Rethinking digital literacy: Towards a holistic digital competency framework for teachers

Garry Falloon

Federation University Australia, Victoria
g.falloon@federation.edu.au

Honorary Professor of Education
The Macquarie University School of Education
New South Wales

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Acknowledgement of Country

I would like to acknowledge the Traditional Custodians of the lands and waters where the campuses, centres and field stations of Federation University are located and pay my respects to Elders past, present and emerging. I extend this respect to all Aboriginal and Torres Strait Islander and First Nations Peoples.

Ballarat: Wadawurrung

Berwick: Boon Wurrung and Wurundjeri

Brisbane: Turrbal and Jagera

Gippsland: Gunai Kurnai

Nanya Station: Mutthi Mutthi and Barkindji

Wimmera: Wotjobaluk, Jaadwa, Jadawadjali, Wergaia and Jupagulk

Stretch Reconciliation Action Plan artwork by Josh Muir and Shanaya Sheridan

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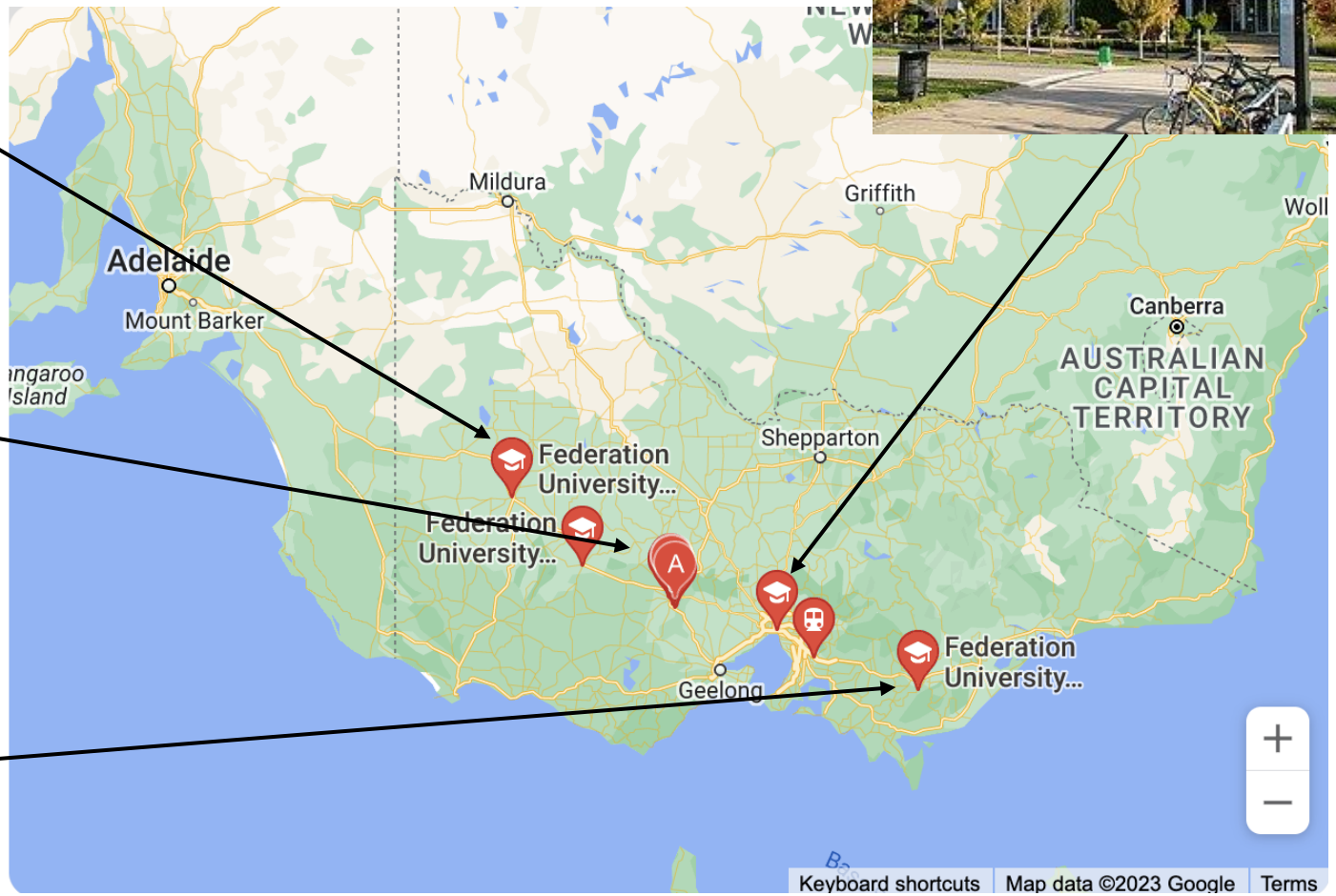
Locations

Horsham campus

Mt. Helen campus

Gippsland campus

Berwick campus



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Background

• Rapid technological advancements demand increasingly diverse and multifaceted skillsets to support their productive, ethical and responsible use

• Digital devices are ubiquitous in all aspects of our lives, and are being introduced to children at increasingly younger ages

• Greater device affordability and provisioning programs such a BYOD (bring your own device) has helped address historical access issues that previously limited technology use in many classrooms

• Research indicates low levels of 'digital literacy' amongst school leavers (e.g., ACER, 2020; Bacalja et al., 2022) and call for new and broader approaches and pedagogies to improve digital literacy education

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• Current teacher education programs that emphasise students' 'digital self-efficacy' and operational knowledge of applications and their 'integration' into curriculum, are inadequate preparation for broadly based teacher digital competence

A proliferation of ‘literacies’

