



BRiTE: Building Resilience in Teacher Education

Final Report 2015

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List of acronyms used

AARE	Australian Association for Research in Education
ACARA	Australian Curriculum, Assessment and Reporting Authority
AITSL	Australian Institute for Teaching and School Leadership
APST	Australian Professional Standards for Teachers
ATEA	Australian Teacher Education Association
BYOD	Bring your own device
BRiTE	Building Resilience in Teacher Education
EARLI	European Association for Research on Learning Instruction
ENTREE	ENhancing Teacher RESilience in Europe
EYLF	Early Years Learning Framework
OLT	Office for Learning and Teaching
PEX	Professional Experience
PST	Pre-service teacher
TEMAG	Teacher Education Ministerial Advisory Group

Executive summary

Context and aims

The *Building Resilience in Teacher Education* (BRiTE) project was developed in the context of an increased national focus on teacher quality with significant changes in the teaching profession and teacher education curriculum, as well as national and international concern about teacher retention and resilience. In this context, the overarching aim was to develop resources to help pre-service teachers build awareness of the skills and practices that will help facilitate resilience in their teaching career.

There were five key aims for the BRiTE project:

1. To provide pre-service teacher educators with a series of BRiTE learning modules that can be embedded in teacher education programs.
2. To assist pre-service teachers build the personal and social capabilities associated with professional resilience.
3. To engage teacher educators, pre-service teachers, and representatives from key stakeholder groups in discussions about implementation of the modules in teacher education programs.
4. To provide evidence-based guidelines to teacher education providers about how the modules may be used in order to improve teacher preparation in higher education and, more broadly, teacher quality in Australia.
5. To determine whether engagement with the modules is perceived to have an influence on pre-service teachers' development of resilience.

To achieve these aims, the project was conducted in four phases. Phase 1, an Environmental Scan (September 2013 to January 2014) identified key research regarding teacher resilience and a range of interdisciplinary programs targeting resilience development. This provided the theoretical foundation for the project and informed the development of the BRiTE framework. In Phase 2 (February 2014 to August 2014) the findings from Phase 1 were used to develop the modules in terms of content, learning experiences for users and online design to maximise engagement. During this phase, three trials were conducted with a range of stakeholders who provided feedback and assisted with dissemination. Each module was developed according to particular design principles, including personalisation, interactivity, connection to the profession and connection to the literature. A pilot implementation with pre-service teachers and teacher educators/experts was conducted in Phase 3 (September 2014 to December 2014) with positive results for evaluations of module design and content. Phase 4 (January 2015 to August 2015) involved the production of support materials for teacher educators. Dissemination activities formed a critical part of all phases of the project with increased emphasis on dissemination in Phase 4.

The project team strategically comprised four members, each with specific skills and expertise to contribute to the project. To engage a wide range of stakeholders in the project from the outset, four main stakeholder groups were formed to ensure a broad representation locally and internationally, and to cover a diverse range of professional

expertise – pre-service teachers, an interstate Advisory Group of teacher educators, a national and international Reference Group of researchers and experts in the field, and a “BRiTE Community” group of people interested in the project.

Project outputs and findings

The major output from this project is the learning modules available at the BRiTE website (www.brite.edu.au). The five online interactive learning modules address the following topics:

- ***Building resilience***: What is resilience and why is it important for teachers?
- ***Relationships***: Building and maintaining relationships
- ***Wellbeing***: Self-care, motivation and managing work life balance
- ***Taking initiative***: Problem solving, ongoing professional learning and communicating effectively
- ***Emotions***: Emotional awareness, management and optimism.

Each module begins with a self-reflection quiz, which informs a personal plan for completing each module. Modules contain reflection questions to activate prior knowledge, information about skills and strategies, tips, interactive learning activities, videos, scenarios where skills can be applied, ‘What do the experts say?’ sections, which show how the content is informed by latest research, and further resources. Throughout each module, users may ‘pin’ items of interest to their personal toolkit, which also includes responses to reflection questions. Users can also download their personal toolkit and receive a certificate after completing all modules. Modules are connected to the profession via links to the *Australian Professional Standards for Teachers (APST)*, the *Australian Curriculum* and the *Early Years Learning Framework (EYLF)*. The modules can be accessed as required and can be revisited at any time, so that users are not confined to completion in a defined time frame.

A further project output is the development of support materials for teacher educators. These are all available from the website (<https://www.brite.edu.au/for-teacher-educators>) and include the BRiTE Framework, Implementation Guidelines, A Quick Reference Guide, Frequently Asked Questions and a Widget for embedding the BRiTE modules in Learning Management Systems.

The BRiTE project responded to the need for resources to support pre-service teachers’ capacity for resilience. Teacher educators and pre-service teachers positively evaluated the modules according to content and online design. Through data obtained via the website, the pilot implementation and feedback provided by participants, there is evidence that engagement with the modules can positively influence pre-service teachers’ resilience and adoption of particular strategies to manage challenges.

The BRiTE modules will be of benefit to pre-service teachers, teacher educators and employers of teacher education graduates. The modules may also be of interest to higher education providers interested in ways to support resilience of university students, particularly in light of the professions they will enter. Finally, the particular design features of the modules may be of interest to those developing online resources and learning experiences for students in higher education.

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1: Project context and aims

1.1 Project context

The *Building Resilience in Teacher Education* (BRiTE) project was developed in the context of an increased national focus on teacher quality with significant changes in the teaching profession and teacher education curriculum in higher education. In addition, there has been ongoing national and international concern about teacher retention and resilience, which, in turn, has impacted teacher education. Recent research of team members, as well as findings of the previous project, *Keeping Cool: Embedding Resiliency in the Initial Teacher Education Curriculum* (Mansfield, et al., 2012) also informed BRiTE.

National approaches to improving teacher quality

Since 2010, there have been significant changes to the teaching profession with a focus on improving teacher quality. Initiatives such as the establishment of the Australian Institute for Teaching and School Leadership (AITSL), development of *Australian Professional Standards for Teachers* (APST) (AITSL, 2011a) and *Accreditation of Initial Teacher Education Programs in Australia: Standards and Procedures* (AITSL, 2011b) have sought to improve teacher quality at the pre-service and in-service levels. The accreditation standards and procedures also set requirements for teacher education curriculum, including program structure and content, minimum requirements for the proportion of program given to the discipline of learning areas, and discipline-specific curriculum and pedagogical studies (AITSL, 2011b). Teacher education providers must also show how their programs address the APST at the graduate level, thus increasing external pressure on the teacher education curriculum. Although the standards refer to some potential challenges for beginning teachers (such as managing student behavior and catering for diversity), there are no standards that directly refer to teachers' capacity to manage their own wellbeing, even though this is widely acknowledged as an important skill for teachers.

Following these changes, additional recommendations have been advocated by the Teacher Education Ministerial Advisory Group (TEMAG) report, *Action Now: Classroom Ready Teachers* (Teacher Education Ministerial Advisory Group, 2014). In specific terms, recommendations are made regarding selection for entry into teacher education programs, noting that a consideration of both academic skills and desirable personal attributes, or qualities for teaching, be actioned in order to foster student development and learning.

These initiatives and recommendations highlight the increasing focus on teacher quality at a national level and acknowledge the importance of personal attributes and skills. In turn, they set the scene for a continuing focus on teacher quality in the future and have an immediate impact on teacher education programs.

Ongoing national and international concern about teacher retention and resilience

Alongside these national developments, teacher retention has been an ongoing issue internationally as well as in Australia with an estimated 25 per cent of teachers found to be leaving the profession within the first five years (Productivity Commission, 2012, p. 100).

