

*X World Conference on Computers in Education  
July 2-5, 2013; Toruń, Poland*

## **Teaching Teachers for the Future: An Australian Government National Project**

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### **Abstract**

This paper describes the Teaching Teachers of the Future (TTF) Project – a national project funded (\$8.8mil AUD) by the Australian Government. The project was aimed at building the capacity of student teachers to use technology to improve student learning outcomes. It discusses the aims and objectives of the project, its genesis in a changing educational and political landscape, the use of TPACK as a theoretical scaffold, and briefly reports on the operations of the various components and partners. Further, it discusses the research opportunities afforded by the project including a national survey of all PSTs in Australia gauging their TPACK confidence and the use of the Most Significant Change (MSC) methodology. Finally the paper discusses the outcomes of the project and its future.

### **Keywords**

student teacher, pre-service teacher, teacher education, teacher, professional development, TPACK, ICT in education, IT in education

### **INTRODUCTION**

The TTF project was funded by the Australian government through the Department of Employment, Education and Workplace Relations (DEEWR) and the ICT Innovation Fund (ICTIF). The project team was awarded AUD\$8.8 million to conduct ICT capacity-building on a scale not seen before in this country. It involved all 39 Australian Universities providing teacher education working alongside the peak bodies of the Australian Council of Deans of Education (ACDE), the Australian Institute for Teaching and School Leadership (AITSL), Education Services Australia (ESA) and the Australian Council for Computers in Education (ACCE). It was an ambitious, nationally significant undertaking that focussed on pre-service teachers (PSTs) (Student Teachers), teacher educators and the new Australian Curriculum. The broad aim of the project was to initiate systematic change of teacher education curriculum and pedagogy across the country. The project consisted of three components.

1. Building explicit Information and Communications Technology in Education (ICTE) dimensions to complement the new National Professional Standards for Graduating Teachers (AITSL 2011) [Component 1 – C1];
2. Developing digital ICTE resources in English, Mathematics, Science and History – the first phase of the new Australian Curriculum, to inform teacher education programs and guide professional practice for PSTs, and [Component 2 – C2];
3. Establish a sustainable national support network of expertise and resources to drive systemic change in curriculum and pedagogy in teacher education in Australia [Component 3 – C3].

## **GENESIS OF TTF PROJECT**

The TTF project had its genesis in early 2010 as a response to the Australian government's call for projects "to support teachers and school leaders to embrace new technology and encourage them to creatively and effectively integrate the use of Information and Communication Technology (ICT) into the classroom" (DEEWR, 2010, p. 3).

The TTF project aim was to enrich the experience of PSTs and, as a result, affect practices and pedagogies in teacher education. To initiate the project bid, a small group of academics led by Professor Toni Downes, Charles Sturt University and Chair of the Australian Council of Deans of Education, and Professor Geoff Romeo, Australian Catholic University, began conversations about what they would see as a significant way forward in promoting transformative change in Australian schools through the meaningful use of ICT and the role that teacher education institutions could play in this. Eventually, a project plan emerged, one informed by the research and a firm belief that an approach coordinated on various levels needed to be initiated. It was seen as vitally important to break away from past and existing practices that did not seem to be effective in sponsoring change. What emerged, particularly in its bringing together of all universities and government agencies, with a common goal, was something that had never been seen before in Australia.

## **The educational and political landscape**

An understanding of the educational and political landscape in Australia from 2007 - 2010, when there was much national innovation and a number of key initiatives, is important in understanding why the project emerged as it did is. A critical project design tenet of the TTF project was that it needed to be of its time, that is, aimed at meeting current and future needs, rather than replicate what already existed or had been trialled before. It needed, above all else, to fit within emerging ideas about 21st Century learning, greater and more ubiquitous access to educational technology in classrooms and the curricular changes occurring within Australian schooling and the professional registration of teachers. It was thus part of, rather than adjunct to, the educational and political landscape in which it would operate. The important elements of this landscape – which became interwoven into the project's design – are summarised as follows:

## **The Digital Education Revolution (DER)**

The DER first came to attention as part of a political campaign (Rudd et al., 2007) with the primary aim of achieving a student to computer ratio, in Years 9 to 12, of 1:1 by the end of 2011. Since enacted, it has, as expected, been predominantly concerned with funding computer hardware and infrastructure in secondary schools and has become increasingly aligned to the rollout of the National Broadband Network (NBN). It has also adopted corollary strategies, supported by additional funding, for developing online curriculum resources and digital architecture, and a recently announced online curriculum support package (Garrett, 2011). The DER was also responsible for funding the ICT Innovation Fund, which has financed the TTF Project.