• Over the years, researchers and commentators have promoted a range of ‘literacies’ as being relevant to optimising the use of digital technologies. These include *digital literacy* (Gilster, 1997); *information literacy* (Zurkowski, 1974); *computer literacy* (Tsai, 2002); *internet literacy* (Harrison, 2017); *media literacy* (Christ & Potter, 1998); *multimodal literacy* (Heydon, 2007)

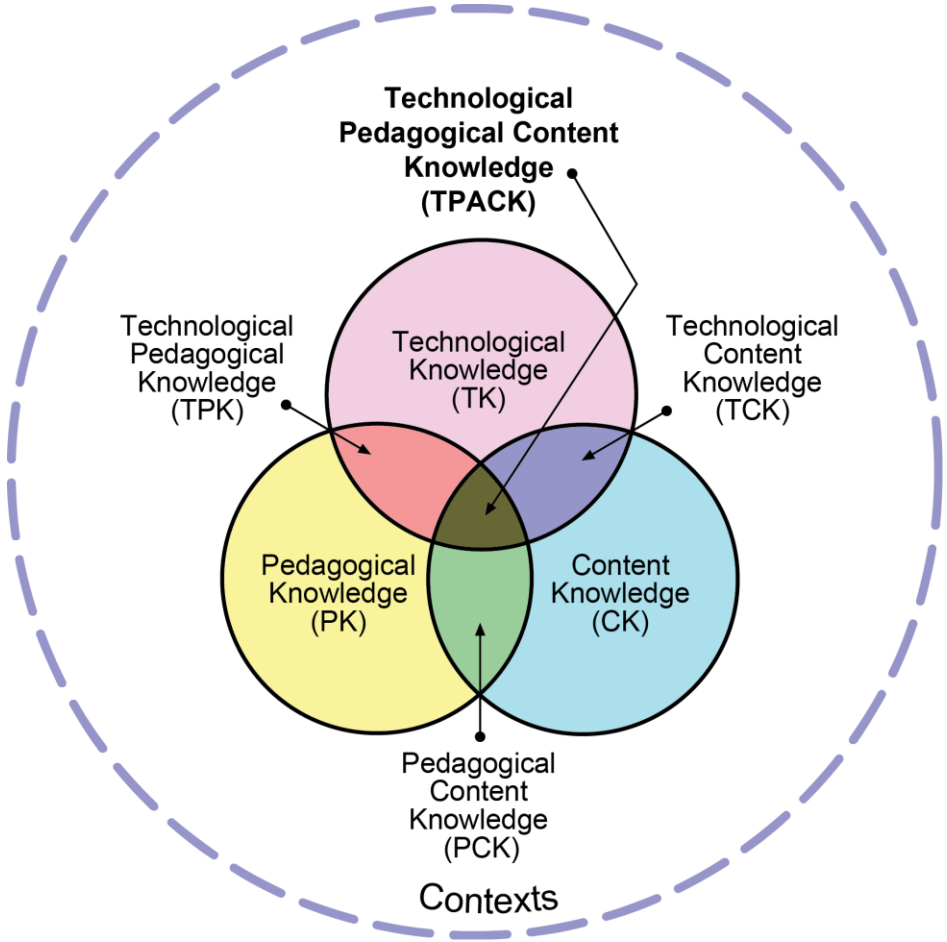
• While these may variously define some components of digital competency, by themselves they are insufficient for defining the broadly-based competency set needed by students

From: Payton, S. & Hague, C (2010).. *Digital literacy in practice: case studies of primary and secondary classrooms*. Futurelab, 2010. https://www.nfer.ac.uk/publications/FUTL06/FUTL06casestudies.pdf

Current frameworks guiding teacher digital capability development

Technological, Pedagogical Content Knowledge (TPACK)

Mishra & Koehler's (2006) Technological, Pedagogical, Content Knowledge (or TPACK) framework conceptualises the relationship between, and combination of, technological, pedagogical and content knowledge needed to effectively and productively use digital technologies in curriculum



The TPACK Framework

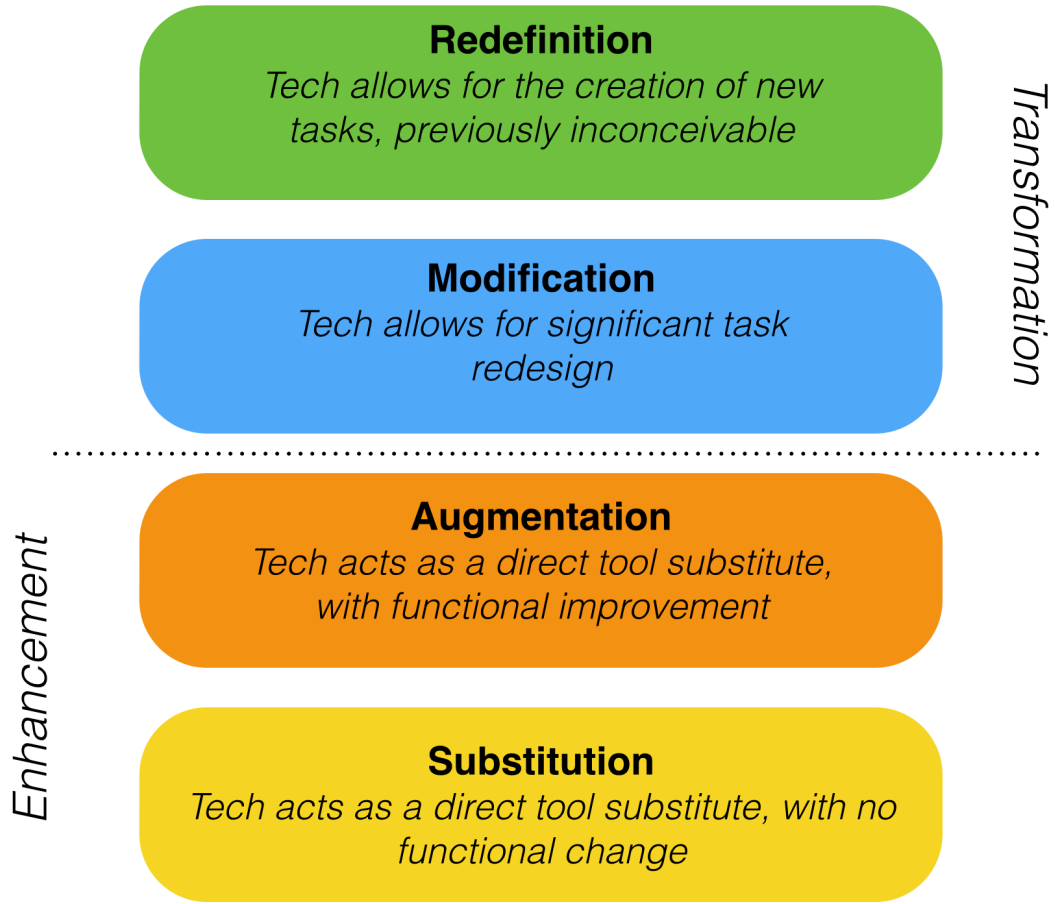
(from Schmidt et al., 2009, Technological Pedagogical Content Knowledge [TPACK]: The Development and Validation of an Assessment Instrument for Preservice Teachers. *Journal of Research on Technology in Education, 42(2)*, 123-149)

