Federation University

School of Education

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PeCALE Research Informed Practices Symposium:

Reimagining technology in education

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Welcome

As convenor of the PeCALE (Pedagogy, Curriculum, Assessment and Learner Engagement) Research Focus Area, and on behalf of the organising committee, it is my pleasure to welcome you to the third symposium in our series of *Research Informed Practices*. This symposium is part of the group's annual community events, which are intended to bring together representatives from formal and informal educational settings, organizations, and private industry partners with researchers from The School of Education at Federation University. As last year, we also have the pleasure of having international guest presenters from Sweden joining us.

The PeCALE research group consists of approximately twenty researchers from the School of Education at Federation University. The group seeks to understand pedagogy, curriculum, assessment and learner engagement within a variety of diverse educational contexts. PeCALE researchers employ a multitude of research approaches and methodologies to explore the complex interrelationships between broad and specific curriculum contexts and approaches, quality of learning and teaching, assessment of learning, and impact on learning.

The PeCALE group consists of the following academics:

Based at the Gippsland campus:	*Based at the Berwick campus:*	*Based at the Ballarat campus:*
Heather Ernst	Ana Larson	Josh Ambrosy
Dr Anna Fletcher	Dr Hongming Ma	Michelle Briede
Dr Monica Green	Cameron Smee	Dr Barbara Chancellor
Dr Stuart Levy	Dr Kathy Swinkels	A/Prof Dean Cooley
A/Prof Margaret Plunkett	Dr Daya Weerashinghe	Prof Claire McLachlan
Clare Williams		Naomi Nelson
		Melania Pantelich
		Bruce Schmidt
		Dr Peter Sellings
		Chris Wines
		Linda Zibell

The theme for the 2019 Gippsland symposium is *Reimagining technology in education – engagement, innovation and communication*, a theme which encompasses learning areas as well as capabilities within the Victorian Curriculum. However, this symposium is set to move beyond the Victorian context. This year, our guest speakers reflect, regional and international perspectives, and through VR technology, we're even including the moon! In short, we look forward to a stimulating discussion with you about the practical applications and possibilities for practice.

We hope you find much of interest in the program, that you get us all thinking by contributing to our conversations (we're all here to learn!) and that you come away with new ideas and contacts for the future. We look forward to seeing you at the next PeCALE symposium!

Dr Anna Fletcher

PeCALE Convenor

Abstracts

Session 1

The Great Debate: Mind-screen or touchscreen - Imagination Lost or Found?

Linda Zibell, School of Education, Federation University of Australia

Abstract: In this session I will draw on my recent PhD research into Teacher Pedagogies of Dialogic Imagination to propose imagination's potency for learning, cognition and well-being. We will sample learning events my teachers as research participants developed to provoke experiences of an alternative reality through students' live imagining. You will learn of the teachers' intentions in creating these experiences, and how they perceive effects and consequences for student learning. Philosophy of imagination as presented by M.M. Bakhtin, Paul Ricoeur and Jens Brockmeier is highly congruent with their understandings: it affirms their suppositions. For discussion purposes I ask: Does the use of technology augment and develop a student's own imagination or does it supplant and repress it? What difference might it make to learning outcomes in our classrooms?

Key words: Imagination; technology; pedagogy; cognition; well-being.

Linda Zibell is a teacher educator in Humanities, Creative Arts, Well-being and Environmental Education/Sustainability in the School of Education. In her greater teaching history, she has worked with students aged 2 to 62, inclusive of people with a range of disabilities, disadvantages and personal challenges. She is a passionate advocate and active change agent for imagination in education, and for practical and positive local and global change. In her community work, local planning and conservation are strengths. Linda is immediate past president of the Buninyong and District Community Association and a founding co-convenor of the Woowookarung Regional Park.

Dyslexia assessment tool based on Artificial Intelligence

Suryani Lim, School of Science, Engineering and Information Technology, Federation University Australia.
Hugo Richard, Co-founder and the CEO of Dystech.

Abstract: According to the Australian Dyslexia Association (ADA), Dyslexia is a life-long learning disorder affecting about 10% of the Australian population. Currently there is no accessible fast and affordable assessment for dyslexia. In place, instead, are pre-assessments: a pre-assessment from ADA is $130, and a full assessment is $1,375, and, in some cases, can go up to $2,500. In this presentation we discuss our tool: a mobile app based on Artificial Intelligence, specifically Machine Learning (ML), which will assess whether a reader has dyslexia or not. The tool is accessible, requiring only a mobile device such as a smartphone or tablet, fast (15 minutes) and affordable (costing less than $100). We believe our tool will allow early detection of dyslexia so that students can receive early intervention. The same tool can also be used to measure the literacy performance of each student over time. We think our tool can benefit students, parents and teachers. We have developed an AI-based tool for assessing dysgraphia (writing difficulty) with 95% accuracy, and we are in the process of developing an app for dyslexia. We think the app will benefit students, parents and teachers.

Key words: Dyslexia; assessment; intervention; artificial intelligence

Suryani Lim is an academic in IT from Federation University. Her research area is in Artificial Intelligence, and she is also passionate about Education and Women in STEM.

