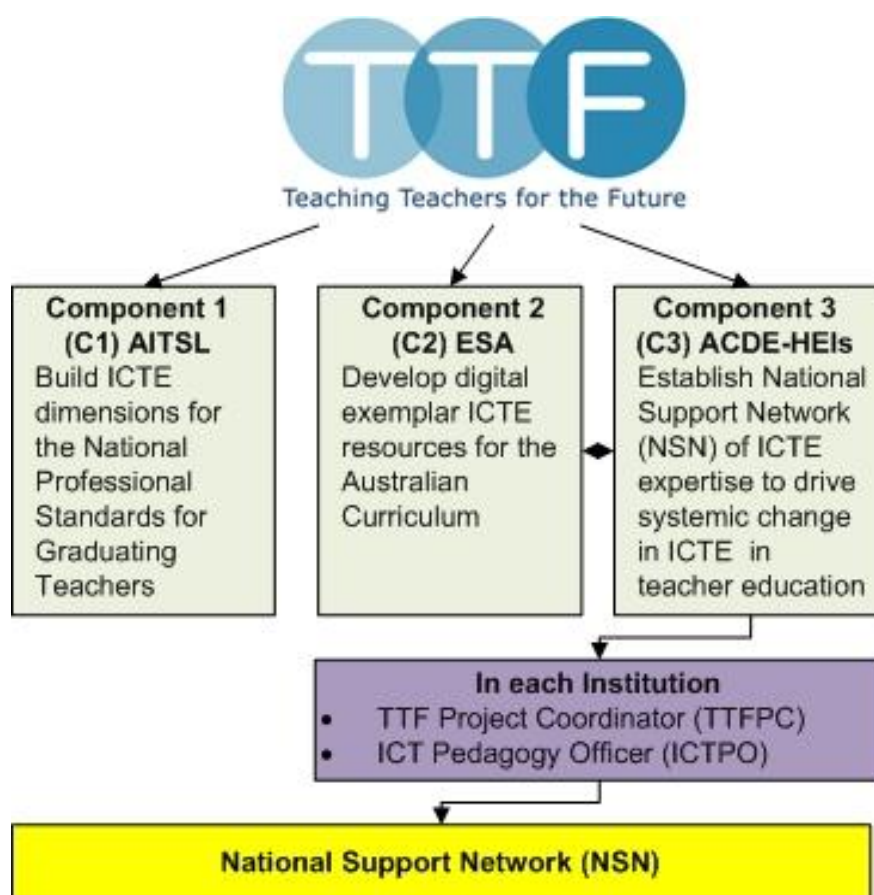
- 2.1 Component 1 Evaluation Report
- 2.2 Component 2 Evaluation Report
- 2.3 Component 3 Evaluation Report
- 2.4 Component 3 Additional Positive Outcomes
- 2.5 'Most Significant Change' Case Studies

APPENDIX 1—Project Summary from the TTF Implementation Plan

The Teaching Teachers for the Future (TTF) project specifically targets systematic change in the Information and Communication Technology in Education (ICTE) proficiency of graduate teachers across Australia through building the ICTE capacity of teacher educators and developing resources.

The project team is comprised of the Australian Council of Deans of Education (ACDE), the Australian Institute for Teachers and School Leaders (AITSL), Education Services Australia (ESA), the Australian Council for Computers in Education (ACCE) and all Australian universities/institutions with pre-service teacher education programs, as partners. The lead agency contracting with DEEWR is Education Services Australia. The Project Management team is supported by the Australian Learning & Teaching Council. The project has three components, see Figure 1.

Figure 1: TTF Components



Component 1

This component, led by AITSL in collaboration with The Australian Council for Computers in Education (ACCE), will develop and trial explicit ICT specific dimensions (elaborations/exemplars/ performance indicators) for approximately 60 % of the descriptors in the National Professional Standards for Graduating Teachers.

Component 2

This Component will be led by ESA and will develop a national collection of digital resources that provide pre-service teachers, teacher educators and teachers with rich professional learning and digital resources ‘ anywhere, anytime’ exemplar packages.

Component 3

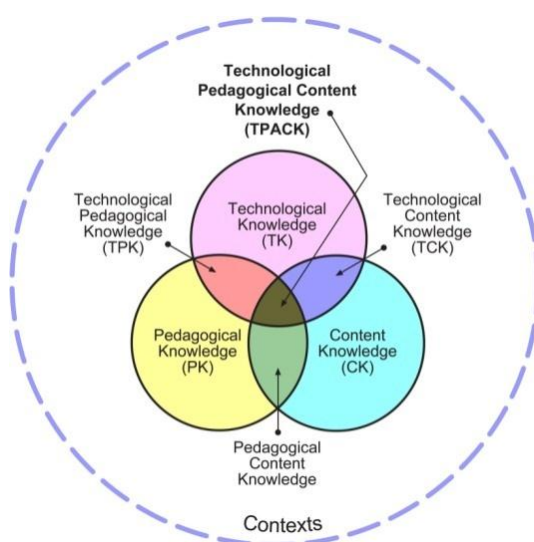
This component, led by ACDE and involving all Australian institution that provide teacher education, will second highly accomplished ICTE educators (ICT Pedagogy Officers— ICTPOs) to Australian universities² to work with teacher educators and pre-service teachers to develop and share exemplary ICTE curriculum and pedagogy, and to contribute to leadership in one or two of the Australian curriculum areas of Mathematics, Science, History and English.

The main focus of Component 3 is the development of professional learning networks that will provide targeted professional development and foster collaboration within and between teacher education institutions and relevant teacher education partners to build capacity within each institution.