Current frameworks guiding teacher digital capability development

Substitution, Augmentation, Modification, Redefinition (SAMR)

SAMR (substitution, augmentation, modification, redefinition) is a framework mapping progression or stages of increasing complexity in classroom applications of digital technologies. Although presented as a hierarchy, SAMR is perhaps better interpreted descriptively as illustrative of different applications of technology on a 'fit for purpose' basis

(Hamilton et al., 2016)



The SAMR Model

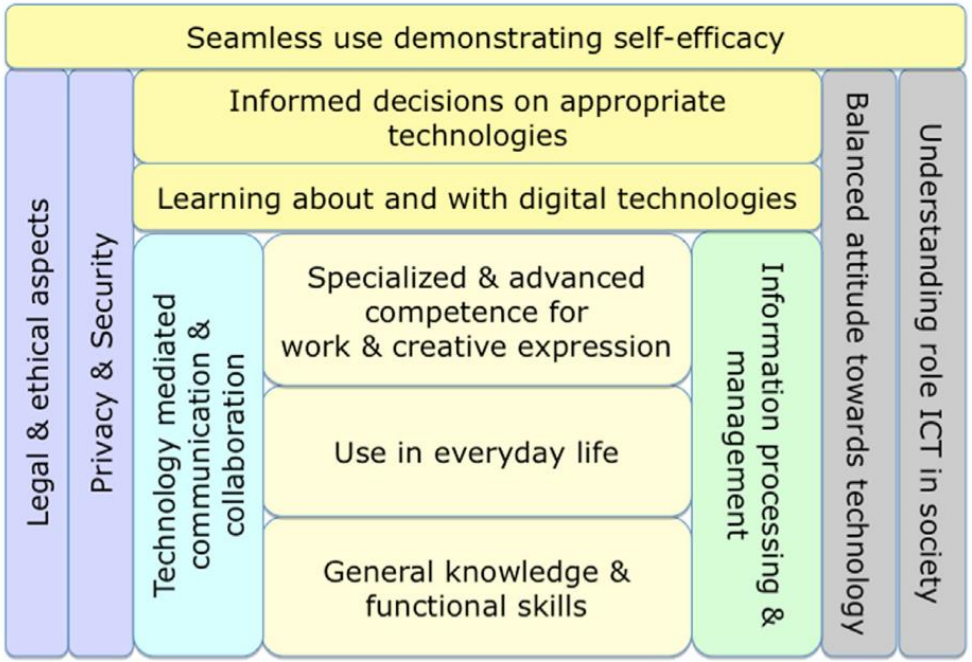
From: Puentedura, (2009). http://hippasus.com/rrpweblog/archives/2015/10/SAMR_ABriefIntro.pdf

Calls for an expanded conceptualisation of teacher digital capabilities

The prevailing focus of teacher education programs on skills development and technology application in teaching tasks has been criticised for its lack of authenticity, failure to take account of different socio-cultural contexts, and ineffective, reductive design (e.g., Gruszcynska et al., 2013; Lim et al., 2011; Lund et al., 2014).

'…digital competency clearly involves more than knowing how to use devices and applications… which is intricately connected with skills to communicate with ICT, as well as information skills. Sensible and healthy use of ICT requires particular knowledge and attitudes regarding legal and ethical aspects, privacy and security, as well as understanding the role of ICT in society and a balanced attitude towards technology…'

(Janssen et al., 2013, p. 480)



Areas of General Digital Competence

From Janssen et al., (2013). Experts' views on digital competence: Commonalities and differences. *Computers & Education, 68,* 473-481.

The challenge for (teacher) educators

'…teacher educators are required both to educate their students about using present and emerging digital resources in their own professional practice and about how to make their students capable of using technology in productive ways. Achieving this is particularly difficult, as it requires catering for more than the immediate capability needs of students, to build a performative competence, that will enable them to interpret into specific instructive, learning design, classroom organisation and assessment practices, how to best use digital resources to support their own students' learning…

… beginning teachers also need transformative competence to resist being socialised into existing practices, but be able to contribute to developing new ones… (p. 2456 - 2457)

Photo with permission

Falloon, G.W. (2020). From Digital Literacy to Digital Competence: The Teacher Digital Competency (TDC) Framework. *Educational Technology Research and Development, 68*, 2449-2472

The challenge for teachers

Teachers face the dual challenges of optimising benefits from digital technology use in supporting curriculum outcomes *(performative & transformative competencies)*, **and** helping their students understand, navigate and interact in complex and rapidly changing digital landscapes in appropriate, safe, ethical and productive ways *(personal-ethical & personal-professional competencies).*