Studies exploring why teachers leave have pointed to teacher stress and burnout (Schlichte, Yssel, & Merbler, 2005), yet more recent studies have sought to identify why teachers remain in the profession and ‘thrive’ not just ‘survive’ (Beltman, Mansfield, & Price, 2011). This resilience-focused approach has gained momentum both nationally and internationally with research determining individual and contextual risk and protective factors that influence teacher resilience (e.g. Fantilli & McDougall, 2009; Mansfield, Beltman, & Price, 2014), and making recommendations for improvements at the individual, school and system levels (e.g. Johnson et al., 2014). Some studies have addressed teacher resilience at the pre-service level (e.g. Le Cornu, 2009). Furthermore, the literature affirms that pre-service programs have a crucial role to play in developing resilience, and specific suggestions as to how this could be done have been made (e.g. Ee & Chang, 2010). The BRiTE modules draw on the literature in this field to underpin key themes and learning experiences.

Previous work in the field

The findings and recommendations from the previous project, *Keeping Cool: Embedding Resilience in Initial Teacher Education Curriculum* (Mansfield, et al., 2012), the empirically driven teacher resilience framework (Mansfield, Beltman, Price, & McConney, 2012) and the website developed in this project (www.keepingcool.edu.au) highlighted the need for the development of specific resources addressing aspects of resilience for teachers. Developing teacher education curricula to build the capacity for professional resilience at the pre-service level is advantageous for pre-service teachers themselves, as well as future employers and school students.

1.2 Project aims

There were five key aims for the BRiTE project:

1. To provide pre-service teacher educators with a series of BRiTE learning modules that can be embedded in teacher education programs.
2. To assist pre-service teachers build the personal and social capabilities associated with professional resilience.
3. To engage teacher educators, pre-service teachers, and representatives from key stakeholder groups in discussions about implementation of the modules in teacher education programs.
4. To provide evidence-based guidelines to teacher education providers about how the modules may be used in order to improve teacher preparation in higher education and, more broadly, teacher quality in Australia.
5. To determine whether engagement with the modules is perceived to have an influence on pre-service teachers’ development of resilience.

These aims informed the project approach and process, as well as the proposed key deliverables, namely the BRiTE online modules and suggestions for implementation.

2: Project approach and methodology

The approach taken in this project was grounded in two main fields of literature: the literature regarding teacher resilience (e.g. Beltman et al., 2011), which informed the module content and learning activities, and literature regarding design-based research (e.g. Reeves, Herrington, & Oliver, 2005), which informed the process of module development.

The approach was also consistent with the Office for Learning and Teaching (OLT) emphasis on curriculum design. In particular, integrating content-focused developments in the discipline (i.e. teacher education program standards, APST, teacher resilience literature), with learning and teaching innovations (i.e. online modules). Furthermore, the approach was designed to maximise sustainability through engagement of stakeholders throughout the sector, ongoing dissemination, and stakeholder involvement in implementation strategies, and successfully achieved this.

The outcome of the approach was the successful development of five online modules, which are innovative in the field and have been positively evaluated by a range of stakeholder groups. The modules are also unique, as no resource such as this, aligned with current developments in the sector, currently exists.

2.1 Project team and Reference Group

The project team strategically comprised four members, each with specific skills and expertise to contribute to the project. Two team members (Mansfield and Beltman) had expertise in the field of teacher resilience and were team members of the *Keeping Cool* project (Mansfield, et al., 2012). Three team members were working as teacher educators (Mansfield, Beltman and Weatherby-Fell) and one had expertise in online learning in higher education (Broadley). The team members were also involved in local, national and international professional networks, which were used to maximise dissemination throughout the project.

To engage a wide range of stakeholders in the project from the outset, four main stakeholder groups were formed to ensure a broad representation locally and internationally, and to cover a diverse range of professional expertise – pre-service teachers, an interstate Advisory Group, a national and international Reference Group and a “BRiTE Community” group of people interested in the project. The role and involvement of stakeholder groups is shown in Table 1.

Table 1: Project stakeholders and involvement

Group	Role and contribution
Pre-service teachers (194 members)	Pre-service teachers who participated in module trials, providing feedback during module development and participated in the pilot implementation.
Advisory Group (27 Teacher educators representing each state)	The Advisory Group were involved in module trials, giving feedback regarding content, design, learning and assessment activities and online accessibility.
Reference Group (13 international experts and representatives from professional associations)	The Reference Group offered specialised feedback about particular aspects of the project and participated in module trials, where available.
BRiTE Community (55 individuals interested in the project)	This BRiTE Community grew in number throughout the project. Community members were kept informed of project progress and invited to dissemination activities through a quarterly email newsletter.

Two project team members (Mansfield and Beltman) were also third-country partners in the project *Keeping Cool Europe: ENhancing Teacher RESilience in Europe* (ENTREE) (Wosnitza, et al., 2013). This project built on the previous *Keeping Cool* project (Mansfield, et al., 2012) and involved six European partners, developing online and face-to-face resources to support teacher resilience in Europe (<http://entree-project.eu/en>). The ENTREE project is evidence of the uptake and impact of the previous work and the interest internationally in supporting teacher resilience.

During the project period, Mansfield and Beltman attended five ENTREE meetings, reporting updates on BRiTE, providing project support and maximising opportunities for feedback and dissemination of the BRiTE project. The relationship between the projects was one of collaboration and reciprocity with the intention of sharing expertise to increase the impact of the respective projects. Furthermore, the international connection and goodwill between project members resulted in opportunities for wider international dissemination, with two joint symposia in the EARLI (European Association for Research on Learning and Instruction) conference in August 2015 (Beltman, Mansfield, Weatherby-Fell & Broadley, 2015; Mansfield, Beltman, Weatherby-Fell & Broadley, 2015).

The diverse skills and breadth of expertise of all those involved in the BRiTE project were a crucial factor in achieving successful outcomes in a timely fashion. Future projects may consider the benefits of various stakeholder groups in broadening project reach.

2.2 Project phases

To achieve the project aims, there were four main phases in the project. These are outlined in Figure 1. Phase 1, an Environmental Scan (September 2013 to January 2014), provided a foundation for the rest of the project and is represented by the clear rectangular shapes to the left in Figure 1. The results from the environmental scan, along with input from Reference and Advisory Groups were used to develop the BRiTE Framework. Phase 2 (February 2014 to August 2014) involved the design of the modules with three trials and related module reviews, and feedback and dissemination points. Phase 3 (September 2014 to December 2014) 'Pilot Implementation' occurred between the 'Module Review 3' and the 'Final Design' of the modules. Phase 4 (January 2015 to August 2015) involved the production of the Implementation Guidelines and dissemination of these and of the completed modules.