A. Conceptual Framework

The Technological Pedagogical Content Knowledge (TPACK) conceptual framework espoused by Mishra and Koehler (2006)³, underpins much of the work in the project. The TPACK framework highlights the nuanced and complex relationships between three forms of knowledge: pedagogical (PK), content (CK), and technological (TK). This framework is represented in Figure 1 over.

Figure 2: TPACK Model



The TPACK model requires teaching and learning about ICT integration to be embedded in curriculum methods and professional studies components of a teacher education program, and to build capacity in teacher educators to embed ICT perspectives in their daily work.

The National Support Network will ensure that all Institutions frame their curriculum mapping exercises, development of ICTE resources, revision of subject profiles and project evaluation within the defining principles of the TPACK model.

² Secondees may be, but are not limited to, practising school teachers or administrators, university educators, or experts working in education systems

³ Mishra, P., & Koehler, M. J. (2006). [Technological Pedagogical Content Knowledge: A new framework for teacher knowledge](#). *Teachers College Record* 108 (6), 1017-1054.

B. Supporting the Priority School Reforms

1. Supporting teachers and school leaders in the transition to the Australian Curriculum

Each institution has nominated up to two focus subjects from the Australian Curriculum v1.1. As a result, 21 institutions will focus on English, 24 on Mathematics, 19 on Science and 11 on History. Many institutions have also stated their intention to revise their subject profiles and trial the ICTE dimensions and ICT Exemplar packages in more than two Australian Curriculum subjects.

The TTF Project Steering Committee includes subject experts in the fields of English, Mathematics, Science and History. They will provide support to the National Support Network (NSN). The NSN website has been designed to provide online discussion forums for each of the first four Australian Curriculum subjects, the Graduate Standards and elaborations, exemplifications and ICT resources including blog spaces, case studies, software examples and threads on pedagogical techniques. The accumulated data will provide a rich source for researchers and all academics to use in supporting teachers and school leaders in the transition to the Australian Curriculum.

The revision of subject profiles as part of the TTF Project will be supported by the use of the new Australian Curriculum documents and the National Professional Teacher Standards. As part of the program redevelopment, TTFPCs and ICTPOs will work towards ensuring the appropriate inclusion of ICT in whole course revision proposed to meet new national program accreditation procedures. In 2012, the lessons learnt from the experiences of academic staff will be captured in Institutional Action Plans and shared internally through symposia.

2. Enable teachers and school leaders to develop the skills needed to maximise potential benefits to students from the National Broadband Network and Digital Education Revolution

The TTF Project will directly support three pillars of the Digital Education Revolution. It will:

1. support systemic change to increase the level of ICT proficiency for teachers and school leaders across Australia to embed the use of ICT in teaching and learning and support the development of innovative projects and research that enable professional learning in the use of ICT;
2. support the development of high-quality digital tools, resources and infrastructure that can support the Australian Curriculum; and
3. support mechanisms to provide vital assistance for schools in the deployment of ICT.

3. Help teachers and school leaders develop the professional capabilities articulated in the National Professional Standards for Teachers

Support for this area of the Priority School Reforms will be underpinned strongly by the work of Component 1.

TTFPCs and ICTPOs will facilitate teacher education curriculum reform during normal institutional development phases across all relevant pre-service teacher education programs in line with ICTE dimensions of Graduate Teacher Standards to enable national accreditation against the National Professional Standards for Teachers.

The long term and ongoing success of the project will be partly evaluated through graduate teachers demonstrating their capabilities in the ICTE dimensions of the National Professional Standards. AITSL will develop a survey instrument to probe the extent of the use of the ICTE dimensions by pre-service teachers and universities. This survey is being coordinated with the work of the TTF Research and Evaluation Working Group.

4. Provide the same level of access to quality professional learning for teachers and school leaders in metropolitan, country and remote schools

TTF is a nationwide project covering all 39 teacher education institutions. Institutions based outside metropolitan areas, ie Charles Sturt University, University of New England and Batchelor Institute of Indigenous Tertiary Education, will be encouraged to contribute their regional perspective to the NSN and development of ICT Exemplars.

5. Deliver online professional learning resources that Australia can share with other nations, especially developing states in our region working toward the Millennium Development Goal of universal primary education

As specified in the Head Agreement with the Department of Education, Employment and Workplace Relations, all Project Material will be made available online and free of charge to school teachers, pre-service school teachers, school principals and other school teaching staff, as well as University lecturers, university tutors and other university teaching staff. These stakeholders may be in Australia or overseas.

APPENDIX 2—Action Plan

The Report identifies recommendations for Universities, DEEWR, the Australian Council of Deans of Education, and a recommendation for developing future online learning resources. These are outlined below. Note that each institution has developed their own individual action plan tailored to their own specific environments.

1. Recommendations for Universities

The Action Plans developed by participating teacher education institutions set out internally agreed strategies for sustaining the project achievements at the local level. A review of these Plans reveals an ambitious and detailed array of approaches. Nevertheless, there are some similarities between the Plans that can be summarised as four high-level recommendations for maintaining sustainable and scalable improvements to teacher education provision:

1.1 Each Faculty or School responsible for Teacher Education should develop, maintain and add to on a regular basis, an easily accessible repository of resources to enable all staff (and students) to access these resources as necessary.

This is partly a continuation of the mapping curriculum and pedagogy practices exercise undertaken in the TTF project. Institutions reported that they plan to take this further by considering all of the ESA ICTE resources for use in future classes.

Content management systems such as Blackboard 9.1 will assist academics in their mapping of current and future courses against what resources and good practice are available.

1.2 Each Faculty or School responsible for Teacher Education should develop a leadership team to help staff to use these resources in a manner that is consistent with the TPACK model.