While obviously enabling the TTF project through funding, the DER has also created a climate of change and a renewed emphasis on the meaningful and broadly based integration of ICT in Australian classrooms.

### **The Australian Curriculum**

In initial discussions around the TTF Project, what was clear was that Universities needed to embrace both the content and spirit of the Australian Curriculum, including its intention to position ICT within all learning areas as a general capability. While governments, regulatory authorities, and Australian Curriculum Assessment and Reporting Authority (ACARA) made this clear, by the end of 2010 no particular initiatives had been mooted, and no funding had been set aside to particularly address the significant curriculum changes that universities would need to undertake. To this end, the TTF development team made the decision to focus on the Phase 1 of the Australian Curriculum (the introduction of national curriculum in Maths, Science, English and History).

Each participating institutions would choose one or two of the four learning area(s) they would address with the TTF Project gaining coverage of all across the participating institutions. This would not only build capacity in the ICTE area, but also support the institutions during the necessary realignment of their teacher education curricula. It was anticipated that the work of the project would provide a template for how teacher education institutions might approach ICTE in the other learning areas of the Australian Curriculum as they were released.

### **National Standards for Graduating Teachers**

Another significant shift in the landscape came through the establishment of the Australian Institute for Teaching and School Leadership (AITSL) on January 1, 2010. As with the curriculum, the process accrediting teacher education courses had traditionally been a function of state and territory governments in Australia. This was now moving to a national process overseen by AITSL. In this process the onus would fall to Universities, seeking accreditation, to demonstrate how courses met the newly released National Professional Standards for Graduating Teachers. Furthermore, the national programs standards that would guide the accreditation process identified ICT as a particular area that needed to be addressed within the curriculum framework of courses seeking accreditation.

As such, by 2015 all Australian Universities providing teacher education would need to be able to demonstrate how the new standards, particularly at Graduate level, were being met through their courses. As expected, and in line with international trends, ICT featured in these standards and so supporting institutions to prepare for national accreditation, through curriculum review and renewal, became the third focus of the project design. The success of the TTF proposal, in seeking funds through the ICT Innovation fund, in many ways, could be attributed to the design of the project in producing tangible outcomes and accountabilities across these three initiatives, the DER, the Australian Curriculum, and the inaugural national accreditation of teacher education programs.

### **STRUCTURE AND OPERATIONS OF THE TTF**

The TTF project may appear at first to be a highly complex set of connections and interconnections between the partner agencies and each participating university. But, it was founded – quite simply – on three interdependent components supported by a community, here labelled as the National Support Network.

The project built a consortium of partners to work interdependently on the three project components. These were: Education Services Australia (ESA), the Australian Council of Deans of Education (ACDE), the Australian Council for Computers in Education (ACCE), and the Australian Institute for Teaching and School Leadership

(AITSL). Further, the Deans of Education in all Australian Universities pledged support for the project.