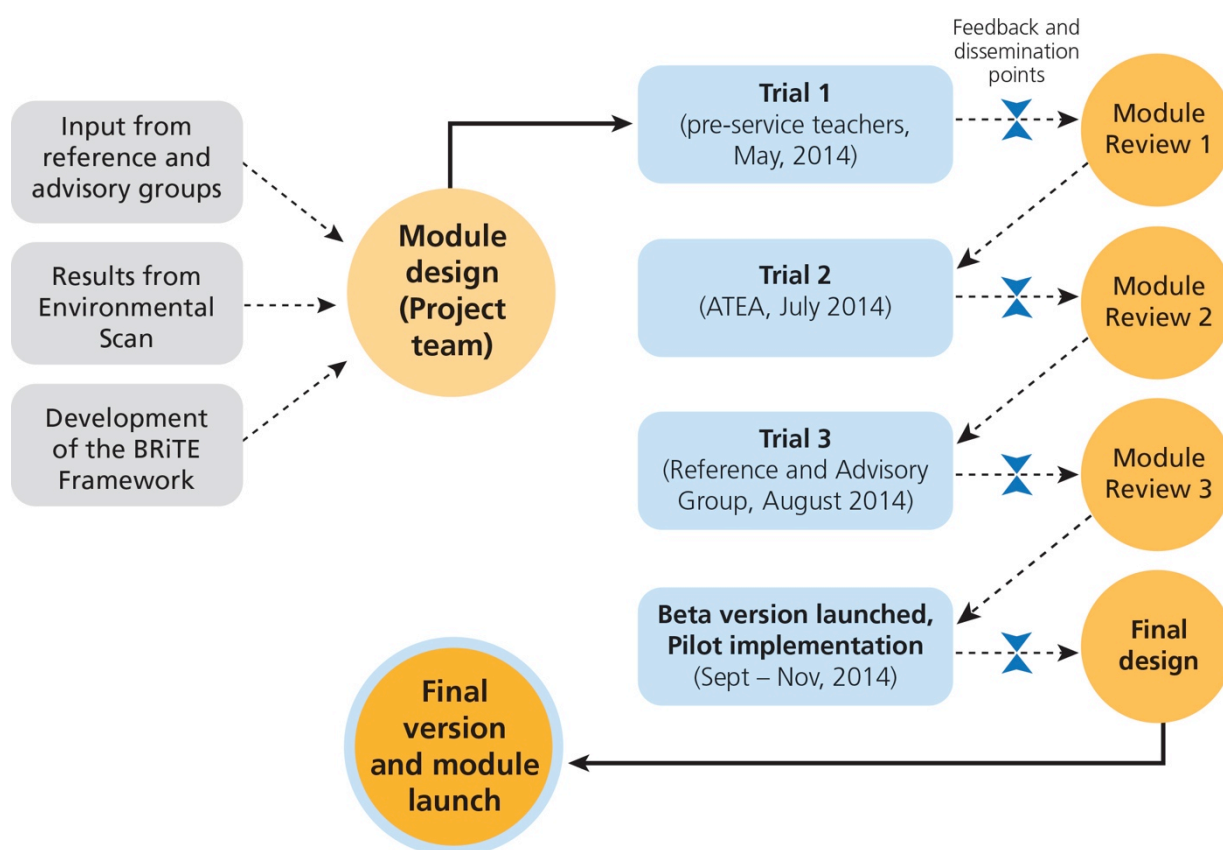


Figure 1: BRiTE project phases

Phase 1: Environmental Scan and development of the BRiTE framework

The purpose of the Environmental Scan was fourfold and aimed to ensure that the content of the online modules reflected best practice based on the following:

- knowledge of practising experts in the fields of education and wellbeing
- literature regarding resilience-building programs in education and other caring professions

- literature regarding key factors associated with teacher resilience
- multi-media resources available to support the resilience of teachers and pre-service teachers.

Research assistants were employed to assist with the search and analysis of literature relating to resilience programs. An Endnote library was developed in which the 58 papers reporting such programs were grouped according to their setting or target group: school students (n = 17), higher education (n = 16), teachers (n = 14), nurses (n = 1), social workers (n = 3), military (n = 4), and other (n = 3). The materials comprised online programs (e.g. Stallman, Kavanagh, Ralph, Edge, & Gibson, 2015), printed published programs in workbooks or manuals (e.g. McGrath & Noble, 2003), research on projects or programs (e.g. Niessen, Sonnentag, & Sach, 2012), position papers about what such programs should contain (e.g. McAllister & McKinnon, 2009) and reports describing programs or interventions – sometimes with preliminary evaluations (e.g. Bozic & Williams, 2011). This scan enabled preliminary identification of the nature and scope of programs and interventions, although it was interesting to note that online programs or materials were limited. Following this initial scan, a more focused approach was taken to gathering peer-reviewed, evidence-based information in order to ensure the modules developed for the current project were based on a sound foundation and were directly relevant to the context of teaching.

In order to provide a sound foundation for the project, therefore, an extensive literature search was carried out to identify key factors associated with teacher resilience. The first broad sweep of the literature included literature from a previous review (Beltman et al., 2011) conducted as part of the *Keeping Cool* project (Mansfield, et al., 2012). An annotated bibliography was created comprising 157 annotated theoretical and empirical refereed journal articles, conference papers, conference proceedings, book chapters, books, and theses that examined the construct of teacher resilience. Each annotated entry outlined the aim of the paper, research methodology, findings (if it was an empirical study), discussion, and implications for future actions/research. See <http://www.keepingcool.edu.au/node/21> for the complete bibliography.

The literature obtained was then refined using specific search parameters that included only publications between 2000 and 2014 (inclusive). Search terms included ‘teach’ and ‘resilience’ or ‘resilient’. The resulting two book chapters and 69 journal articles were further analysed by the project research team. The analysis of the papers resulted in 51 separate factors, which were then used to develop an evidence-based resilience framework – which in turn informed the development of content for modules. Details of the analysis and of the development of the framework have been published (Mansfield, Beltman, Broadley, & Weatherby-Fell, 2016). In brief, the factors were grouped according to *personal resources*, which included motivational (e.g. efficacy; initiative) and emotional (e.g. optimism; hope); *contextual resources*, which included various types of relationships and support networks; *strategies*, such as problem-solving and reflection; and *outcomes*, such as wellbeing and job satisfaction. When grouped thematically, five themes appeared: understanding and building resilience, relationships, wellbeing, motivation (including taking initiative), and emotions. These themes formed the basis of the five BRiTE modules as shown in Table 2, which also includes possible teaching and learning strategies suggested in this literature.

Table 2: Building Resilience in Teacher Education: The BRiTE framework

Informed by the literature	Example pre-service topics	Possible teaching and learning strategies
Theme: Building resilience		<p>Reflecting and discussing with peers, mentors, teachers.</p> <p>Examining case studies and videos illustrating professional challenges.</p>
<p>Resilience as a dynamic, multifaceted process where individuals mobilise personal and contextual resources and use coping strategies to enable resilience outcomes.</p>	<ul style="list-style-type: none"> • What is resilience? • Why is resilience important for teachers? • Resilience in schools. • What makes a resilient teacher? • The resilience process – bouncing back and bouncing forward. 	
Theme: Relationships		<p>Engaging with problem-solving activities related to authentic scenarios.</p> <p>Analysing videos of teachers talking about how to address challenges.</p>
<p>Social competence (for building relationships, support networks and working collaboratively), setting boundaries, communication.</p>	<ul style="list-style-type: none"> • Understanding relationships and resilience. • Building relationships in schools. • Working in a professional team. • Building personal and professional support networks. • Using social media support networks. • Communicating effectively. 	
Theme: Wellbeing		<p>Identifying and practising adaptive coping strategies.</p> <p>Practising reframing skills and optimistic thinking.</p> <p>Practising effective communication skills for a range of situations.</p>
<p>Seeking renewal, work–life balance, time management.</p>	<ul style="list-style-type: none"> • Understanding personal wellbeing and mental health. • Responding to and managing (dis)stress. • Healthy living. • Managing work–life balance. • Time management. 	
Theme: Taking initiative		<p>Reflecting on personal resources and strategies via self-assessment tools and planning for self-development.</p>
<p>Efficacy, value, sense of purpose, sense of vocation, initiative, high expectations, problem solving, professional learning, goal setting, help seeking, reflection, persistence.</p>	<ul style="list-style-type: none"> • Maintaining motivation. • Persistence and efficacy. • Problem-solving processes. • Goal setting and management. • Help seeking. • Ongoing professional learning. 	
Theme: Emotions		<p>Conducting action research projects.</p>
<p>Emotional competence*, optimism empathy, hope, courage, humour, emotion regulation, mindfulness.</p>	<ul style="list-style-type: none"> • Emotional awareness. • Optimistic thinking. • Enhancing positive emotions. • Managing emotions. 	