This can be equated with a continuation of the support to curriculum methods staff task pursued by ICTPOs under the TTF project. A minority of ICTPOs will remain employed by their institutions, though in roles with a reduced ICTE focus, and all TTFPCs will remain in post. These staff will act as hubs for wider support to their faculties, coordinating professional development workshops and, in some cases, coaching peer mentors who have been identified from the TTF project.

1.3 Each Faculty or School responsible for Teacher Education should redesign certain key units to provide both a model of integrated ICTE strategies and a model of effective redesign processes to form the basis of a broader redesign initiative across the school/faculty.

This relates closely to the revising subject profiles task from the TTF project. On the back of the successes in redesigning focus Australian Curriculum subject units, faculties will now take a more holistic approach to course offerings to avoid repetitive use of particular strategies across courses. The

involvement of the Network of Associate Deans of Learning and Teaching in Education (NADLATE) at the third NSN Workshop has helped to give senior ownership of this task in many institutions.

1.4 Each Faculty or School responsible for Teacher Education should develop institutional processes/systems to enable sustainable improvements in curriculum, pedagogy and assessment in relation to ICTE dimensions, and graduates that can demonstrate the ICTE dimensions of the National Standards for Graduate Teachers.

This relates to procedures that are being established to ensure teacher graduates meet the National Professional Standards and ICTE digital resources continue to be embedded in units. Many faculties have reported that they plan to follow this approach and include reporting of ICTE implementation into existing accountability processes, for instance by ensuring unit assessments include a demonstrated capability of pre-service teachers to meet the graduate National Professional Standards.

2. Recommendation for the Department for Education, Employment and Workplace Relations

2.1 Future capacity building and change implementation projects in the use of ICT in education (ICTE), implementing the Australian Curriculum and National Professional Teacher Standards should emulate the collaborative model tested and proven to be very successful in the TTF project.

Not only did the TTF project bring all teacher education institutions together in service of common goals but the partnership with AITSL and ESA provided a genuine opportunity for all three partners to leverage off the expertise and constituencies of the others to produce outcomes, resources and capacities that surpass what could have been achieved if each had worked independently.

3. Recommendation for the Australian Council of Deans of Education

3.1 ACDE should assume responsibility for sustaining facilitation of a collaborative national support network of ICTE experts across Australian teacher education institutions. As part of this responsibility ACDE will encourage and support:

3.1.1 Each institution responsible for pre-service teacher education to develop and share exemplary ICTE pedagogy in one additional Australian curriculum area and in one cross-curriculum priority and generic capability statement.

Implementation of this recommendation will build on the institutional knowledge developed by ICT Pedagogy Officers in the TTF project and will maintain the momentum they have successfully generated.

ACDE will coordinate these activities to ensure broad coverage of one Australian Curriculum area in the early years, middle years or senior

years of schooling from Phase 1 (English, Mathematics, Science and History) or Phase 2 (geography, arts and languages). The area chosen in each institution will be different from the area that was its focus in the TTF project. As well one of each of the Australian Curriculum, Assessment and Reporting Authority's (ACARA) General Capabilities⁴ and Cross-Curriculum Priorities⁵ will be incorporated into this work.

3.1.2 Development of informal State and Territory networks to ensure ICTE elements of the Australian Curriculum include local content and technological priorities.

The successful National Support Network model will be continued and will include an online presence to connect its members virtually. State-based communities will constructively engage with local schools and their respective jurisdictions to ensure that the use of ICTE in the classroom is effectively managed in the roll out of Australian Curriculum.

3.1.3 Collaborative research in areas of need identified by the TTF Project Evaluation.

The discovery that teacher educators and pre-service teachers are less confident in the use of, or the usefulness of ICTE for educating Aboriginal and Torres Strait Islander students has serious implications for education in rural and remote communities and should be fully investigated through research specifically designed for that purpose.

Further analysis of the impacts within various teacher education institutions should be undertaken to determine what factors lead to successful integration of ICTE in teacher education curricula. Comparisons across a small sample of universities did uncover marked differences between universities in relation to perceived confidence in use and usefulness of ICT in teaching. This invites further research to determine the characteristics of teacher training programs that are more likely to be effective in encouraging effective use of ICT by teacher trainees and new graduates.

4. Recommendation for expression of the ICT Statements

4.1 Consideration should be given to preparing Holistic Statements against the National Professional Standards for Teachers rather than against Focus Areas within Standards.

Feedback on the Statements suggested that writing ICT Statements for each Focus Area breaks up the ICT pedagogies into small pieces, and makes

⁴ Literacy, Numeracy, Information and communication technology competence, Critical and creative thinking, Personal and social competence, Ethical behaviour, and Intercultural understanding.

⁵ Aboriginal and Torres Strait Islander histories and cultures, Asia and Australia's engagement with Asia, and Sustainability

meeting standards in each Focus Area an artificial activity. Interviewees also warned about the potential for building “cumulative complexity”.

5. Recommendation for developing future online professional learning resources

5.1 Consideration should be given to the development of a suite of resource packages to support Phase 2 of the Australian Curriculum, utilising reviewed model of existing TTF resource packages.

Implementation of this recommendation will build on the project knowledge developed by the consortium in the TTF project and will maintain the momentum they have successfully generated.

Education Services Australia should coordinate these activities to ensure broad coverage of one Australian Curriculum area in the early years, middle years or senior years of schooling from Phase 2 (geography, arts and languages). The TTF project demonstrated that the resources developed through the Component 2 resources development activity can be repurposed to meet other Digital Education Revolution objectives; including the Component 1 Illustrations of Practice resources.