To achieve this, teachers need broadly based digital competence comprising both *TPACK* capabilities (curriculum-focused) and *personal-professional* capabilities and dispositions (ethical/dispositions)

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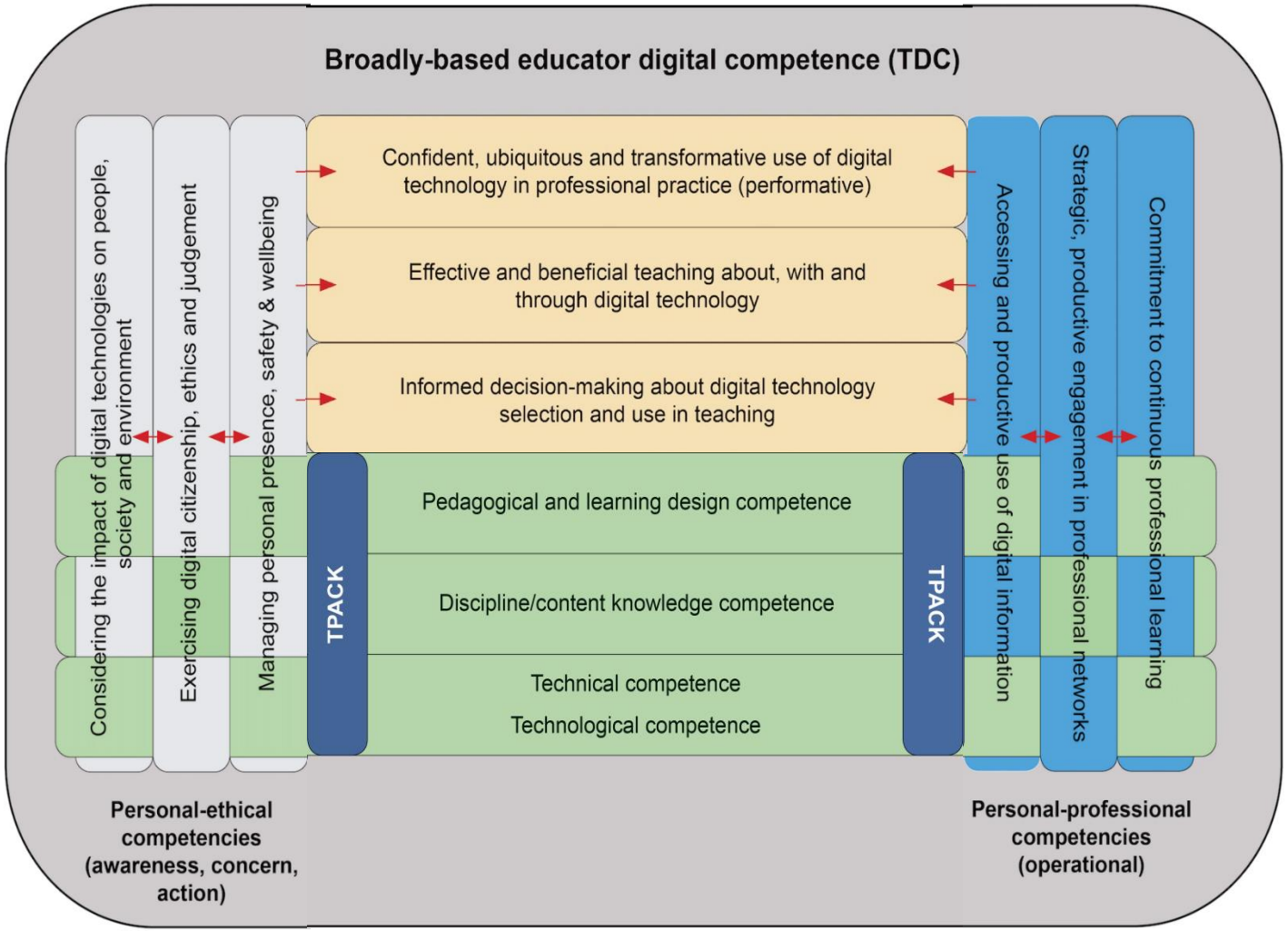
From Digital Literacies… to Digital Competence

Teachers and educators should aspire to a broadly-based digital competence, model and incorporate competencies in their professional practice, and integrate opportunities for their students to exercise and develop these in coursework.

The 'interweaving' of *personal-ethical* and *personal-professional* competencies with curriculum-oriented *TPACK competencies* is central to achieving transformative and performative educational goals



Falloon, G.W. (2020). From Digital Literacy to Digital Competence: The Teacher Digital Competency (TDC) Framework. *Educational Technology Research and Development, 68*, 2449-2472

Implementing the framework… one approach

The Macquarie University Professional Digital Competency project (PDC) (2018-2019)

Background

A 2017 NSW state government review of digital literacy skills and learning identified significant limitations in prevailing teacher education programs and practices for preparing graduates for the increasingly digital learning environments within which they would be working.