As well as informing the conceptual underpinnings of the modules, the literature identified in this phase contributed to the writing of ‘What do the experts say?’ sections in each online module. This was deemed critical by the project team so as to show how the concepts in each module had been informed by research and to make this research accessible to module users.

The Environmental Scan also identified a range of resources to support resilience. It became evident that there was a range of resources available that could be used to inform the modules as well as illustrate the concepts or skills being developed. For example, the AITSL TeacherFeature (<http://www.aitsl.edu.au/teacher-feature>) includes teachers discussing aspects of managing the profession (e.g. ‘What advice would you give to a teacher beginning their career?’) and strategies for working in rural areas. Fact Sheets and videos about resilience and wellbeing from ResponseAbility (<http://www.responseability.org/>) and KidsMatter (<http://www.kidsmatter.edu.au/>) were also identified. As well as deciding to embed some of these resources in the modules, the team agreed to include additional resources at the end of each module, to enable pre-service teachers or teacher educators to follow up on any concepts or skills in more depth. These appear in the further resources section of the web site – see <https://www.brite.edu.au/BRiTE/Home/Resources> (login required).

Phase 2: Module design and development

In Phase 2, Aims 1 and 3 were addressed: the BRiTE modules were developed and stakeholders were engaged in discussions about module development and implementation. The process in Phase 2 was informed by design-based research, ‘a methodology designed by and for educators that seeks to increase the impact, transfer, and translation of education research into improved practice’ (Anderson & Shattuck, 2012, p. 16). The modules were developed in a staged approach, where stakeholder trials and opportunities for feedback and dissemination were integral to the process. Figure 1 shows the process of module design, which used input from the Reference Group and Environmental Scan, trials with feedback from various stakeholders, revisions, and then development of the final version.

Design-based research and design principles

In design-based research, the intent is to produce ‘new theories, artefacts and practices that account for and potentially impact learning and teaching in naturalistic settings’ (Barab & Squire, 2004, p. 2). Applying this systematic but flexible methodology allowed for a significant contribution from the project team, Advisory and Reference Groups (as noted above), and web designers to improve the educational outcomes of the modules. This methodology enabled the project to employ an iterative process of analysis, design, development and implementation, as illustrated in Figure 1. An important aspect of the process was to be cognisant of the constructive alignment of the modules, both vertically and horizontally. Learning outcomes, learning activities and feedback mechanisms were considered and planned through a methodical approach that ensured users of the resilience modules were scaffolded in appropriate ways.

The modules were developed both for independent access and to complement face-to-face, blended, or online teacher education courses. The following principles informed the module design:

- **Personalised:** e.g. opportunities to ‘pin’ items for later reference
- **Interactive:** e.g. ‘What would you do?’ scenarios
- **Grounded in the literature:** e.g. ‘What do the experts say?’
- **Connected to the teaching profession:** e.g. videos embedded.

O’Donnell, Lawless, Sharp, & Wade (2015) defined personalised learning as the provision to each user ‘of content or an experience which has been tailored to suit their specific needs based on implicit or explicit information about that user’ (p. 23). To this end, the project designed a set of online modules, four of which began with a self-reflection quiz that provided information about the user and then automatically prioritised their learning path through the topics in the module. The website was designed so that users were required to reflect on key themes, inputting ideas before progressing to further information and activities. Personalisation and interactivity also underpinned the design of the modules through a personal toolkit, which can be developed throughout the learning journey. Users could also ‘pin’ and save information to their toolkit for future use as desired.

Modules were interactive, as individuals responded to scenarios designed to allow users to apply their resilience, have opportunities for reflection, and contribute ideas regarding useful additional strategies. Modules were practice-based and connected to the profession, with teacher voices frequently ‘heard’ through videos, as well as direct quotes from our research featuring pre-service and early-career teachers. Dynamic principles meant the modules included non-linear navigation, multimedia links and further resources. Importantly, modules were grounded in the literature or were evidence-informed, with reference to supporting research and literature a key feature of each topic.

Design-based trials

As indicated in Phase 1, the content of the modules was designed using input from the Reference Group and Environmental Scan. After working with the web designers and various online learning experts, one module was developed to trial with three stakeholder groups (pre-service teachers, Reference and Advisory Groups, and teacher educators) as shown in Figure 1. The Relationship (R) module included all of the design principles (i.e. personalised, interactive, grounded in the literature and connected to the profession) that were considered the foundation of future module design. This allowed the stakeholders at each trial to be focused on engagement with one module and proved to be an efficient use of stakeholders’ time. The development of other modules was based on the trialled and refined R module with further input for refinement from the Reference Group.

The first trial was undertaken with pre-service teachers in May 2014 with positive results. Forty-eight second year pre-service teachers (22 primary; 26 secondary) from an Australian university, who had completed one school placement, participated in the trial. Participants attended a session in a computer laboratory and worked through the module at their own pace. Feedback was provided via an anonymous pen and paper evaluation regarding content and online design. The evaluation included 18 questions with a five-point Likert scale (strongly agree to strongly disagree) asking users to evaluate aspects of the module including knowledge and skills, overall design and aesthetic appeal. Two open-ended questions asked for users to identify the time they had taken to participate and any

additional comments. In line with design-based research methodology, further module review and refinement were undertaken to incorporate the feedback from this trial.

The second trial was held in July 2014, with 13 participants from the Australian Teacher Education Association (ATEA) conference, held at the Australian Catholic University in Sydney. This trial involved teacher educators accessing the Relationships module, providing feedback on a paper-based survey about usability, technical aspects, layout and content-specific input from relevant disciplines. These data were used to refine and redevelop the modules prior to the third trial. The trial was very well received with participants taking the time to be specific and generous with their feedback.

The third and final trial occurred in August 2014, where Reference and Advisory Group members were invited to engage with the Relationship module. This stakeholder group included consultant psychologists, exercise physiologists, teacher educators and online learning experts who attended this final trial to ensure all key design features of the modules were reviewed prior to release. In this phase of trials, minor aspects were highlighted for refinement, including mainly aesthetic issues such as darkening of font colour and sizing of text boxes. One major design refinement from this trial included users having the option of saving and printing the toolkit for further reflection.

The design-based trials outlined in this section provided a longitudinal, cyclical improvement process to enhance the quality of the content and online learning experience. It proved to be a highly successful model as the project team gathered integral feedback from a broad range of trial participants, including users, experts in the field of teacher education and resilience research, and online learning / instructional design experts.

Phase 3: Pilot implementation

The third phase of the project was designed to achieve Aims 2 and 5 of the project, and was conducted in two stages (see Figure 1).

Stage One

Two cohorts of participants piloted the online modules. The first cohort comprised pre-service teachers ($n = 144$). The second cohort ($n = 37$) comprised teacher educators as well as education experts who were also members of the Reference or Advisory Group for the BRiTE project. Participants were provided with instructions and could access and complete as many of the modules as they preferred over the course of eight weeks. At the end of each module, the pre-service teacher participants were asked to provide feedback on aspects such as how helpful they found the content of the modules, and whether they believed they would use the information in the future, and recommend modules to their peers. Similarly, at the end of each module, education professionals were asked to provide feedback on questions about the potential suitability of the modules for teacher education courses.

For this trial the modules had to be worked through in the order presented. At the completion of each module, users were asked to complete a short evaluation comprising a five-point rating scale (1 = strongly disagree; 5 = strongly agree) for items related to module content and online design. Tables 3 and 4 present the quantitative results from the

evaluation rating items for each cohort. The full module evaluation questions are shown in Appendix B.