Hugo Richard is the co-founder and the CEO of Dystech.

Virtual Reality – what is its place in education? A review of the Ballarat Science Teachers' Professional Development session exploring Virtual Reality and its potential.

Bruce Schmidt and Chris Wines: School of Education, Federation University Australia

Abstract: Earlier this year a Science Teachers Professional Development (PD) session was held at Ballarat Tech School exploring Virtual Reality (VR) in connection with the 50 Year Anniversary of the Moon Landing. This was an initiative of lecturers from the School of Education (Bruce Schmidt, Chris Wines and Rob Davis) in partnership with the School of Science, Engineering and Information Technology (Stephanie Davison and Evan Dekker) and Ballarat Tech School (Sofia Fiusco and Albert Ferguson). Three different VR experiences were available for the 25 participating teachers to experience: 'International Space Station' (from NASA), 'Apollo 11' (commercially available), and 'Moon Walk' (a Federation University project for final year IT students). This presentation will review these VR experiences and share the participants' reflections and subsequent ideas on the role of VR within a Science/STEM school learning program.

Key words: Virtual Reality; education; STEM; teacher experiences

Bruce Schmidt *and* ***Chris Wines*** *have a long-standing collaboration in Science Education as teachers, researchers and lecturers, with a key interest in Inquiry Based Learning and associated pedagogies.*

Session 2 (after morning tea)

The power of written feedback for pre-service teachers in teaching mathematics: A study in cooperation between mentors, pre-service students and teachers in teacher education

Caroline Nagy, Halmstad University, Sweden
Gun Wedding, Halmstad University, Sweden

Abstract : This presentation explores a study about how mentor teachers formulate feedback to pre-service teachers who teach mathematics in primary school (ages 6-9). We have identified that pre-service teachers tend to seek generalised feedback and that mentors rarely give content specific feedback. To improve the quality of feedback, both mentor teachers and pre-service teachers undertook a series of action research cycles as part of their professional development in providing and receiving specific feedback. During the practicum, the mentor teachers used a digital tool to observe and supervise the pre-service students. The digital tool is a multimodal app that pre-service teacher peers and mentor teachers use to video record, take photos, evaluate and give feedback. The data consists of information feeds from the app and pre-service teachers' concluding reflections after the practicum. Findings indicated three important conditions for specific conversations in mentoring sessions: 1) Pre-service teachers' targeted goals for teaching and for feedback, 2) Multimodal feedback and transparency is necessary to understand and keep engagement alive, and 3) Ownership in the gap between teaching and supervision. Planning seemed to be the most crucial phase where mentors and pre-service teachers negotiated their joint enterprise.

Key words: Written feedback; pre-service teachers; mathematics; teacher education

Caroline Nagy is a University Lecturer at Halmstad University, Sweden. Caroline has a Philosophy Licentiate in Educational Practice. She has researched progression in teaching fraction from preschool to 9th grade (ages 1-16). Caroline is involved in a project exploring collegial conversations between pre-service and in-service teachers using digital tools for coaching and multimodal feedback. This project illuminated that student teachers tend to seek generalised feedback and that mentors rarely give content specific feedback. Therefore, she and her colleagues are conducting action research attempting to influence students to formulate content-specific goals into their plans, and influence mentors to provide content-specific feedback.

Gun Wedding is a coordinator for teaching practice at Halmstad University, Sweden. She is responsible for teacher students' placements and for establishing contact with coordinators and mentors in practice schools, both preschools and schools.

Working with neuroscientists at school

Frank Wedding, Kattegattgymnasiet, Halmstad, Sweden

Abstract : This presentation describes a project called Real Classroom Lab (RCL) at a secondary school of 1400 students located in regional Sweden. The Real Classroom Lab is an initiative where classroom teachers collaborate with industry, such as local, regional, national and global companies, to pilot and co-design places created for learning and implement products and services that increase digital skills in schools. As part of the RCL initiative, the school tested a holistic neurology-based learning project called 'BrainSMART'. The 'BrainSMART' project involves scaffolding students' development of 10 habits to develop the ability to regulate their learning and finding inner motivation, self-esteem, and study techniques to increase their results. Students explored how a holistic approach to promote thinking affected themselves as individuals and society at large.

Key words: Neuroscientists; 10 habits; BrainSMART; study technology

Frank Wedding is principal of Kattegattgymnasiet Halmstad (SWE). The school is an upper secondary school with 1400 students. Frank works actively with school development projects, including Brainsmart, a concept in which the school has been working with neuroscientists for several years to develop students' study technology and results, but also well-being and health.

Session 3 (after lunch)

A recipe for innovation and communication: Forethought to develop students' creativity and learning competence

Anna Fletcher, School of Education, Federation University Australia

Abstract : It is probably something that every teacher is familiar with: the challenge of ensuring you teach to the curriculum at the same time as you are trying to make learning engaging, meaningful and targeted for your students to help them develop the skill to self-regulate their learning. If we want students to take charge of their learning, we need to support them to take on an active role in driving the learning process (Frey, Fisher, & Hattie, 2018). This presentation is a practical 'how to guide' for getting school students to take charge of their learning, based on a study of classroom-based (primary) assessment in writing.