The report highlighted the inadequacy of prevailing emphases in ITE programs of 'device specific' skills learning, indicating that '*alternative approaches embedding broader technological competence in a more fluid and flexible manner, are needed'* (p.10)

New South Wales Education Standards Authority (2017). Digital Literacy Skills and Learning Report. NSW Government. https://www.nsw.gov.au/sites/default/files/2022-11/Digital-skills-and-learning-report.pdf

Implementing the framework… one approach

The Macquarie University Professional Digital Competency project (PDC) (2018-2019)

PDC project goal

To build the capacity of ITE staff to embed the innovative use of digital technologies in their professional practice, and model and develop in their students personal ethical and personal professional competencies through this process

PDC project implementation: the project-based model

- An individual or team project- based approach addressing pedagogical, technological, & learning/assessment design
- Projects up to 12 months in duration;
- Linked to a publication output;
- Individual and negotiated project budget (from centrally-managed funding pool);
- Milestone structured;
- All projects coordinated by the PDC leader, who will also provide mentoring and contribute to research outputs (for ECRs)

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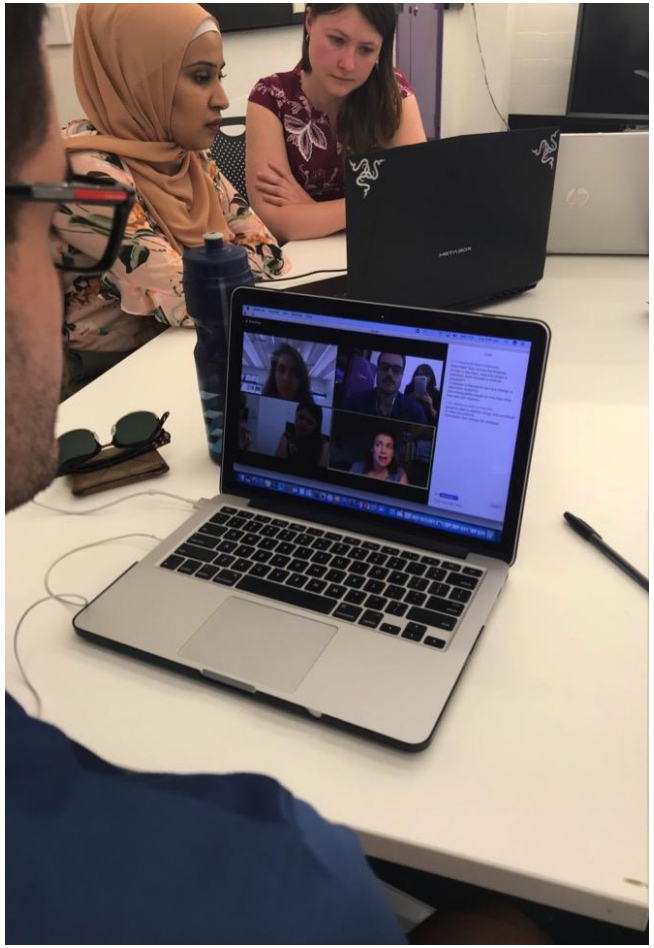
Implementing the framework… one approach

The Macquarie University Professional Digital Competency project (PDC) (2018-2019)

PDC project performance indicators

• Enduring changes to staff professional practice with and through digital technologies is evident (beyond the PDC project duration);
• Strong staff engagement (at least 12 PDC projects in 2019);
• Minimum of one academic publication per PDC project;
• Create base of 'innovation champions' willing and able to support others in similar initiatives;
• Higher student unit/course satisfaction levels;
• Improved student readiness to purposefully and productively incorporate digital technologies into their professional practice (performative/transformative);
• Improved student awareness of personal-ethical and personal-professional competencies (both determined by parallel project research);
• Success sufficient to justify project continuation



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Implementing the framework… one approach

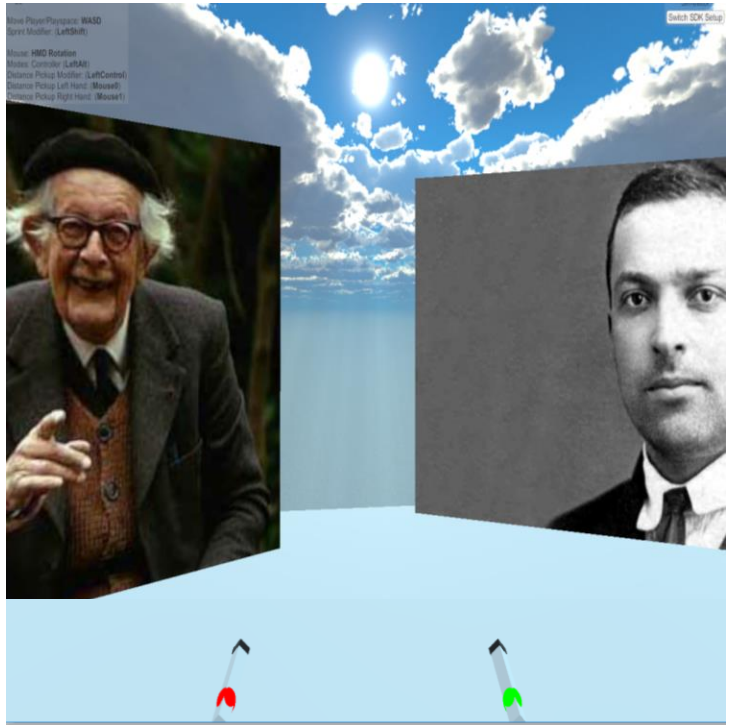
The Macquarie University Professional Digital Competency project (PDC) (2018-2019)

PDC project funding and selection

• Bulk funded by the Macquarie University Learning and Teaching Strategic Priority Grants (2018-19). These competitive grants are available to support teaching and learning innovations that demonstrably support the university's teaching and learning strategic goals (as detailed in the university's strategic plan). $A150,000 was awarded to the PDC project for 2018-19, with the recommendation that the opportunity be expanded to other faculties;

• Project selection by committee followed an open EoI process. This invited project ideas responding to the PDC goal and performance indicators and particularly focused on mechanisms for broad competency development. EoIs were no more than 2 pages, with a maximum budget of $12,000;

• Selected projects were refined and finalised by project holders and PDC project leader



The Virtual Reality in History and Philosophy of Early Childhood Education PDC Project

Implementing the framework… one approach

The Macquarie University Professional Digital Competency project (PDC) (2018-2019)