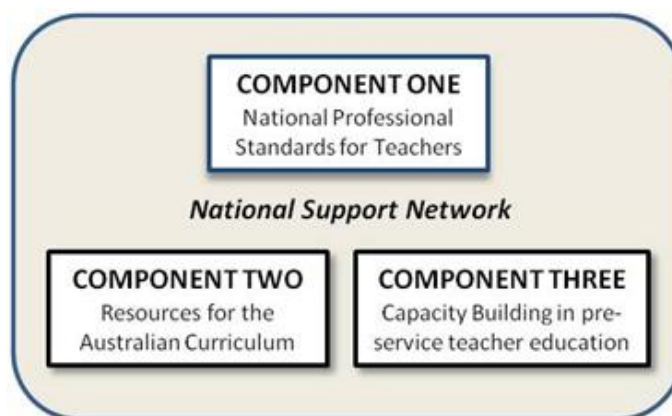


**Figure 1:** Organisational Structure of the TTF Project

#### **Component 1 (\$100000AUD)**

Component 1, under the direction of the Australian Institute for Teaching and School Leadership (AITSL) and the peak teacher professional association, the Australian Council for Computers in Education (ACCE), was concerned with building explicit ICTE dimensions into the National Professional Standards for Graduating Teachers and linking them to the Australian Curriculum. The purpose, in the shorter term, was to enable PSTs to map their proficiency against the Graduate Standards and similarly for university academics to use the annotated Standards as a guide for developing meaningful assessments and learning experiences for students. The tangible outcome of Component 1 was a cohesive set of print and digital resources published online (AITSL 2011). It includes: an e-Evidence user guide, and the ICT Elaborations and Annotated Illustrations of Practice – video vignettes of pre-service and beginning teachers in the classroom. They are publicly available to inform the professional learning of practising teachers as well as continuing to support teacher education pedagogy.

#### **Component 2 (\$1.6milAUD)**

The aim of Component 2, as led by Education Services Australia (ESA), was to develop a high quality collection of digital resources for PSTs, teacher educators and teachers. The resources were to represent Australian classrooms and to make explicit the connection to the Australian Curriculum and the National Professional Standards for Teachers. Twelve resource packages were produced, that is, one for each of the Phase 1 learning areas of the Australian Curriculum (English, Mathematics, History, and Science) for the early years, middle years and senior years of schooling. Each resource is at least 30 screen pages in length and includes purposeful classroom footage, extensive references and, importantly, the voices of PSTs. An important design parameter was that the resources were to be stand-alone, that is, available for all PSTs independent of their university programs. The resources may be found, with access limited to educators, at <http://www.ttf.edu.au>. The resource packages were published in Semester 2, 2011. Available evaluation data showed teacher education institutions were 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.

#### **Component 3 (\$7.1milAUD)**

Component 3 was, put simply, about people, curriculum and pedagogy. More formally, it was about driving change, building capacity, sharing expertise and de-

veloping sustainable professional networks both within and between Universities. The more tangible outcomes of Component 1 (documentation around the Graduate Standards) and Component 2 (illustrations of practice) were designed to support Component 3. Through Component 3 funding, senior academics with ICTE expertise were partially released from teaching duties and highly accomplished ICTE educators were seconded to work with teacher educators, particularly curriculum methods lecturers, and PSTs to develop and share exemplary ICTE curriculum and resources. Titles were invented for the roles they would undertake. The senior academics were known as TTF Project Coordinators, abbreviated to TTFPC. The seconded teachers or early career academics were employed as ICT Pedagogy Officers, abbreviated as ICTPOs. The role of the TTFPC was to mentor and assist the ICTPO and to provide strategic leadership in the institutional components of the project. Those in the institutions working within Component 3 were supported through a National Support Network (NSN). The NSN connections were simple. First, there was a SharePoint site, the hub of the project, where all information was stored, a calendar was maintained, and events were recorded. Second, there were email lists used for discussion and reminders of milestones. Thirdly, there were face-to-face events. The TTF project convened three face-to-face NSN workshops. At these events, plans were made and progress was shared between institutions. There was a high level of acceptance of the ICT Pedagogy Officers (ICTPOs) within participating institutions accompanied by an exceptionally high level of retention, with only three of the 39 Universities, reporting any change of personnel during the life of the project. Of particular interest was the diversity of activity within the institutions with each designing programs best suited to their own situation. Further, there was a palpable energy around the project and the expected synergies within and between institutions were evidenced, particularly through the cooperation, sharing and collaboration in the project's designated online spaces. One of the most welcome findings from the final report is in the sense of ongoing commitment, with frequent reference made to proposed work continuing on from the project, intended use of resources, and longer term curriculum changes being set in place. The final report has recognised TTF project as a catalyst to broader change both within the institutions and on into classrooms.

## THEORETICAL FRAMEWORK

TTF was not a research project but, rather, a teaching and learning project that needed to appeal to and be understood by politicians, bureaucrats, teachers, and PSTs as well as teacher educators. There were two main influences on the design and conduct of the project. These were:

1. The grounded practical advice provided in *ICT in Education Practices: A Capacity-Building Toolkit for Teacher Education Institutions in the Asia-Pacific* (Lim, Chai & Churchill, 2010); and,
2. The conceptual framework known as TPACK or technological, pedagogical and content knowledge (Koehler & Mishra, 2008, 2009; Koehler, Mishra & Koehler, 2006).

Initial planning for the project was influenced by the toolkit developed by Lim, Chai and Churchill (2010), particularly in its Strategic Dimension Two (Program: Curriculum, Assessment and Practicum). The ICT capacity-building "toolkit" (Lim, Chai & Churchill, 2010) has remained the guiding document for the TTF Project as it moves into the stage of planning for the future.

## TPACK

TPACK (Technological Pedagogical Content Knowledge) is a conceptual framework for teacher education built from Shulman's (1986) understandings of pedagogical content knowledge. It brings together teachers' content knowledge, pedagogical knowledge and technological knowledge, focusing on the interactions between

these three domains. The authors acknowledge that there was limited critical appraisal of TPACK in the conceptualisation of the project and none is attempted in this paper. We also acknowledge that TPACK is contested in some literature and this project has not really contributed to the development of TPACK as a theory. This however was not our purpose, the concept provided the TTF project with an important and valuable schema for thinking about, discussing and integrating ICT in the curriculum. In the TTF project, TPACK also provided a framework for the resources built as part of Components 1 and 2, as the conceptual basis for a comprehensive national student survey, and in some instances, as the means to audit existing courses in pre-service curriculum studies.

Further, TPACK provided a useful starting point in conversations with the curriculum methods lecturers and to move them along from the notion of ICT as an “add-on” or a simple tool for reporting or presentation of findings. Importantly, TPACK provided the project with the language to describe the intersection and interplay of the three core elements of knowledge of content, pedagogy and technology. It allowed the project leaders to bridge the gap between research and curriculum design and provided guidance on how to apply the ideas in education contexts, including teacher education programs, and the building of resources.

### **Evaluation and research**

The TTF Project, while not a research project per se, provided opportunities for research at both a national and local level. First, was a cycle of reporting to the funding body, DEEWR, which was met through scheduled interim reports and face-to-face briefings. Evaluation was also built into Components One and Two in quite formal ways. For example, Component One was evaluated by AITSL through a survey and sample interviews with a focus on how the ICTE Elaborations would be used to support the development of ICT capacities of PSTs. Further, Component Two was evaluated by ESA through a similar survey and interview process to consider the value and functionality of the developed resources as well as a more comprehensive approach that involved PSTs. The impact of Component Three was subject to rigorous evaluation coordinated by a specially convened Research and Evaluation Working Group. This took the form of two independent studies. The first was quantitative in nature and involved extensive surveys to collect data on the perceptions of TPACK usefulness and confidence of PSTs at all levels. The second was qualitative and made use of the Most Significant Change technique (Dart & Davies, 2003). Its intention was to gather rich project data through the iterative recounting of stories of practice. More on the outcomes of these more formal research initiatives will be reported during the course of this conference.

### **TTF OUTCOMES, RECOMMENDATIONS, AND THE FUTURE**

The TTF project had both a unique opportunity, and the unenviable responsibility, to make the most of a rare opportunity for national funding and organisational support to make a change to how ICTE is promoted and modelled in initial teacher education across Australia. The project also faced challenges and opportunities posed by the current educational and political landscape of teaching and learning in Australia. It was a watershed project marked by goodwill, commitment and sustained focus. The time was right for such a project and not surprisingly it generated significant outcomes. The final report states,

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 PSTs, Education Services Australia (ESA) and the Australian Institute for Teaching and School Leadership (AITSL).