Key words: Assessment as learning; self-regulated learning; 'mini c creativity'

Dr Anna Fletcher is the Associate Dean Teaching Quality in the School of Education of Federation University. Anna's research describes, implements and theorises effective classroom assessment applications within Literacy to promote student voice, student agency and self-regulated learning in the primary years. Anna convenes the Research Focus Area for Pedagogy, Curriculum, Assessment and Learner Engagement (PeCALE) at Federation University Australia. She also co-convenes the Australian Association of Educational Research (AARE) Assessment and Measurement Special Interest Group. Anna welcomes collaboration across institutions.

Three practical models for discussing technology in education

Heather Ernst, School of Education, Federation University of Australia

Abstract : How can we tell if using technology is supporting teaching and learning in our schools and universities? Are we using technology to the best advantage? This presentation describes three conceptual frameworks to support discussion and research around the use and misuse of technology in education. The 'Master/Servant/Partner/Extension of self' metaphor describes and potentially improves the relationship between students and technology (Geiger, 2009). TPACK, looks at the interaction between Technology, Pedagogy and Content Knowledge (Mishra & Koehler, 2006) and advocates that these knowledge factors need to be considered together when planning teaching. Cultural Historic Activity Theory (Engeström, 2001) is a versatile framework used to describe how tools, especially technology, can change the dynamics between students, teachers, rules, roles and learning objectives. In this presentation, each of these practical models will be explained by examples from local schools and recent literature.

Key words: Technology, TPACK, Activity Theory,

Heather Ernst is a lecturer in the School of Education at Federation University, and has been teaching Mathematics and Science Education to both undergraduate and postgraduate students for the past five years. Her current research is in the teaching and learning of senior secondary mathematics, and curriculum alignment. Previously she was a mathematics and science teacher for 25 years in local Gippsland schools.

Our Global Classroom: Developing Global Thinkers

Bronwyn Joyce, Liddiard Rd Primary, Traralgon,and Founder and CEO of Education Elevators and Our Global Classrooms Education Netword.

Abstract: This presentation highlights the impact on student engagement when learning about, and reasoning through, global issues in a critical and creative manner. Bronwyn will share insights and experiences gained from implementing digital pedagogical approaches in her year 5/6 class in Traralgon, Victoria, where her students develop dispositions that support logical, strategic, flexible and adventurous thinking about a range of global issues. Bronwyn will highlight the impact the Writer's Notebook has on providing a place for students to record their thinking, as a precursor to the exploration of big issues happening around the world. Further to this, Bronwyn showcases her students shared interactions with technology tool 'Flipgrid', which is the leading video discussion platform for millions of Pre-K to PhD educators, students, and families in 180+ countries.
Finally, Bronwyn explains the free 'Our Global Classroom' International Education Network that she founded and which her students are members of. She highlights the network as a conduit for students to collaborate and engage in critically and creatively thinking, which supports their learning about the world with the world.

Bronwyn Joyce is a teacher from Traralgon, Australia and founder of Education Elevators. She specialises in Curriculum Innovation and the delivery of training, linked to critical and creative thinking and bringing the world into classrooms. In addition to teaching and training, Bronwyn uses the connection of social media to mentor and globalise teachers and classrooms internationally. She has travelled the world speaking about the importance of preparing students to be future ready, and is an advocate for the United Nations Sustainable Goals. Bronwyn believes we live in a world where we should be learning together. Her Our Global Classroom mission statement is simple: One World, One Classroom.

Symposium Participants

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Space for notes and questions for follow-on discussions & flipped panel

Program at a glance

Time	Event
9:30	Arrival/registration
9:50	Welcome, Acknowledgement of Country -Dr Monica Green
10:00	The Great Debate: Mind-screen or touchscreen - Imagination Lost or Found?- Linda Zibell
10:15	*Follow-on discussion*
10:30	Dyslexia assessment tool based on Artificial Intelligence- Suryani Lim(1) and Hugo Richard(2)
10:45	*Follow-on discussion*
11:00	Virtual Reality – what is its place in education? A review of the Ballarat Science Teachers' Professional Development session exploring Virtual Reality and its potential.- Bruce Schmidt and Chris Wines
11:15	*Follow-on discussion*
11:30	Morning tea
11:45	The power of written feedback for pre-service teachers in teaching mathematics: A study in cooperation between mentors, pre-service students and teachers in teacher education- Caroline Nagy - Gun Wedding
12:00	*Follow-on discussion*
12:15	Working with neuroscientists at school - Frank Wedding
12:30	*Follow-on discussion*
12:45	Lunch
1:15	A recipe for innovation and communication: Forethought to develop students' creativity and learning competence- Anna Fletcher
1:30	*Follow-on discussion*
1:45	Three practical models for discussing technology in education- Heather Ernst
2:00	*Follow-on discussion*
2:15	Our Global Classroom: Developing Global Thinkers- Bronwyn Joyce's
2:30	*Follow-on discussion*
2:45	Message from A/Prof Margaret Plunkett
3:00	End of Symposium