Table 3: BRiTE module evaluation: Mean scores pre-service teacher (PST) participants

Question	Module 1	Module 2	Module 3	Module 4	Module 5	<i>Question mean</i>
Content						
Useful	4.2	4.0	4.2	4.2	4.3	4.2
Interesting	4.1	3.9	4.2	4.1	4.3	4.1
Relevant	4.4	4.1	4.3	4.3	4.4	4.3
Appropriate level	4.4	4.2	4.3	4.4	4.3	4.3
Enjoyable	3.9	3.8	4.0	3.9	4.1	3.9
Enabled reflection	4.1	3.9	4.2	4.3	4.3	4.2
Raised awareness	4.1	4.1	4.2	4.2	4.2	4.2
Enabled development of knowledge and skills	4.0	3.8	4.0	4.1	4.2	4.0
Consider new ideas	3.8	3.8	3.7	3.8	4.0	3.8
Will use content in Professional Experience	4.0	3.9	3.9	4.0	4.0	4.0
Will use content in teaching career	4.2	4.1	4.1	4.2	4.3	4.2
Will refer to in future	4.0	3.7	3.9	4.0	4.0	3.9
Will recommend to friends	3.9	3.8	3.8	3.9	3.9	3.9
<i>Content mean</i>	4.1	3.9	4.1	4.1	4.2	4.1
Online design						
Appealing	4.3	4.2	4.3	4.3	4.4	4.3
Graphics appropriate	4.3	4.3	4.3	4.3	4.3	4.3
Navigable	4.5	4.2	4.2	4.3	4.4	4.3
Organised	4.5	4.3	4.4	4.4	4.4	4.4
Links work	4.6	3.8	3.7	4.3	4.2	4.1
<i>Online design mean</i>	4.4	4.2	4.2	4.3	4.3	4.3
Overall mean	4.2	4.0	4.1	4.2	4.2	4.2
No. & per cent participants completed evaluation	117 (81%)	81 (56%)	73 (51%)	71 (49.3%)	67 (46.5%)	

Table 4: BRiTE module evaluation: Mean scores for non-pre-service (PST) teacher participants

Question	Module 1	Module 2	Module 3	Module 4	Module 5	Question mean
Content						
Useful for PSTs	4.3	4.3	4.1	4.4	4.3	4.3
Interesting for PSTs	4.0	4.3	3.9	4.3	4.6	4.2
Relevant for PSTs	4.3	4.3	4.2	4.6	4.4	4.4
Appropriate level for PSTs	3.9	4.4	4.0	4.4	4.3	4.2
Enable reflection for PSTs	3.9	4.3	3.9	4.0	4.0	4.0
Enable development of knowledge and skills	3.7	4.3	3.9	4.0	4.0	4.0
Will refer PSTs to module	4.1	4.2	4.0	4.3	4.0	4.1
Will refer to content of module in teaching	3.8	4.1	4.0	4.1	4.1	4.0
<i>Content mean</i>	4.0	4.3	4.0	4.3	4.2	4.2
Online design						
Appealing	4.1	4.5	4.0	4.1	4.3	4.2
Graphics appropriate	4.2	4.5	4.2	4.1	4.1	4.2
Navigable	4.2	4.6	4.1	4.4	4.2	4.3
Organised	4.1	4.6	4.1	4.3	4.4	4.3
<i>Online design mean</i>	4.2	4.6	4.1	4.2	4.3	4.3
Overall mean	4.1	4.4	4.0	4.3	4.2	4.2
No. & per cent participants completed evaluation	26 (70%)	10 (27%)	9 (24.3%)	8 (21.6%)	9 (24.3%)	

As may be seen in Tables 3 and 4, the quantitative evaluations of the modules were highly positive for both cohorts trialling the modules. Not all participants completed module evaluations, and some participants completed module evaluations for some but not all of the modules they completed. Although the number of users participating in the completion of the modules, and the module evaluation completions, dropped over modules 1 to 5, it is noteworthy that the mean scores for those participants who did complete all of the modules and completed module evaluations, did not drop. This indicates that participants who continued to work through all of the BRiTE modules found the later modules to be equally useful and engaging in terms of content and design. The findings also show that both cohorts of participants were closely aligned in their evaluative feedback on the relevance and the usefulness of the BRiTE modules for teacher education.

In addition to the quantitative evaluations, qualitative data were collected. At the end of each module all participants were asked: *Are there any comments you'd like to make about*

this module? Educational professional (non-pre-service teacher) participants were also asked: *How do you think this module could be used in teacher education programs?*

In the qualitative data, pre-service teachers identified strengths of the content, such as encouraging reflection, use of practical examples, resources and tips, useful information and videos, and well-organised information. For example:

The module was well organised and the content useful, in particular the provision of practical examples. (Participant 14, 2014)

This module gave me some great suggestions on how to build and maintain relationships in a new school environment. (Participant 95, 2014)

It allowed me to reflect on my own teaching practice, I will definitely be using this during my next PEX [Professional Experience] and also in my future teaching career. (Participant 15, 2014)

In terms of the online design, strengths included use of a variety of different media to present topics, opportunities for reflection, creation of personalised toolbox, ability to 'pin' ideas and add to personal toolbox, and ease of navigation. Pre-service teachers also commented that they would refer to the modules in the future.

Non-pre-service teacher participants noted the importance of the resource for pre-service teachers, the engaging and well-presented learning design, effective use of the AITSL standards and resources, and a good balance of theory and practice. For example:

This is an excellent resource for teachers and teacher educators to help stimulate discussion, reflection and training on all areas related to resilience. (Participant 8, 2014)

This module provides some great strategies for pre-service teachers to learn to cope with the stressors of the profession, and hopefully these strategies will be carried forward well into their careers. The importance of this cannot be underestimated, as burnout is not necessarily sudden; it can be a very drawn-out and painful process. (Participant 2, 2014)

A good balance of theory, videos of personal experiences and practical advice. It is easy to navigate and the tips and advice is given in a supportive non-judgemental way. (Participant 22, 2014)

Suggestions were also made regarding how the modules could be used in initial teacher education programs. For example:

Students could complete the module right before a practicum placement as they will likely see much of the examples given in schools as well go through their own challenges as they cope with the pressure of these learning experiences. Perhaps it could be used in a professional practice unit, where students all complete the module as a group with opportunity to ask questions, discuss and complete the activities together. (Participant 20, 2014)

This module could be incorporated into the Professional Practice unit to equip pre-service teachers with mental strengths before being placed in a school for their practicum. The knowledge in the module will be necessary for pre-service teachers to deal with various levels of stress and adversity in the classroom, e.g., challenging students, prac-life balance, the heavy load of lesson planning, etc. (Participant 10, 2014)

Some comments were made regarding improving the modules. For example, general comments included providing an indication of the time needed to complete a module, varying the text box style, enabling a printed page of the tips at the end of each module, and including quotes from renowned people. Most of the suggestions were incorporated into the final version of the modules.

Stage Two

In the first stage, pre-service teachers were also required to complete an online survey before engaging with the modules. The survey included 12 scales measuring teacher resilience (profession-related; motivation; social; emotional; general), commitment, rumination, efficacy and coping (appraisal; social; challenge; avoidance). Participants from the university cohort who completed the survey and then the modules before their final school placement were invited to complete another survey after their final school placement. The post-placement survey also included items regarding perceptions of the modules' content. The scales used were from previous studies and from the partner EU ENTREE Project and are listed in Table 5.