TTF has:

- For the first time, involved all 39 teacher education institutions in Australia in a national project
- Demonstrated an effective model for national organisations to work in partnership in the education sector
- Developed a suite of quality resources encompassing the Australian Curriculum, National Professional Standards for Teachers, and ICT in education (ICTE)
- Fostered significant enhancement in the ICTE capacities of participating teacher educators
- On a national level, increased the confidence of PSTs in using ICT in the classroom, and their confidence to facilitate student use of ICT (DEEWR 2012)

These outcomes were achieved through the three integrated components of the project. The final report of the project makes a number of recommendations relating to universities, DEEWR, ACDE, resource development and professional development. These arose from teacher education institutions' Action Plans and the comprehensive evaluation of Components 1, 2 and 3. In summary, those recommendations included:

1. Each Faculty or School responsible for Teacher Education should
  - develop and maintain an easily accessible repository of resources
  - develop a leadership team to help staff to use these resources
  - 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
  - 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. 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. 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:
  - 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.
  - The development of informal State and Territory networks to ensure ICTE elements of the Australian Curriculum include local content and technological priorities.
  - Collaborative research in areas of need identified by the TTF Project Evaluation.
4. Consideration should be given to preparing Holistic Statements against the National Professional Standards for Teachers rather than against Focus Areas within Standards.
5. 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 (DEEWR 2012).

So what of the future? The project has always been seen as a catalyst for change in teacher education pedagogy and curriculum. The ACDE along with the original consortium partners recently submitted an application for further funding (TTF Phase 2) however this has been unsuccessful. So with no further funds, how will the

directions and goodwill between institutions be sustained? How will the momentum for change be sustained? How will the networks that have been established and worked so effectively, especially the networks between institutions and government agencies be maintained and lubricated? What will happen to the significant resources that have been generated and how will they be stored and maintained? What will compel teacher education institutions to implement their action plans and continue working in this way? How can stakeholders build on the significant investment that has already been made? These questions need to be discussed as part of our formal and informal conversations at this conference. Sustainability, without funding, is problematic and it will take a great deal more goodwill to keep TTF alive and vibrant along with commitment from Deans and Universities. Has the journey been worthwhile? The significance of the TTF project should not be underestimated. It was a project of its time juxtaposing with policy and national initiatives. It was also a large-scale complex project that transcended geographical, institutional and jurisdictional boundaries to provide important outcomes. Above all it has brought us closer together professionally and demonstrated to stakeholders that we can collectively impact policy and practice on national scale. We all now face the major challenge of maintaining the momentum.

**Acknowledgement:** The authors would like to acknowledge the significant work and leadership of the Australian Council of Deans of Education, Education Services Australia, the Australian Institute for Teaching and School Leadership, and the Australian Learning and Teaching Council. Further, we would like to acknowledge the excellent work of ICTPOs and TTFPCs and thank them for their dedication – without them there was no TTF. The Teaching Teachers for the Future project was funded by the Australian Government Department of Education, Employment, and Workplace Relations through the ICT Innovation Fund.

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## Biographies



**Professor Geoff Romeo** – Professor Romeo has a PhD from Monash University. In 2004 Professor Romeo received state and national awards for outstanding leadership in ICT in Education and was made a fellow of the Australian Council of Computers in Education in 2010. In 2010 he led the team that secured an \$8.8million (AUD) project-Teaching Teachers for the Future, and had a major national leadership role in this nationally significant project.



**Margaret Lloyd** is an Associate Professor in the Faculty of Education, Queensland University of Technology, with a specialisation in ICT (information and communication technology). Associate Professor Lloyd's current research interests outside of the scholarship of teaching include the professional development of teachers and STEM initiatives in education.



**Professor Toni Downes** is Dean of Education at Charles Sturt University. Her work has included numerous research and professional projects, over 70 publications, many keynote addresses, professional presentations and workshops. She is the immediate past President of the Australian Council of Deans of Education. In 2011 she was made a fellow of the Australian Teacher Education Association and the Australian College of Education.

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