The resources for teacher support for Phase 2 of the Australian Curriculum should incorporate digital material and professional learning in a variety of media formats; annotated video of teacher and pre-service teacher practice, advice on the use of technologies within the pedagogical approach, the facility to deconstruct and repurpose resources, research articles and tools to support collaboration and planning. The resource packages should incorporate similar, but not be limited to, the same elements as the existing 12 resource packages and pre-service teacher trial materials. The resource packages should be licensed for use for educational purposes and through Creative Commons, where this option exists, and should be free for use by pre-service teachers, teacher educators and schools.

APPENDIX 3—TTF Committees

TTF Executive Committee

In June 2011 the Project Director, Heather Watson, became Chair of the TTF Executive Committee which comprised Component Project Leaders. The Executive Committee's responsibilities were to provide overall performance monitoring of each Component, project management, risk assessment and risk management, reporting to DEEWR and dispute resolution.

The TTF Executive Committee met formally nine times over the course of the project. The members of the Committee are noted below. The dates of the meetings and outcomes from those meetings are also summarised below.

20 April 2011

- Terms of reference, membership and Chair were agreed.
- The Committee agreed protocols regarding contacting DEEWR.
- The Committee agreed upon procedures for managing the collection of project data, acknowledging its effects upon reporting timelines.

2 June 2011

- It was noted that a Project Evaluation Report is to accompany the Final Report to DEEWR and that Professor Christine Ewan had undertaken to compile this report.
- The Committee was advised that there would be no adverse impact on the project relative to the timeline extension granted by DEEWR in response to ESA's request. It was noted that AITSL's timeline/s had not changed.
- The Committee noted the close relationship with other ICTIF-funded projects, including that of Principals Australia. The Committee resolved to thank the leader of the University of New South Wales *Learning to Teach Online Project* for the offer of the use of their project's resultant resources but to decline the offer citing no substantive alignment with the TTF Project.
- As a result of a request from DEEWR relating to TTF work carried out to support indigenous students, the Committee agreed to the creation of a forum on the TTF SharePoint site for the sharing of pedagogy for teaching indigenous communities.
- It was agreed to migrate the TTF site housed on the ALTC website to ESA's servers.

4 August 2011

- The Committee was advised of a change in AITSL membership on the Project with Edmund Misson replacing Keren Caple and Graeme Hall replacing Anne Loos. Melanie Boyd also joined in a supporting role to Graeme Hall.
- Specific committee members were tasked with developing guidelines for the use of project name and logos, including project name in email title and use of logo in email signature block.

- Specific committee members were tasked with developing guidelines for project acknowledgment in conference papers and journal articles.

22 September 2011

- It was acknowledged that the ICTIF-funded PLANE project is designing a resource for pre- and in-service teachers. The Committee agreed that discussions around linkages with TTF should continue.
- Due to an in-kind contribution from ALTC which surpasses that which was budgeted, there is forecast to be approximately \$90,000 contingency in the project finances. The Committee agreed to present proposals to DEEWR before and in the second Progress Report to reallocate this funding towards project sustainability initiatives, namely: a larger third NSN workshop, analysis of the TPACK surveys, and ongoing support to the NSN online environment. It was also agreed that additional project management costs incurred by ESA and ACDE as a result of their leadership roles would be reimbursed.
- The Executive Committee endorsed the draft second Progress Report. It was noted that each institution and consortium partner had submitted its individual Progress Reports on time.

10 November 2011

- It was reported that ESA will host the NSN website for another year free of charge.
- The Committee agreed to the proposal to invite Professor Punya Mishra and Associate Professor Matthew Koehler, authors of the TPACK model, to the third NSN Workshop.
- The Committee endorsed the proposed Final Report outline.
- The Committee agreed that the newly formed TTF Evaluation Group would carry forward final reporting to DEEWR, with due accountability to the TTF Executive Committee.

8 December 2011

- The Committee agreed that DEEWR would be approached to enquire whether they would accept a verbal progress update at the scheduled 19 December meeting in place of the fourth written Update due 16 December.
- It was agreed that the third Progress Report, due 30 March, would include material from the draft Final Institutional Reports received that month. This would negate the need for further Institutional Progress Reports at that time. To meet agreed Deliverables, institutions would be asked to provide drastically streamlined submissions for this milestone instead.

16 February 2012

- The Committee approved for use the institutional template for the third Progress Report
- The Committee agreed upon the substance and a process for a TTF Sustainability Proposal to DEEWR.

14 March 2012

- The Committee considered the first draft of the TTF Sustainability Proposal and made recommendations for the final version.

3 May 2012

- The Committee were presented with the regular financial report for the project
- Consideration of the first draft of the Final Report was carried over to the subsequent Steering Committee meeting

TTF Executive Committee Members

Chair (since June 2011):

Ms Heather Watson

Project Director & Project Leader –
Component 2
Education Services Australia

Members:

Ms Keren Caple

Project Leader – Component 1 (*until July 2011*)
Australian Institute for Teaching and
School Leadership

Professor Toni Downes

Project Leader – Component 3
Australian Council of Deans of Education

Professor Christine Ewan

Project Director and interim Chair
Australian Learning and Teaching Council
(*until June 2011*)
Senior Project Consultant (*from June 2011*)

Ms Gabrielle England

Senior Project Manager &
Project Manager – Component 2
Education Services Australia

Mr Edmund Misson

Project Leader – Component 1 (*from July 2011*)
Australian Institute for Teaching and
School Leadership

Professor Geoff Romeo

Project Leader – Component 3
Australian Council of Deans of Education

In attendance:

Ms Solveig Dewhurst

TTF Project Manager
Australian Learning and Teaching Council
(*until November 2011*)
Project Consultant
Australian Council of Deans of Education
(*from May 2012*)

Ms Helen Kenneally

TTF Project Executive Officer
Australian Council of Deans of Education

Mr Gareth Patterson

TTF Project Officer
Australian Council of Deans of Education

TTF Steering Committee

The TTF Steering Committee, chaired by Professor Christine Ewan, comprised members of the TTF Executive Committee, specified personnel responsible for achieving their Components' deliverables, as well as specialist Academics responsible for project leadership within their disciplines. The Steering Committee was responsible for monitoring the performance and progress towards, and delivery of, major activities and milestones within each component. It also oversaw the work of the Research and Evaluation Working Group (REWG), chaired by Professor Glenn Finger. Towards the end of the project the Committee worked to develop strategies for sustaining the achievements of the project beyond the cessation of central funding.