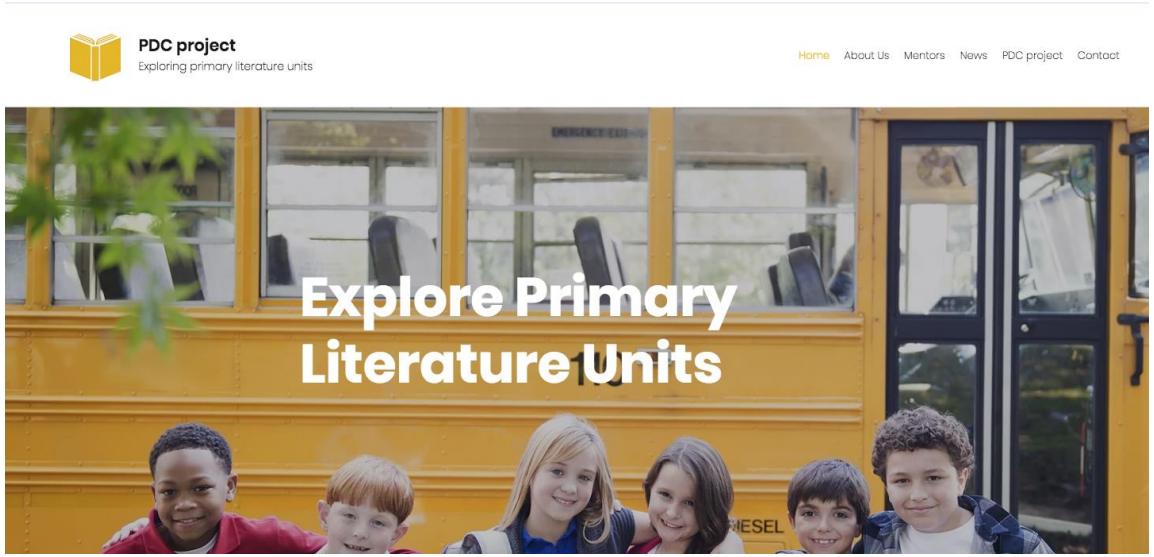
Sample projects

• Explore Primary Literature Units (providing effective and ethical peer feedback using a bespoke online tool) ;

• Measurement in STEM: Furthering the safe, ethical and purposeful use of digital devices for data collection in STEM;

• Breaking the Fourth Wall: Using H5P to help EAL students interpret online video learning objects through interactive annotating connecting it with lecture and/or reading content;

• Developing Digital Competencies in PACE (professional and community engagement) programs: Teaching, reflection and evaluation;



• Using virtual reality in history and philosophy of education units (evaluating ethical and moral dilemmas) ;

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Implementing the framework… one approach

The Macquarie University Professional Digital Competency project (PDC) (2018-2019)

Sample projects

• Integrating effective use of web conferencing systems into external teacher education units (building and leveraging professional digital networks);

• Optimising digital competencies in external offerings of secondary teacher education units;

• Competent and ethical practices in using cloud services for providing feedback in ECE professional experience (practicum) units ;

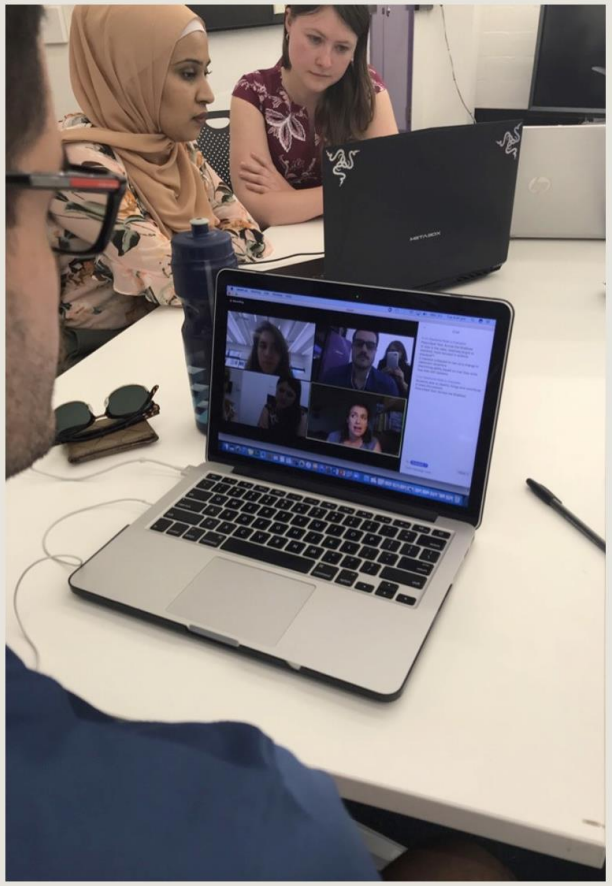
• Online interviewing across cultures: Practical strategies for improved digital communication for work ready graduates across borders (developing linguistic proficiency and cultural agility);

The Online Interviewing Across Cultures PDC Project (photo with permission)

• Voices of experience: De-identified voice data collection and text responses to sensitive topics in Sociology of Education units;

Project example

Integrating web conferencing systems into external teacher education units: Wisdom stories



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Wisdom Stories

STAGE 6
ENGLISH WEB-CONFERENCES

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TEP423/TEP424 – English in the Secondary School 1 and 2

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Wisdom Stories
• Initial preparation we-conferencing meeting for pre-service teachers only
• Groups of 4-5 pre-service teachers web-conference with an in-service teacher
• In-service teacher shares their experiences of teaching new Stage 6 English Curriculum
• Pre-service teachers invited to prepare modules of work for real classes
• In-service teachers provide feedback to pre-service teachers about their work
• Pre-service teachers learn from in-service wisdom and complete authentic tasks