Table 5¹: Scales used in pre- and post-placement surveys

Scale	Scale Name	Source	No. of items
TRP	Teacher Resilience – Profession	Mansfield & Wosnitza, 2014	6
TRM	Teacher Resilience – Motivation	Mansfield & Wosnitza, 2014	10
TRE	Teacher Resilience – Emotion	Mansfield & Wosnitza, 2014	6
TRS	Teacher Resilience – Social	Mansfield & Wosnitza, 2014	4
TCG	Teacher Commitment – General	Morgan, 2011	5
RUM	Rumination	Morgan, 2011	7
TRG	Teacher Resilience – General	Morgan, 2011	9
TEF	Teacher Efficacy	Morgan, 2011	12
CAP	Coping – Appraisal	Deakin Coping Scales (Moore, 2003)	7
CSO	Coping – Social	Deakin Coping Scales (Moore, 2003)	4
CCH	Coping – Challenge	Deakin Coping Scales (Moore, 2003)	4
CAV	Coping – Avoidance	Deakin Coping Scales (Moore, 2003)	4

In addition to these scales, at the second measurement point, the participants were asked questions regarding the extent to which the BRiTE modules were used during the placement, or Professional Experience (PEX) period. For example, one question was: 'During your PEX, to what extent did you use items from your BRiTE toolkit?' (1 = never; 5 = definitely). Forty-nine students completed both pre- and post-placement surveys. Analysis of the data revealed that there were moderately significant increases between the two measurement points for most of the scales. Scores on all five pre- and post-placement

¹ TRP, TRM, TRE, and TRS are newly developed scales (Mansfield & Wosnitza, 2014) based on the authors' earlier work on teacher resilience (Mansfield, Beltman, Price, & McConney, 2012). TCG, RUM, TRG and TEF are taken from (Morgan, 2011). The Deakin Coping Scales (Moore, 2003) CAP, CSO, CCH and CAV were also used.

resilience measures increased significantly. There was also a significant increase for teaching efficacy and two of the four coping scales (appraisal and social).

The changes could have been related to simply undergoing the school placement. To examine the impact of using the BRiTE modules, the matched data sets were divided according to whether or not participants said they had used the modules during their placement. Users (n = 32) scored significantly higher scores than non-users (n = 17) on the post-placement survey scales of differentiated teacher resilience (not general), and of teacher commitment and efficacy. Perhaps, surprisingly, coping measures did not differ between groups. To further explore the extent to which survey results may have been influenced by other factors, we conducted 30 interviews with pre-service teachers. Findings from those interviews will be discussed in a forthcoming publication.

The study indicated that using the online modules assisted pre-service teachers to develop their capacity for resilience during their placement, enhancing their self-efficacy and commitment to the profession. More detailed description of the scales, analysis and discussion of the results were presented at the Australian Association for Research in Education (AARE) conference in Fremantle in November 2015 (Beltman, Wosnitza, Mansfield, Broadley & Weatherby-Fell, 2015), and appear in a forthcoming publication (Beltman et al., in preparation). At the AARE conference, the paper, 'Using online modules to develop pre-service teachers' capacity for resilience' was in the symposium (convenor: Beltman) entitled: 'Beginning teacher resilience: Making a difference'.

Phase 4: Implementation guidelines

The key task of Phase 4 was to develop implementation guidelines for teacher educators, showing how the modules may be used in order to improve teacher preparation in higher education and, more broadly, teacher quality in Australia (project aim 4). During this phase, two key documents were developed (Implementation Guidelines and the BRiTE Quick Reference Guide), and a section for teacher educators was created on the BRiTE website.

In developing implementation guidelines, the project team drew on their expertise as teacher educators and feedback obtained through discussions with colleagues and at dissemination points. Consideration was also given to the range of teacher preparation courses available in Australia (Bachelor, Graduate Diploma, or Masters level qualifications) and careful thought given to possible approaches. To allow flexibility in implementation it was decided that four possible approaches to implementation might be suggested, as in Table 6. As will be seen in the later Dissemination section of this report, teacher educators are beginning to take up the implementation of the modules.

These approaches to implementation have been published in the Implementation Guidelines (Appendix C), which also include an overview of module content and design, and a table showing how the modules are connected to the APST, the *Australian Curriculum* and the EYLF. The Implementation Guidelines were sent to all Reference and Advisory Group members, those participating in workshops and the BRiTE Community group.

Table 6: Implementation possibilities for BRiTE modules in teacher education programs

Raising awareness (Appetizers)	<ul style="list-style-type: none"> • Introduce pre-service teachers to the modules within class or online resources. • Provide the web address to the modules. • Encourage students to participate as an optional learning experience.
Blended learning (Dine in or takeaway)	<ul style="list-style-type: none"> • Ask students to BYOD or schedule a classroom with designated computers. • Provide an integrated learning experience by designing your learning activity, tutorial or workshop to connect the online modules to your collaborative learning activities in the classroom. • Personalise the student experience by leveraging the personal skill-building plan within the modules.
Pick and mix (Buffet)	<ul style="list-style-type: none"> • Select one or more modules for inclusion in a course, e.g. preparation for Professional Experience, health and physical education, integrating technology / information communication technology. • Select a specific topic within a module that might complement a learning experience in one week of a course.
Holistic approach (Banquet)	<ul style="list-style-type: none"> • Embed the modules into a learning management system and structure as a compulsory component of a course. • Students work through personalised plan within or outside of classes. • Printed toolkit can be used to bring to class for peer-to-peer discussions. • Responses to scenarios in the modules can form the basis of a learning activity and encourage the creation of more scenarios.

As well as delivering the Implementation Guidelines as promised in the project proposal, the team also developed additional materials to increase the useability and accessibility of the BRiTE modules to teacher educators. These include a quick reference guide, overviewing the topics and themes for each module, key learning activities, resources embedded (videos and downloadable information) and connections to APST, ACARA and EYLF (see Appendix D). Furthermore, a dedicated page on the BRiTE website to provide assistance for teacher educators has been built <https://www.brite.edu.au/for-teacher-educators#moodle>. The page includes:

- Links to download the Implementation Guidelines and Quick Reference Guide.
- A BRiTE framework overview showing alignment of modules to themes from the literature and recommendations for teacher education.
- Frequently Asked Questions (FAQs) and answers about using BRiTE in teacher education.
- A widget for embedding the BRiTE modules in Learning Management Systems, such as Blackboard and Moodle, and instructions showing how to embed the widget.

3: Project outputs and findings

3.1 Outputs

The key deliverable was the BRiTE modules for Building Resilience in Teacher Education. There were four modules proposed, each including clear learning outcomes, a case or scenario relating to the APST, structured authentic learning activities involving reflection, and problem solving. Suggestions for implementation were also to be developed.

The BRiTE project has not only achieved these outputs but has gone beyond the original proposition in terms of scope, number of modules and online design. Five modules have been developed with innovative design that is unique in the field. A range of resources to support teacher educators using the modules has also been developed, as described below.

BRiTE learning modules

The major output from this project is the learning modules available at the BRiTE website (www.brite.edu.au). As the module development process unfolded, the team identified a need for users to share the project's conceptual understanding of resilience, hence the additional module in the final design. As shown in the BRiTE framework (Table 2), the five online interactive learning modules address the following:

- **B**uilding resilience: What is resilience and why is it important for teachers?
- **R**elationships: Building and maintaining relationships
- **W**ellbeing: Self-care, motivation and managing worklife balance
- **T**aking initiative: Problem solving, ongoing professional learning and communicating effectively
- **E**motions: Emotional awareness, management and optimism.

Furthermore, the team agreed that the modules should contain a range of learning experiences beyond those originally proposed. As a result, each module contains a self-reflection quiz, information about skills and strategies, tips, videos, scenarios where skills can be applied, a 'What do the experts say?' section (summarising latest research) and connections to the APST at the graduate level.