The TTF Steering Committee formally met eleven times over the course of the project. The members of the Committee are noted below. The dates of the meetings and outcomes from those meetings are also summarised below.

19 January 2011

- Committee members introduced themselves and agreed on protocols for informing ALTC of any project meetings set up for Component-specific work.
- The first National Support Network workshop was confirmed for 24 February 2011.
- Procedures for consortium partners' review of the Head Contract between DEEWR and ALTC were agreed.
- The draft Institutional Guide was presented and minor changes were suggested.
- It was agreed that all templates produced for institutions would be shared by ALTC with the Committee before being put to use.
- It was confirmed that ALTC would host the TTF webpages on its site.
- The work of the Research and Evaluation Working Group (REWG) was endorsed by the Committee.

24 March 2011

- The Committee was informed of recent amendments to the Head Contract, including ESA's role as the Lead Contractor.
- The Agreements between ACDE and Institutions were largely agreed in principle, but were awaiting the signing of the Head Contract before being signed-off themselves.
- The Implementation Plan was presented to the Committee and suggested alterations were requested by 25 March.
- The Committee agreed upon a workflow for the production of Progress and Final Reports.
- The Committee received a report on the status of the NSN SharePoint site.
- The Committee received a report on the work of the Research and Evaluation Working Group (REWG).

29 April 2011

- The schedule for future Steering Committee meetings was established.
- The Committee received a report on the status of Institutional Agreements.
- It was reported that the first payment funds were being transferred from ESA to ACDE today. Payments to Institutions could proceed based on signed Agreements and invoices received.
- It was reported that the draft ICT elaborations are available for distribution, use and trial.
- It was reported that a call for ICTPO reviewers for the second draft of the resource packages had gone out.
- It was reported that the Component 2 Project Reference Group met 1 April and resolved to contact DEEWR seeking a six-week extension for the delivery of the first batch of resource packages from 9 May to 4 June given the timeline complexities involved.

2 June 2011

- It was reported that all Agreements had been distributed week commencing 11 April with 28 out of the 39 signed and returned, and that eleven are still outstanding being tied up in institutional legal departments with no adverse outcomes expected. It was noted that all institutions had at least one ICTPO in place and working on the project.
- It was reported that 22 payments had been processed thus far and that no invoices were currently outstanding. It was further noted that the process established for the ongoing payment of invoices ensured those received were paid on the Friday of every week.
- It was reported that the NSN site was functioning well with over 200 accounts established including TTF and ICTPO representation from all institutions; the TTFPC and ICTPO email lists were regularly reconciled with those held by the ALTC.
- The Committee noted that all internal project data and resources housed on ALTC servers had been migrated to a secure TTF-specific environment, with regular housekeeping and archiving processes established.
- Subsequent to advice received from the Executive Committee and ensuing discussion, it was resolved to decline the offer of the COFA project's output resources due to a lack of substantive alignment with the TTF Project, and to extend the Committee's gratitude to the UNSW project team for its offer.
- The Committee received a report from REWG that 4,900 students participated in the recently-released survey with 3,772 having completed in full. The survey is to remain open until end July (previously closing June 10) seeking to achieve an aspirational 30% response rate.
- Regarding Component 1, advice was received that a terminology change variation statement would be submitted to DEEWR along with a footnote speaking to change in first Progress Report was noted.

4 August 2011

- Edmund Misson and Graeme Hall from AITSL were welcomed to the committee replacing Keren Caple and Anne Loos who were moving to other roles within AITSL. It was noted that Melanie Boyd (AITSL) will be supporting Graeme Hall and that Emma Scott (AITSL) will be continuing with the project providing transition support to both Edmund and Graeme. The committee acknowledged the considerable efforts of both Keren and Anne in support of the project and wished them both well in their new roles.
- The Committee was advised that all but one Agreement had been signed and received. This institution was being followed up.
- The Committee was advised that over \$3 million has been paid out in the first three instalments to 29 institutions and that the remaining 10 have been followed up with a request to submit invoices.
- It was reported that: SharePoint now had 277 registered accounts with 135 registrations received in March alone; resources from the second NSN workshop were now on SharePoint; email alerts for TTFPCs and ICTPOs had been set up and were functioning successfully, and; a local register had also been set up to capture TTF-related research being undertaken but noted that an awareness of people using the project name and data generated under the project name was required.
- Given the impending closure of the ALTC, a new website was under construction which will be advised when completed.
- The Committee noted the ongoing development of ICTPO networks in the form of state-based get-togethers and afternoon teas.
- The Committee received an update on REWG activities noting that the survey was now complete with over 7,000 responses received; this was considered a good response rate, and the *Most Significant Change* (MSC) method had received ethics clearance.

22 September 2011

- The Committee received a detailed report on institutional progress as provided in their Progress Reports.
- The Committee received a thorough report of REWG activities to date.
- The Committee was presented with the proposed approach by ESA to trialling and evaluating the 12 packages in institutions, and sought Committee ratification to proceed. It was noted that the Project Reference Group has provided its consent. The Steering Committee endorsed the proposed approach.
- The internal reallocations of project funds proposed by the Executive Committee were approved by the Steering Committee.