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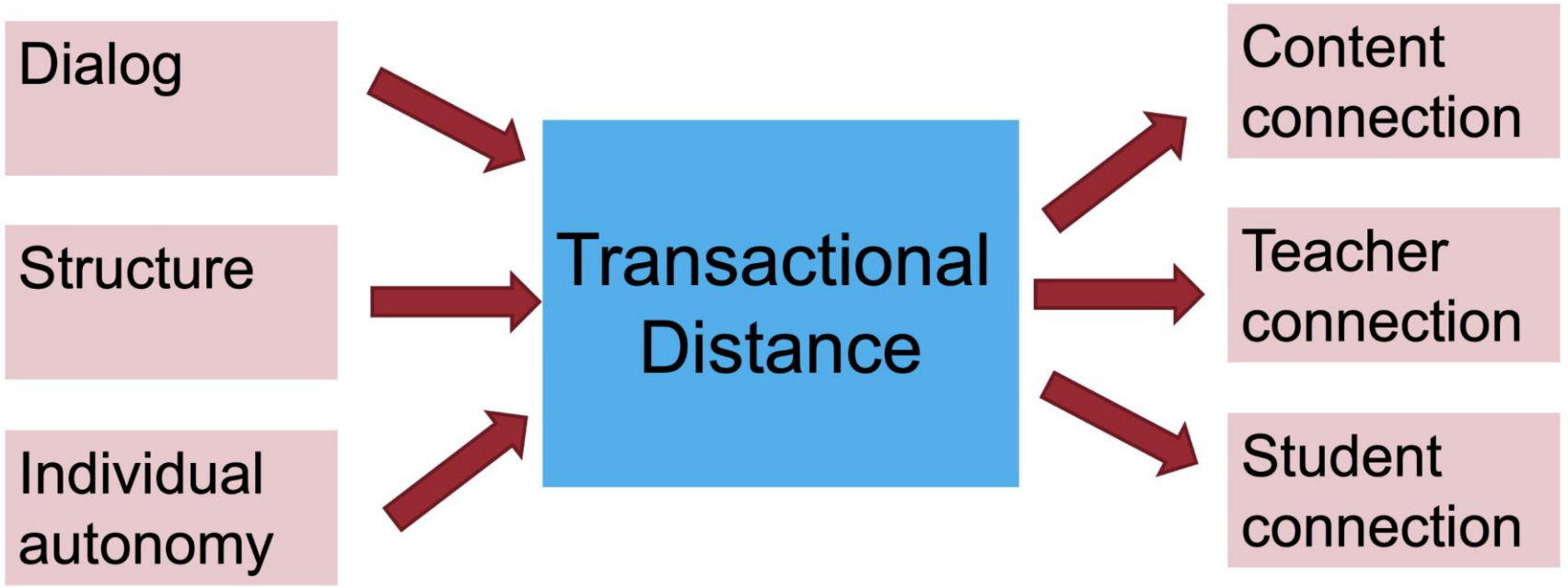
Theoretical referent 1: Transactional Distance



(Moore, 2013)

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‘Wisdom stories’

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STAGE 6 ENGLISH WEB CONFERENCE: TEP424 ENGLISH IN THE SECONDARY SCHOOL II

- Teachers talk with the students about their school, class and experiences teaching the new Syllabus Year 11 Common Module for the first time.
- Discuss what you have planned for the Year 12 Common Module: Texts and Experiences
- Students invited to work on developing some resources (worksheet(s)/multi-modal task …) for the teacher’s unit and nominated class.
- The pre-service teachers completed this task and send it to the teachers for optional feedback.
- Teacher also answered questions about their work as an English teacher and their advice about the transition to teaching.

ZOOM MEETING DETAILS

1. Student only preparation ‘meeting’ – 45 minutes
2. Teacher and student meeting – 40 minute. Teacher in dialogue with 4-5 pre-service teachers.

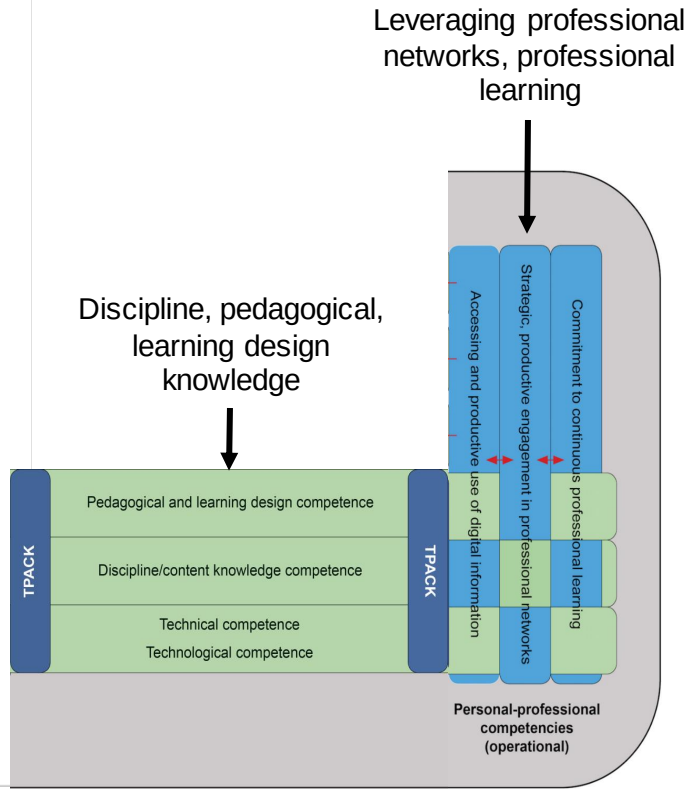
Student participants: 29 TEP424 students

Teachers: Teachers NOT part of the research.

- Sourced via professional contacts and ETA social media group.
- 7 x Teachers: Moree, Armidale, Taree, central coast, central west, metro Sydney.
- 5 x State school, 1 x Independent, 1 x CEO

Career Stage:

- 2 x Year 1 Early career teachers
- 1 x 70 year old late career teacher



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Integrating web conferencing systems into external teacher education units: Wisdom stories

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Integrating web conferencing systems into external teacher education units: Wisdom stories

Network & professional community building

Curriculum design and technology knowledge & skills

Table 4a. Perceptions on the use of web-conferencing	
Items	**Mean / 6**
1. The use of web-conferencing in this unit increased the amount I learnt	4.54
2. The use of web-conferencing in this unit enhanced my attitudes and beliefs towards the subject	4.52
3. The use of web-conferencing increased my participation in this course	4.61
4. The use of web-conferencing resulted in a better quality course	4.57
5. The use of web-conferencing increased my overall perceptions of the technological quality of the course	4.83
6. The use of web-conferencing increased my overall perceptions of the teaching quality for this course	4.67
7. The use of web-conferencing increased my sense of connection with the profession	4.57
8. The use of web-conferencing increased my perception of the institutional support provided by Macquarie University	4.24
9. The use of web-conferencing enhanced my sense of connection with the content being studied	4.52
10. The use of web-conferencing enhanced my sense of connection with the teacher	4.63
11. The use of web-conferencing enhanced my sense of connection with other students in my class	4.35
12. I am confident in my abilities to use web-conferencing	4.30
13. The use of web-conferencing provided me with a stronger sense of teacher contribution in terms of their design, facilitation and instruction of curriculum	4.70
14. The use of web-conferencing enhanced my ability to cognitively engage in this unit	4.48
15. The use of web-conferencing provided me with a stronger sense of social connection with my class in terms of being a part of a community	4.37

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Integrating web conferencing systems into external teacher education units: Wisdom stories

Table 5. What did you particularly like about using web-conferencing in your unit	
	Frequency
Facilitated professional network and learning	**21**
Enhanced interaction and connection with the profession	**13**
Enhanced understanding of pedagogies and learning design for meeting the needs of diverse students	**8**
Enhanced professional knowledge of the new English curriculum	**7**
Enhanced confidence and skills in using web conferencing for professional purposes	**3**
Enhanced sense of presence in the teaching environment	**2**
Discussing with teachers from different schools provided access to different views and experiences	**1**

Allowed me to be involved in discussions with others in the program especially as I am studying externally and don't have the option to be involved with lectures and tutorials (Enhance interactions and connection)

Web-conferencing promoted authentic learning as the technology allowed me to talk to an experienced teacher from a country school. I extended my network. I have only had experience teaching in schools in the city and web conferencing technology gave me the opportunity to talk to professionals who are able to share real-world experiences in different situations (Facilitate professional network and learning).

Project showcase

A university project showcase event was held where PDC project holders detailed the methods and outcomes from their PDC projects, and how they intended to sustainably carry these forward into future courses and/or other professional tasks

In summary, PDC projects:

- were bespoke, project-based and driven by staff identified teaching and/or learning needs or opportunities
- were theory informed
- aligned with selected framework competencies (TPACK, PP, PE)
- complemented course/unit learning and capability outcomes
- represented new uses of digital technologies in ITE curriculum
- were collaborative & team focused
- were scalable across units/courses
- were sustainable (strong student support for becoming integral to curriculum)

FACULTY OF HUMAN SCIENCES

MACQUARIE University

The Professional Digital Competencies projects showcase event

THURSDAY 28 FEBRUARY 2019

The Professional Digital Competencies projects (PDC) was an initiative supported by a 2018 University Teaching and Learning Strategic Priority Grant. The projects comprised 12 targeted interventions managed by the Department of Educational Studies, engaging academic staff from PACE, and the Faculties of Human Sciences and Arts, in projects designed to:

BUILD STAFF TECHNOLOGICAL CAPABILITY AND DIGITAL LITERACY

INTEGRATE DIGITAL TECHNOLOGIES MORE EFFECTIVELY IN UNITS AND PROGRAMS

TRIAL NEW AND EMERGING TECHNOLOGIES IN DIFFERENT TEACHING AND LEARNING CONTEXTS

YOU'RE INVITED TO THIS SHOWCASE EVENT WHICH WILL COMPRISE 8 MINUTE VIGNETTES ON KEY METHODS AND OUTCOMES FROM EACH OF THE PROJECTS. PROJECTS TO BE SHOWCASED INCLUDE:

- **Using near real time data in PACE units:** an investigation of how digitally-harvested data can be used to inform better understanding of PACE students' needs, expectations and outcomes, and be used in the classroom as teaching resources ;
- **Breaking the 4th Wall:** using high quality video and H5P to engage off campus students more interactively with online learning content;
- **The Voices of Experience:** Voice masking and recording technology to communicate personal stories in sexuality education;
- **Virtual reality in the history and philosophy of education:** Learning educational theories through a VR quiz game;
- **ADB-TV. Video production in Ancient History and Archaeology:** introducing and trialling digital humanities (video production) and peer-peer assessment methods;
- **Online interviewing across cultures:** Improving video interview techniques in multiple languages;
- **Building and trialling digital resources in online secondary teacher education programs:** Design and implement digital learning activities to support external secondary teacher education methodology units
- **e-Folios in early childhood teacher education:** investigating e-folios for enhancing student reflective practice;
- **A Lab in your Pocket:** using mobile devices and apps in STEM education;
- **Improving teacher planning through virtual communities of practice:** establishing and trialling a virtual professional community to feed back on student planning using Program Builder and Scootle;
- **Synchronous, flexible online learning in teacher education:** integrating web conferencing into external teacher education;
- **Low-cost online learning content in Sociology:** developing and trialling video based-learning modules to teach R in Sociology.

VENUE: The Incubator

DATE: Thursday 28 February 2019

TIME: Refreshments and nibbles 3.30pm. Presentations start at 4.00pm.

Register for this event here.

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