Another issue discussed at length was that of personalising the modules. Not wanting the modules to become purely an avenue to provide information, the project team sought to consider innovative ways they could make the modules interactive and personalised. Web designers were crucially important in this regard as they were highly responsive to our thinking, and innovative in their suggestions and the final output. As a result the modules are personalised, so users can, for example, build their own toolkit, record their learning, 'pin' items for future reference and download the toolkit for future reflection.

Resources for teacher educators

Throughout the project, interaction with teacher educators through the Advisory Group and at dissemination activities helped the team consider the most appropriate resources for teacher educators. The intention was to develop support resources that could be easily

accessed, and would have a high degree of useability for the intended audience. Implementation Guidelines were developed and these are available as a hard copy (distributed at dissemination events) and also a PDF download from the website. To complement these guidelines, a Quick Reference Guide and the BRiTE Framework as a PDF were developed. The Quick Reference Guide gives an overview of each module, providing details about learning activities, resources embedded, and links to curriculum and standards. In consultation with the web designers, a specific page for teacher educators was also added to the BRiTE website (<https://www.brite.edu.au/for-teacher-educators>) where information is ready and available with no login required. Finally, the path through the modules for those signing in as teacher educators has been altered, so teacher educators can easily access particular pages, without having to work through previous pages of the module.

Resources for users

The BRiTE modules are the key output for users; however, the final output goes beyond the original intention. Specifically, the modules are interactive and personalised, providing a learning experience involving reflection, understanding and application of strategies. The modules can be accessed as required and can be revisited at any time, so that users are not confined to completion in a defined time frame. Users can also download their personal toolkit and receive a certificate after completing all modules. Links to further resources provide information to follow up where appropriate.

Academic publications

Academic publications are also an important output for this project. At the time of writing this report, the development of the BRiTE framework has been published (Mansfield, Beltman, Broadley & Weatherby-Fell, 2016) and a chapter will appear in a forthcoming book (Mansfield, Beltman, Weatherby-Fell & Broadley, in press) entitled *Teacher Education - Innovation, Interventions and Impact* (Eds R. Brandenburg, S. McDonough, J. Burke, & S. White). Another book chapter is in preparation (Beltman, Wosnitza, Mansfield, Broadley & Weatherby-Fell, in preparation) to be published in *Resilience in Education: Concepts, contexts and connections* (Eds. Wosnitza, Piexoto, Beltman & Mansfield). Two further publications are in the planning stage. Two team members were also invited to publish in a Special Issue of *School Psychology International* (Beltman, Mansfield & Harris, 2016). One team member has written a book chapter regarding teacher resilience for an educational text (Beltman, 2015).

Factors critical for project success

Project team

The *project team was strategically developed* around the expertise needed for project success and with individuals playing key roles for specific aspects of the project. All team members had worked as teacher educators (and three as school teachers) and so understood the challenges of the profession and of preparing future generations of teachers. One team member had worked as a school psychologist. The team members had complementary areas of expertise, enabling individuals to 'lead' particular aspects of the project, while supporting one another in ongoing project tasks.

The *relationship between team members* was also important for success. As one team member was not from WA, an early face-to-face 'start-up' meeting provided a critical opportunity for project team members to get to know each other and build a detailed collaborative plan for the project. As the project progressed, regular Skype meetings became critical to maintaining project momentum, promoting positive working relationships, having a shared vision-in-action for the project, and maximising productivity. The team also maximised opportunities for face-to-face meetings to coincide with dissemination events at two conferences. It was also important to keep open communication about roles and responsibilities and be flexible where needed. The role of the *Project Leader* was crucial throughout the project but particularly in relationship to the team cohesion. The leader was able to be flexible and creative, but also to maintain and communicate a clear vision of the end point of the project and a focus on achieving the highest standards possible within budgetary and time constraints.

The *Project Evaluator* also participated in some project meetings offering insights about project progress and suggestions for maximising participation and dissemination. Adopting the role of critical friend, the Project Evaluator contributed to the project success. The Evaluation Report is available at Appendix H. Strong *project management* was also important for project success, ensuring milestones were met on time and within budget. The Project Manager also provided strategic and just-in-time support throughout the project.

Access to stakeholders

Project success was also hinged on *access to a range of stakeholders* who were known to team members through personal and professional networks. Stakeholders formed advisory and reference groups with local, national and international representation (as shown in Table 1). The international Reference Group members enabled an international perspective on the project activities and module development and shared their expertise generously. Advisory Group members shared local expertise and played a critical role in dissemination and spreading the word about the project.

Access to a wide range of stakeholders also made possible module trials with potential BRiTE users. Holding trials with Reference and Advisory Groups, teacher educators (through the ATEA network) and cohorts of students from three universities enabled multiple perspectives to inform module development. The trials contributed to development of module content and online design, especially given varying levels of expertise with online learning.

The *flexibility and opportunistic thinking* of project team members also increased access to stakeholders and wider dissemination. Taking advantage of informal, unplanned events and conversations to promote the project and engage more people through the BRiTE Community contributed positively to project success.

Web designers

The web design was one of the most critical aspects of the project. The project team sought web designers who had previous experience in designing interactive and personalised online resources in the higher education sector. The web designers from Zetatech were flexible, innovative and responsive to project needs. Furthermore, they understood the vision of the

project and the pedagogy underpinning the module design. At times, their suggestions were beyond what the team thought possible, and their method of working closely with the team enhanced the project considerably.

Challenges experienced and lessons learned

The main challenge in this project was that it became much bigger than originally intended. In part, this was due to the findings from the Environmental Scan in Phase 1 and also due to developing a shared vision of the online design with the web designers. It became evident that five modules rather than four were required, and that the range of online activities and resources could be considerably better than had previously been envisioned. Overcoming this challenge increased the workload for the project team, particularly during Phase 2; however, the result has exceeded our original expectations.

Changes in the academic roles of team members when universities were undergoing restructuring and changes in leadership was also challenging at times. All team members, as senior academics, held a high level of administrative responsibilities in their universities. The period of the project saw many changes across the higher education sector and led to increasing pressures and responsibilities not only for the project team but also for the Advisory Group. Managing these challenges meant being flexible and also having team members who could and were prepared to take on extra tasks.

A broader challenge in conducting research with university students is identifying ways to maintain contact once students graduate. In hindsight, it would have been advantageous to ask participants to give a personal email address, rather than a university email, or provide an alternative way they could be contacted in the future.

4: Project impact and dissemination

4.1 Project impact

The BRiTE project is a transition project and, as such, an impact plan did not form part of the original proposal. The team, however, have considered the impact of the project in light of recent Office for Learning and Teaching guidelines, particularly the *Impact Management Planning and Evaluation Ladder* framework (Hinton, 2014).

The BRiTE project has been successful in advancing the *team members'* knowledge of teacher resilience, online learning and effective online practices in teacher education. The two completed publications, one under review and those in preparation are also important for career progression and communicating the project findings and resources to a wider national and international academic community. In addition, invitations for international presentations, invitations to publish in Special Issues of international peer-reviewed journals (Beltman, Mansfield & Harris, 2016) and to co-edit a book (Wosnitza, Piexoto, Beltman & Mansfield) and development of joint symposia at national and international conferences have occurred as a result of the project.

Perceived short-term impact for *immediate students* participating in the pilot evaluation in 2014 was generally positive. Participants responded favourably to evaluation questions about the extent to which the modules helped them develop knowledge and skills (mean = 4), whether they would use content in Professional Experience (mean = 4) and future teaching careers (mean = 4.2), and whether they would refer to the modules in future (mean = 3.9). Gathering longitudinal data to monitor impact over a longer period of time is an avenue for future research. Beyond the pilot implementation in 2014, pre-service teachers in 2015 continue to find the modules useful, as demonstrated by the following unsolicited feedback: 'Loved doing these modules ... some great information and ideas to think about ... thank you' (pre-service teacher, email communication, 14 April 2015).