10 November 2011

- A Working Party for preparations for the third NSN Workshop was formed and presented ideas for the inclusion of Professor Punya Mishra and Associate Professor Matthew Koehler to the event.

- The work of the TTF Evaluation Group on the Final, Institutional and Evaluation Report outlines was presented to the Committee.
- The Committee received an update, including that the MSC website to collect institutions' stories (which will inform their Action Plans), and that the second survey has been out for a few weeks and received 2566 responses. The survey will remain open until 5 December.

8 December 2011

- Discussion was held over where locally developed teaching resources would be stored, and whether they would be accessible to non-TTF people. It was agreed that the types of resources being developed would be quite specific to institutional circumstances and would generally have to be adapted to be of use to others.
- It was agreed that NADLATE members (Network of Associate Deans of Learning and Teaching in Education) would be invited to the third NSN Workshop to support the sustainability of project outcomes. The travel costs (approx. \$20k) would be funded by NADLATE themselves. They would meet and agree a project to support the TTF project while at the event.
- ICTPOs' travel (maximum approx. \$20k) would be funded by ESA from the reallocation of funds agreed by DEEWR in the second Progress Report. ACDE will administer this.

16 February 2012

- The Committee received a report from the positive meeting held with DEEWR in Canberra on 19 December.
- It was reported that the Executive Committee had agreed to write a Sustainability Proposal to DEEWR, to be submitted alongside the Third Progress Report on 30 March. This proposal would require evidence of the impact of the project, most likely drawn primarily from early analysis of the *Most Significant Change* data.
- It was reported that over 90 registrants were confirmed attendees at the third NSN Workshop, and each institution is sending at least one representative. The Committee was informed that the Network of Associate Deans of Learning and Teaching in Education (NADLATE) would be attending, meeting separately for half of one day. Professor Punya Mishra and Associate Professor Matthew Koehler were also confirmed attendees and would deliver two keynote addresses.
- All REWG activities were reported as progressing well: the MSC stories were being annotated on the Zahmoo site and the data analysis was deemed likely to provide strong evidential support for the positive outcomes of the project. Further, project participants were being encouraged to submit abstracts for the ACEC2012 conference, demonstrating the project's ability to draw on collective wisdom from across the country.
- The Committee was presented with the sole draft Institutional Report received to date as an early example of the data which can be expected from the 39 institutions.

22 March 2012

- The Committee was told of the plan by ESA to explore making highlights packages of the workshop available to all HEIs, costs permitting. ESA will upload longer, edited footage of the Institutions' Presentations and Mishra & Koehler on the NSN site in six separate files.
- It was reported that, as a result of the research and evaluation sessions at the third NSN Workshop, the REWG had followed up with Trevor Bond regarding creating 39 institutional TPACK survey analysis reports and graphs. This extra work would be paid for by Griffith University.
- The draft third Progress Report was presented to the Committee and comments were invited until 26th March.
- The TTF Sustainability Proposal was presented to the Committee and three principles—spreading the project to a further one of the Australian curriculum areas and in one cross-curriculum priority and generic capability statement, the creation of State and Territory networks, and closer links to local schools—were endorsed for inclusion.

3 May 2012

- The Committee were informed that the MSC stories website would be decommissioned at the end of the month. Members will meet and decide upon the method of storing and sharing all REWG data in advance of this
- The Committee considered the first drafts of the Final and Evaluation Reports, with a specific focus on the recommendations
- The Committee endorsed the Commonwealth and institutional recommendations and agreed that the recommendations on resource development be taken from the Sustainability Proposal. It was also agreed that a recommendation be made to ACDE to facilitate the NSN in the future.

TTF Steering Committee Members

Chair

Professor Christine Ewan

Project Director
Australian Learning and Teaching Council
(until June 2011)
Senior Project Consultant (from June 2011)

Members:

Ms Melanie Boyd

Project Officer – Component 1 (from July 2011)
Australian Institute for Teaching and School Leadership

Mr Tony Brandenburg

ACCE Representative (until February 2012)
Australian Council for Computers in Education

Ms Keren Caple

Project Leader – Component 1 (until July 2011)
Australian Institute for Teaching and School Leadership

Professor Toni Downes

Project Leader – Component 3
Australian Council of Deans of Education

Ms Gabrielle England

Senior Project Manager &
Project Manager – Component 2
Education Services Australia

A/ Professor Susanne Gannon

TTF Curriculum Specialist - English
University of Western Sydney

Mr Graeme Hall

Project Manager – Component 1 (from July 2011)
Australian Institute for Teaching and School Leadership

A/Professor Margaret Lloyd

National Support Network Coordinator
Queensland University of Technology

Ms Anne Loos

Project Manager – Component 1 (until July 2011)
Australian Institute for Teaching and School Leadership

Mr Edmund Misson

Project Leader – Component 1 (from July 2011)
Australian Institute for Teaching and School Leadership

A/Professor Paul Newhouse

TTF Curriculum Specialist – Maths
Edith Cowan University

Professor Geoff Romeo

Project Leader – Component 3 (with History curriculum expertise)
Australian Council of Deans of Education

Dr Jenny Wajsenberg

Project Manager – Component 2
Education Services Australia

Ms Heather Watson

Project Director & Project Leader – Component 2
Education Services Australia

Mr Bruce White

TTF Curriculum Specialist – Science
University of South Australia

In attendance:

Ms Solveig Dewhurst

TTF Project Manager
Australian Learning and Teaching Council (until November 2011)
Project Consultant
Australian Council of Deans of Education (from May 2012)

Ms Helen Kenneally

TTF Project Executive Officer
Australian Council of Deans of Education

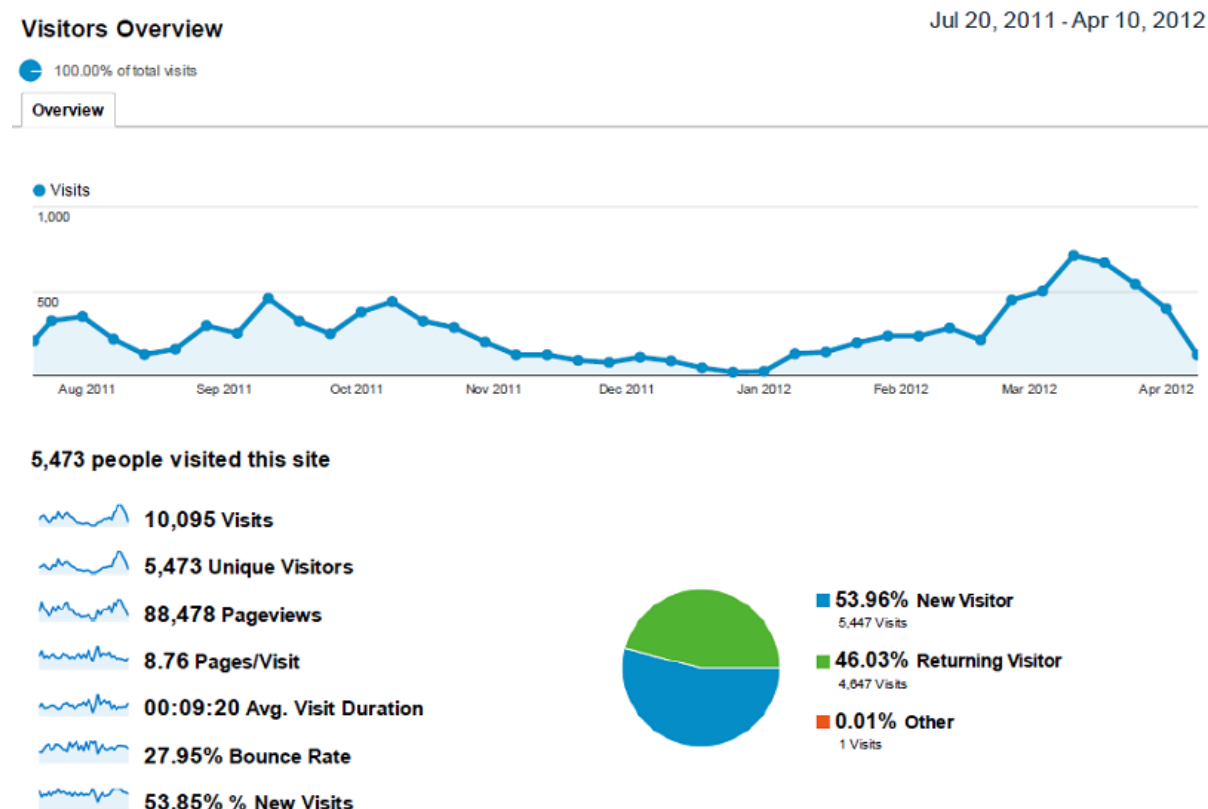
Mr Gareth Patterson

TTF Project Officer
Australian Council of Deans of Education

APPENDIX 4—Data Reflecting TTF Site Usage

Key statistics on visitors to the site, as shown in Table 1, indicates that as at April 10, 2102, 5,473 people have visited the TTF site since its publication.

Table 1: Visits to the TTF website since 20 July 2011



Source: Google

Just over 10,000 visitors have reached the site, with over 5,400 unique visitors. This suggests that just over half of the viewers are returning visitors. As the main audience is the 39 higher education institutions, this suggests a solid penetration rate and that, on average, 139 people in each institution have engaged with the site, some multiple times.

The data references an average of nine pages per visit, suggesting users might be navigating to content specifically relevant to their individual needs. On average, visit duration is over 9 minutes and, in conjunction with the nine pages per visit, this could include time spent reading those pages and also reviewing one or several videos.

Bounce rate is an internet marketing term used in web traffic analysis. It represents the percentage of visitors who enter the site and leave the site (“bounce”) rather than continue viewing other pages within the same site. Bounce rates can be used to help determine the performance of an entry page. An entry page with a low bounce rate means that the page effectively causes visitors to view more pages and continue deeper into the website. On an open site, a bounce rate of less than 20% is seen as unusual

and anything over 35% would be of concern. Note also that once users have entered the TTF site once, they can go direct to a package and bypass the front page of the site.

A review of the "top ten" numbers suggests the following:

- The majority of visits (~97%) are from Australia, as expected.
- A third of the visits are from Melbourne (~32%).
- Almost half of the users viewing the site are using Internet Explorer (~44%).
- Three quarters of users are running Windows (~73%). This is interesting as, when used in conjunction with the Internet Explorer figure, we can see that a number of Windows users are running alternative browsers.
- The iPad is the most used mobile device (~70%) followed by the iPhone (~22%), so Apple devices account for the vast majority of mobile access.
- There was a spike in usage in mid-March. This is most likely related to the presentation at the third National Support Network (NSN) meeting and the addition of the pre-service teachers' content, which more than doubled the regular number of visits. It was by far the most active period in the site's History.
- In the months of September and October 2011 and March and April 2012 over 500 visitors went to the site. This correlates with key semester teaching times in the HEIs.

APPENDIX 5—Institutions' Conclusions on the TTF project

This section presents some of the concluding remarks institutions made in their final project reports. These anonymised statements convey the considered judgments of ten TTF Project Coordinators on the impact of the TTF project on their institutions.

The Faculty has been able to dedicate the time of the ICTPO and the TTFPCs to consistent meetings and discussions on ICTE. With all the conflicting needs across a university, sometimes we need to have a reason to move a particular focus to the top of the list. The TTF has enabled us to do this. The project has also provided valuable frameworks for future projects in the Faculty in the area of ICTE both in terms of pragmatic guidance on how to conduct these projects and also in terms of promoting TPCK as a conversational and philosophical framework in which to embed the projects.

Involvement in the TTF project has enabled staff to allocate time to the examinations and incorporation of the TPACK model into ICT use in the School of Education. It has also provided opportunities to engage in meaningful exchange with other tertiary institutions and to examine a wealth of recent ICT developments (both hardware and software). There is an increased interest in developing pedagogically sound ways of incorporating ICT into the work undertaken by students at [the institution] and in these students' ability to successfully advance TPACK in the school in which they will ultimately serve.

The development of these courses and the embedded TPACK is only beginning. The advances made in the other areas of the TTF project, significantly the resources provided, will support the ongoing growth of our students. Given that these resources have only recently been released, particularly the PST materials, and following the excellent presentations at the ACDE Conference, we are again reflecting on how we can embed them to better support our students. In conclusion, a primary outcome of our involvement in the TTF project is the emergence of a broadly distributed expertise in ICTE and TPACK, and a growth in school and institutional capacity to model and immerse our students in learning that has been transformed by the use of digital resources and pedagogies.

By far, the greatest successes were based around the networks and opportunities to identify in a community of practice on the basis of a commitment to ICTs and professional capacity building with Teacher Education. There was, and continue to be, much to be gained from sharing stories, experiences with colleagues from across Australia.

The project has given a massive boost to moving our school in the digital direction. To some extent, the success is represented by the fact that the demand for computer laboratories for teaching increased to such an extent for 2012 that it could not be timetabled with existing facilities and thus 140 laptops computers have been purchased, to be accessed using six trolleys across the two campuses. However, this is seen as a short-term solution with one of the projects initiated for 2012/13 investing a move to using student-owned devices rather than university provided laboratories. In most units there is now more use of ICT and most staff are, where relevant, actively pursuing increased use of ICT in their teaching. With much of this now embedded within the official unit descriptions and outlines it is likely to be sustained as new staff join the School.

The project has been a catalyst for positive changes to the culture in the School of Education as it has facilitated professional dialogue about ways to improve both the quality of teaching and the quality of our graduates. As a direct result of the project, the school recognised the importance of investing in the professional development of part-time instructors, and this will have long-term benefits as these individuals have already demonstrated their willingness to apply their learning from the project to their regular teaching commitments in other topics. Moreover, the project has highlighted the need to align all topics in all undergraduate programs with the National Professional Standards for Teachers (Graduate Level) and make these connections explicit to pre-service teachers in topic information and in weekly learning activity modules. In addition, the project has prompted other Topic Coordinators to seek support in the use of ICT in their topics. Importantly, there is now an expectation that the changes implemented in topics will be sustainable and form the foundation for ongoing critique in teaching teams.

Through the leadership of the Dean, the aims of the TTF Project have been embedded in School of Education Strategic Plan 2012-2015. As a result, there is potential for enduring change and reform in curriculum units that reflects the impetus of both the Australian Curriculum and the implementation of the AITSL Graduate Teacher Standards. The revamped assessment is designed to move students away from entry level technologies (such as PowerPoint) and from default thinking (where the inbuilt defaults of the software or hardware become the only engagement by students).

As a result of the involvement with the TTF Project, it has become clear that there are some important implications for moving forward. The first is that the barriers

to learning through inadequate infrastructure need to be removed if the aim of appropriate inclusion of ICT in whole course revision to enable courses to meet new national accreditation procedures is to be realised. It appears that it is critical for pre-service teachers to personally interact with ICT from the perspective of both a student and a teacher if they are to be confident enough to integrate ICT in their own practice. Secondly, it is important to continually build capacity in teacher educators to embed ICT perspectives in their daily work, if they are to have a significant impact on the pre-service teachers' ICT capacity. There are financial implications for both of these.

This project has indeed been an adventurous one especially given its many dimensions and its timeframe. Bringing about institutional change is not easy, and if it was, all Australian Universities would be much more 'technologically embedded' than they are now. For me, the main outcome of this project has been raising the importance of ICT as a necessary inclusion within the curriculum and not the domain of those who have an interest. I am convinced that this project has provided the necessary impetus for us to move ahead. In some ways the varying dimensions of this project compounded it. While I recognise the need and value of these perhaps a longer time frame would have assisted. I feel we are now only beginning.

This project has resulted in significant changes at this institution. The scale of the project being national certainly added credibility and focussed the attention of the university hierarchy and staff around importance of their sustained engagement and support. A strength of the design of the program was the ability for each institution to take up and individualise the project and engage staff at levels where they were able to operate and be successful and take their institution to the next level of engagement of ICTE. This was achieved with collaboration between institutions and not competition reflected in the same level of funding for each organisation regardless of size. As a small institution with little discretionary funds, this was significant in the success of the project.

The work done so far has been important in laying the foundations and raising awareness, but there is a great deal more work to be done. Within the constraints of university and faculty budgets, the sustainability and expansion of this initiative may present challenges. However, several staff members have been up-skilled and these staff members will be encouraged to share their knowledge and enthusiasm with others. Some valuable resources have been identified and made accessible so that staff can use them and improve their ICTE expertise and confidence.