Another indicator of impact is the number and location of users of the BRiTE modules since they became available in September 2014. By strategically *spreading the word* at local, national and international events, the website is receiving an increasing amount of traffic. Through the use of Google Analytics, the team has been able to obtain comprehensive statistics regarding the visitors to the webpages of the modules. Between 1 October 2014, and 1 September 2015, there have been a total of 4684 visitors to the site (Appendix E), with 35.3 per cent of these being return visitors. An update on 1 April 2016, showed 8,182 users, with 38.8% being returning users. This shows the increasing use of the modules, with users nearly doubling in number in a 7 month period. Of the visitors, the majority (64.75 per cent) come from Australia, with other users from the United States, Germany, China, Russia, Japan, the United Kingdom, Portugal and Brazil. More nuanced user data showing demographics of logged-in users was also available from the BRiTE website. This data showed that pre-service teachers at participating institutions as well as 14 other Australian universities have engaged with the modules in 2015 (as of April 2016). Website data also shows that pre-service teachers from universities in Germany, UK and USA have accessed the modules.

Maximising opportunities for dissemination also meant that the BRiTE modules have attracted interest from other universities and a range of professional organisations, suggesting *narrow opportunistic adoption*. Website data show users from the Department of Education, the Hunter Institute of Mental Health, AITSL, Teach for Australia, and the Board of Studies Teaching and Educational Standards, NSW. Users with a variety of roles have also accessed the modules, including pre-service teachers, teacher educators, teachers, psychologists, policy officers, educational consultants, academic development managers, career consultants, curriculum managers, professional learning officers, programmers, school psychologists and university professors. Not all users appear to be in the field of education, as nurse educators and web developers have also accessed the modules. This suggests that the modules may have an impact beyond the educational sector.

Narrow systemic adoption can be seen at participating institutions. For example, in the School of Education at Murdoch University, BRiTE modules have been embedded in Professional Experience units starting in 2015. Students will engage in modules prior to Professional Experience and reflect on the module learning in light of experiences afterwards. Each module is aligned with a particular Professional Experience unit. It is hoped that embedding the modules in this way will contribute to sustainable impact of the modules over time. Similarly, at Curtin University those working with pre-service teachers to

prepare them for their school placements have embraced the modules. For example, in a revised third-year unit for primary pre-service teachers, students will need to complete all of the modules and put elements of their work in their electronic teaching portfolio. They will also need to provide their certificate of completion as evidence of professional learning. At the University of Wollongong, the modules have been embedded into a core academic subject within the Master of Teaching programs (primary and secondary). A recent 'Overseas Professional Experience' activity used the modules to support the students as they were immersed into unfamiliar cultures and school contexts. Further, subjects aligned with Professional Experience placements (in early years, primary education and secondary mathematics, science and physical and health education) are also introducing the modules to students and beginning the process of integrating them into the associated subjects across each program.

There is also evidence of *broad opportunistic adoption* with users from 17 different Australian universities logging in to the modules. Conversations with teacher educator colleagues also indicate further adoption will occur. Unsolicited feedback was received from an advisory group member who stated 'It is obvious that this work is going to 'go places' and have 'traction!' (Advisory Group member, email communication, 16 February 2015)

Broad systemic adoption is ongoing. For example, the Department of Education, WA and the Catholic Education Office of WA have committed to using the BRiTE modules as part of their early career teacher induction programs. The BRiTE modules are aligned with the current focus of such programs.

It is the intention of the project team that the BRiTE modules be used as widely as possible in teacher education programs across Australia. Early indications are highly positive, with much interest and enthusiasm for the resource demonstrated thus far. The design of the modules appears to be unique in the higher education section. The positive feedback about the online design (see previous section) from a range of users suggests that the module design may have application beyond this project. In other 'caring professions' (for example, nursing) similar challenges and coping strategies may be experienced, and resources such as these may be used as a blueprint for the development of resources for other disciplines.

4.2 Dissemination

Dissemination has been an ongoing feature of this project since the early stages when the Reference and Advisory Groups were engaged. Inbuilt project design features ensured multiple dissemination and feedback points for module trials and opportunities to engage stakeholders and then provide feedback about how their suggestions were being used.

A range of printed resources to assist dissemination were developed, including three iterations of the project poster, two iterations of postcards (See Appendix F), regular newsletters and the Implementation Guidelines in PDF and hard copy. The postcards have been widely distributed to pre-service teachers and teacher educators at conferences, in university courses and at professional events. Soft copy resources have been distributed via email to all stakeholder groups and team members' professional contacts nationally and internationally.

Formal dissemination events and invited presentations (Appendix G) such as presenting at conferences (n = 9), conducting workshops (n = 3), holding module launches (n = 3), were used, as well as opportunistic dissemination activities such as university open days, personal and professional networks, and within-university research presentations. Targeted conferences, for example the ATEA, have been important for dissemination, as indicated in this unsolicited feedback:

I love the BRiTE resources, I have added the link on all my Moodle sites. I can see how we could adapt a similar concept to working with ICT [information and communication technologies]. (Teacher educator, email communication, 13 July 2015)

Links have also been posted on other online resources (for example, AITSL e-resource <http://www.aitsl.edu.au/school-leadership-ecollection/search-the-school-leadership-ecollection?cr=AnyField!Contains!BRiTE>).

In the final stages of the project, the use of social media (including Facebook and Twitter) was increased to assist with dissemination strategies. Project team and Reference Group members used their existing professional and personal social media networks to share the BRiTE website and information about the project. This method was considered to be a more effective social media strategy than creating new accounts where no existing network could be instantly leveraged. Terras (2012) reported significant spikes in downloads of research papers that correlate with blogging and tweeting about them through social media. The use of social media allows academics to rapidly share through large networks and communities, and the BRiTE project team, through its extensive international networks and professional association connections, believes this will be a successful and cost-effective strategy to continue to attract users to the BRiTE modules and increase the participation globally.

5: Conclusion

The BRiTE project aimed to support the development of professional resilience in pre-service teachers by developing online learning modules. In doing so, five interactive online learning modules were developed, along with a range of resources to support implementation. Within the timeframe of the project, feedback from stakeholder groups was used to develop the modules with the resulting product being positively evaluated. Pre-service teachers are continuing to engage with the modules over a longer period of time, returning to the site on multiple occasions. Teacher educators in a number of universities are using the Implementation Guidelines, to inform how the modules are used in their courses.

This project is of benefit to the higher education sector in a number of ways. The modules demonstrate how an engaging online resource can be developed to raise awareness of skills and strategies for resilience in a specific professional context. The design of the resource is transferrable to other disciplines and contexts. The particular features of the online design (interactivity, personalisation, connection to research and the profession) are also transferrable to other online learning resources. The design-based research process, with

multiple trials with a range of stakeholder groups, may be useful for the design of future projects. Finally, engagement with national and international leaders in the field is beneficial for 'big picture' feedback and broad dissemination.

I am really impressed with the thinking that underpins the design of the project ... I liked the themes of the modules which address areas that WILL help trainee teachers and early career teachers to better understand the nature of teachers' work and lives and, most importantly, how to survive and thrive in the reality of teaching. (International expert Reference Group member, email communication, 14 May 2015)

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Appendix A

Certification by Deputy Vice-Chancellor (or equivalent)

I certify that all parts of the final report for this OLT grant/fellowship (remove as appropriate) provide an accurate representation of the implementation, impact and findings of the project, and that the report is of publishable quality.

Name:Date: