

SCU's First Microcredential : Professional Certificate Teaching Mathematics (Out-of-field)

A partnership between Southern Cross University and the Mathematical Association of NSW (2023-2024)
Supported by a Microcredentials Pilot in Higher Education Grant from the Australian Government

Monday 2 September 2024, 1.00 pm – 2.00 pm

Presenter

Dr Lewes Peddell: Faculty of Education, Southern Cross University



Mathematical Association of NSW Inc
Promoting Quality Mathematics Education for All



Southern Cross
University

What brought you here ... Is there more you'd like to know?

In Australia, as well as internationally, increasing **teacher shortages** are leading to severe **mismatches between teacher qualifications and the discipline-specific needs in schools**. This mismatch has prompted many jurisdictions to require **teachers to teach subjects outside their field of expertise**, a challenge particularly **acute in mathematics**, where over 40% of high school mathematics teachers in Australia are teaching mathematics out-of-field. To address this challenge in mathematics and to provide a middle ground between ad-hoc, single-school-based professional learning meetings and multi-year retraining programs, **Southern Cross University secured a Commonwealth grant to develop a 12-week microcredential program** in collaboration with the Mathematical Association of NSW as industry partners.

Led by Dr Lewes Peddell from the Faculty of Education, this CTL session outlines the **design principles, university approval process**, including constructive alignment, digital badging, and advanced standing arrangements, and designation as the Professional Certificate in Teaching Mathematics (Out-of-field Teachers). This presentation also includes **insights and outcomes from the inaugural cohort of 25 teachers** from across Australia who completed the microcredential during Dual-Term Two earlier this year. With planning currently underway to offer the microcredential again in 2025, this initiative is attracting national and international interest, including being shared as part of a discussion group session at the 15th International Congress on Mathematical Education in Sydney in July 2024.

Join us to explore how similar initiatives can be adapted across different disciplines and educational contexts with our university.



Presentation overview

1. Starting with the product
2. Behind the scenes
3. Research project (very brief)
4. Q & A – although these can be asked throughout as well



1. Starting with the product

Supporting teachers teaching mathematics out-of-field: Initial outcomes from an innovative microcredential

This overview shares the design principles and outcomes of a 12-week microcredential run in the first part of 2024—piloted at Southern Cross University (Australia) in partnership with the Mathematical Association of NSW, with funding support from the Australian Commonwealth Government.



Professional Certificate Teaching Mathematics

Overarching Project Goals

1. Improve **proficiency** in teaching mathematics.
2. Increase **self-efficacy** towards teaching mathematics.
3. Decrease **mathematics anxiety** and **mathematics teaching anxiety**.
4. Increase feelings of **belonging** to a community and network of mathematics teachers (in-field and out-of-field) and resources, with this network sustaining and continually improving practice and enabling contribution to the profession.
5. Increase **identity** as a mathematics teacher (role identity and belonging to a community).
6. Increase **retention** of these teachers in the teaching profession.



Professional Certificate Teaching Mathematics

Learning outcomes

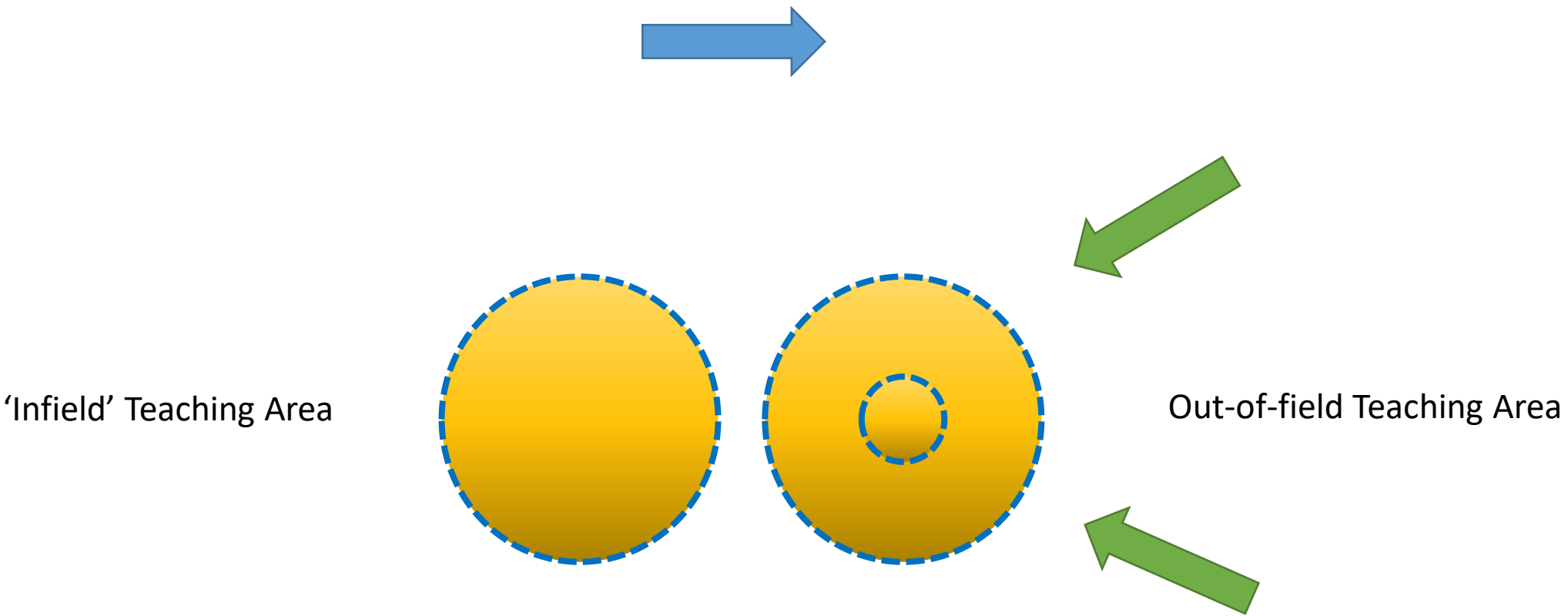
- LO1 **Apply knowledge of mathematics teaching content and strategies**, including ICTs, to develop engaging teaching activities for the Australian Curriculum's Years 7 to 10 mathematics learning area.
- LO2 **Develop mathematics teaching content** into coherent, well-sequenced, and engaging learning and teaching programs informed by contemporary evidence-based mathematics education pedagogies, reflection and feedback on teaching practices.
- LO3 **Design and implement learning and teaching programs** using knowledge of mathematics curriculum, assessment and reporting requirements to respond to students with diverse needs and cultural backgrounds.
- LO4 **Critically analyse and reflect on** the **cognate and non-cognate knowledge** and understanding used to develop effective teaching strategies to support students' numeracy and mathematical achievement.



Teaching Fields Transfer Model

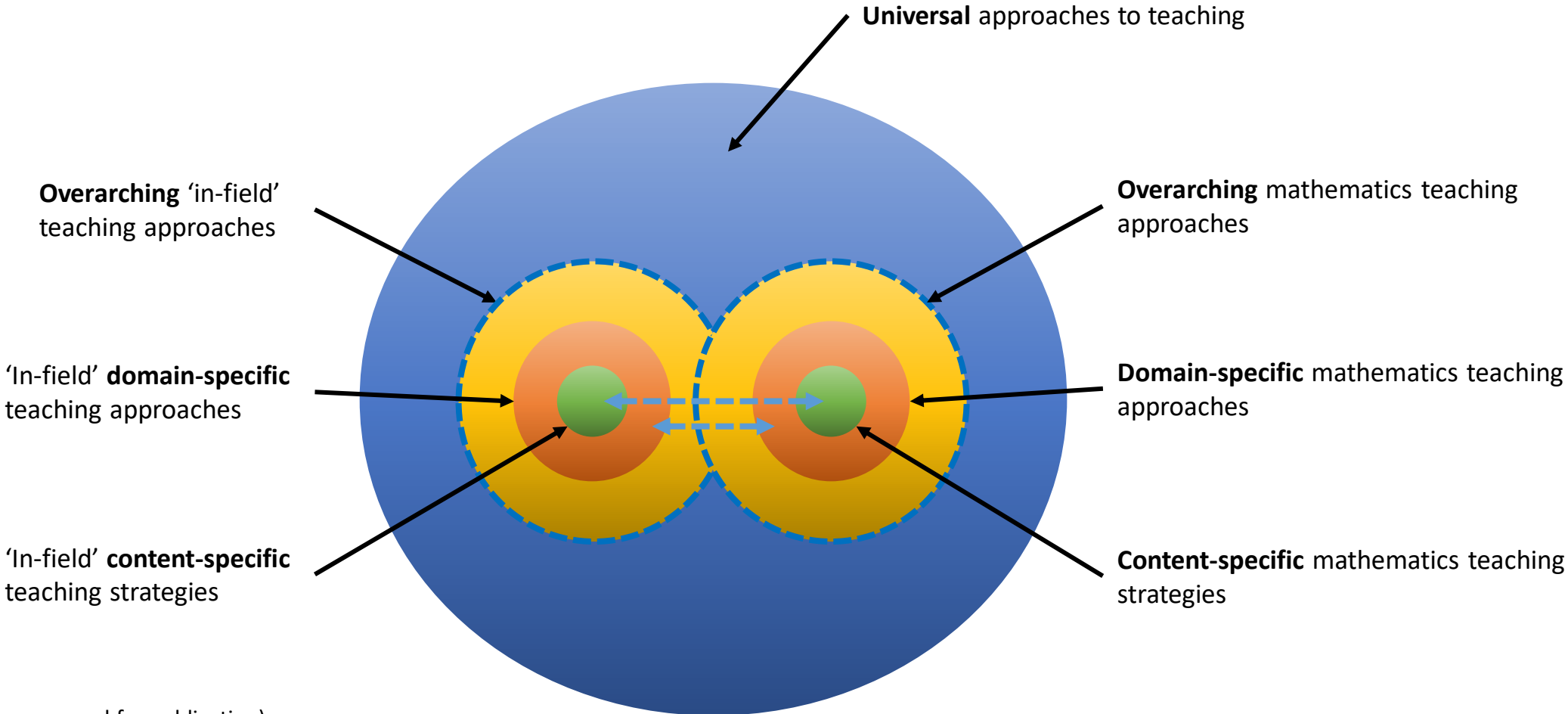


Teaching Fields Transfer Model



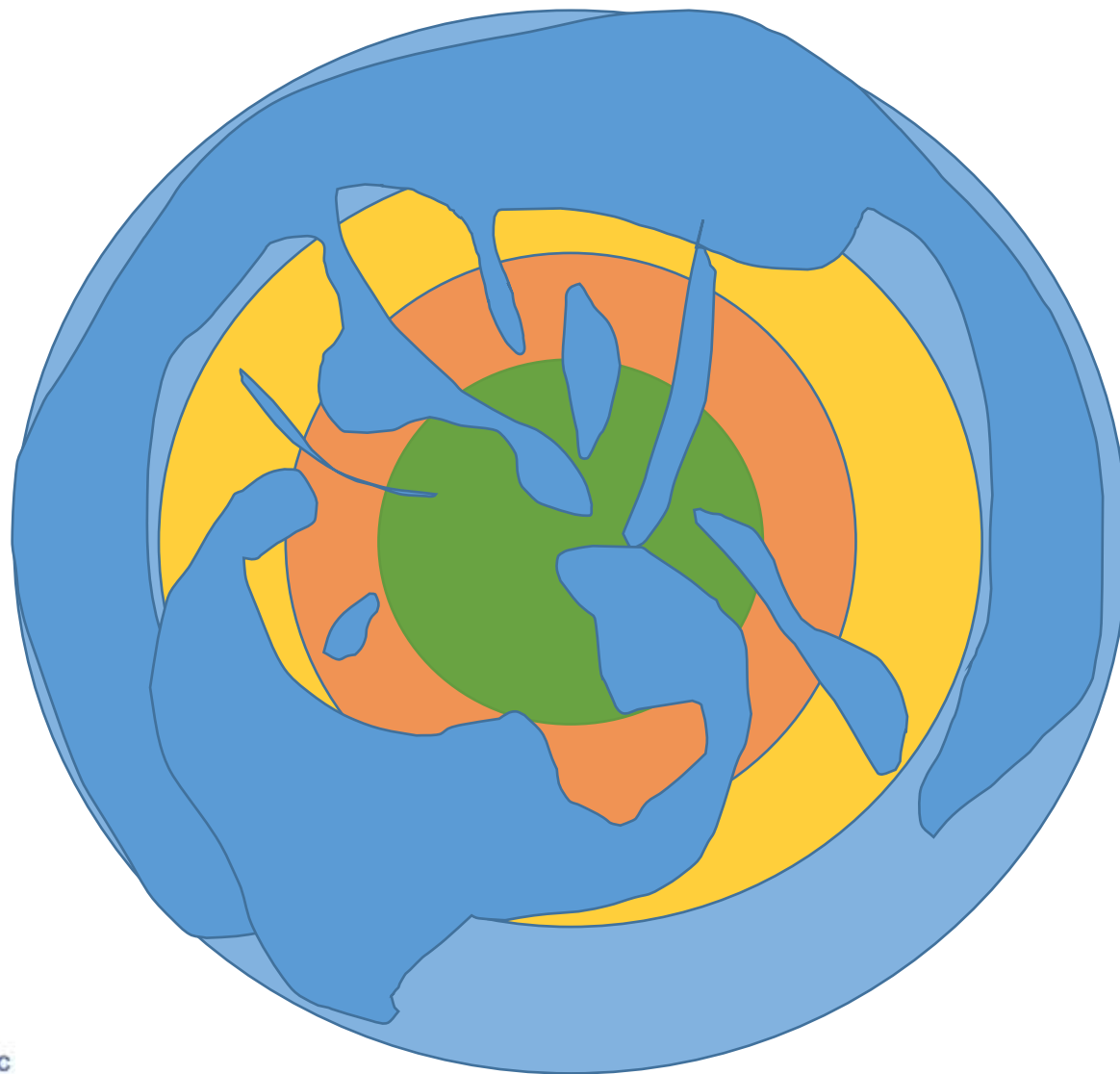
Peddell, L. (Being prepared for publication)

Teaching Fields Transfer Model

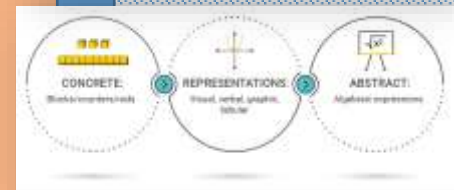
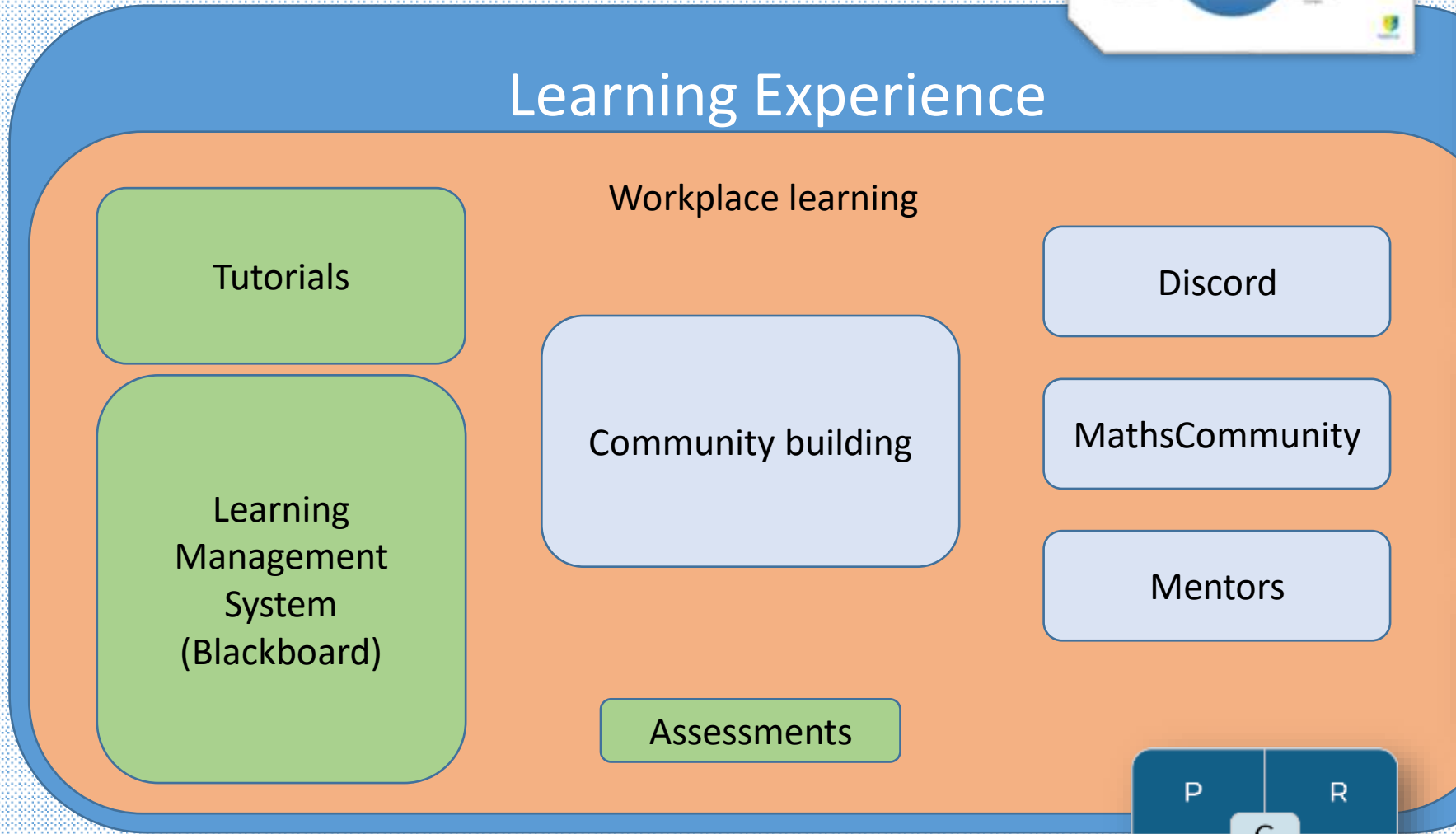


Peddell, L. (Being prepared for publication)

Teaching Fields Transfer Model



Let's explore the course





Orientation

[View](#)



Video vignettes:
Experienced maths teachers sharing insights with you

Six videos made just for teachers in MATH5001!

[View](#)



Module 1: Curriculum, engaging mathematics teaching and learning, and identity

Weeks 1 & 2 (March 4 to 17)

[View](#)



Module 2: Learning Design for the Mathematics Classroom I

Weeks 3 and 4 (March 18 to 31)

[View](#)



Module 3: Learning Design for the Mathematics Classroom II

Weeks 5 & 6 (April 1 to 14)

[View](#)



Module 4: Students' mathematical learning needs and evidence-based mathematics pedagogy

Weeks 7 & 8 (April 15 to 28)

[View](#)



Module 5: Promoting inclusive mathematical learning and positive mindsets

Weeks 9 & 10 (April 29 to May 12)

[View](#)



Module 6: Where to next? Your emerging identity as a mathematics teacher

Weeks 11 & 12 (May 13 to May 26)

[View](#)

Module 3:

Learning Design for the Mathematics Classroom II

[Overview](#) [Purpose](#) [Topics](#)

This module provides additional insights into differentiating support for student learning, builds on the MKT model to address misconceptions, and provides ways to engage students through non-traditional problem-solving. It also shares additional approaches to lesson planning and examples of practice in geometry and statistics.

Module 3 folders

1. Special Topic

Responding to students with diverse needs and cultural backgrounds

[View](#)

2. Learning design

Don't fix mistakes, address misconceptions; Framework of engagement; Opening up to non-traditional problem solving

[View](#)

4. Examples of practice

Practical Trig; Not all patterns are linear; Summarising Statistics

[View](#)

5. Learning check

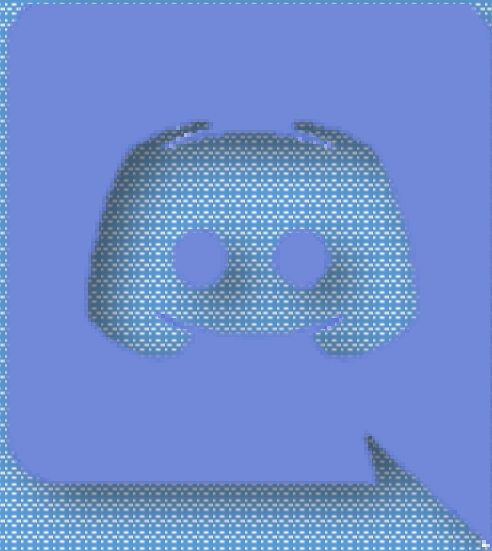
[View](#)

Assessment 1. Two sequential lesson plans and reflection

Assessment 2. Portfolio and Reflection

[View](#)





Teaching Mathematics Out-of-field Hub ▾

[Community Home](#) [Discussion 8](#) [Library 14](#) [Blogs 0](#) [Events 0](#) [Members 35](#)

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Welcome to the Professional Certificate in Teaching Mathematics (Out-of-Field Teachers)! I am delighted to have you join this postgraduate micro-credential program designed to empower teachers teaching mathematics outside their infield teaching area.

As a participant, you'll gain practical, work-based learning opportunities, with almost half of the learning hours occurring in your own classrooms. The assessments are integrated into real-life classroom practice, leveraging your expertise and experience, including those from your in-field teaching areas.

A distinguishing feature of this certificate is our partnership between Southern Cross University and the Mathematical Association of NSW (MANSW), Australia's largest professional association for mathematics teachers. Through this collaboration, you'll connect with experienced maths educators who can serve as mentors and access valuable educational resources.

While the program mainly focuses on teaching mathematics using the Years 7 to 10 curriculum, the knowledge, skills, and approaches you'll learn apply to teaching mathematics to students of all grade levels.

This community page is a place to continue networking with other teachers of mathematics once you have completed the micro-credential, a place where you can access resources, have discussions and interact with other teachers.

Once again, welcome! I look forward to supporting you on this exciting journey of professional growth and development.

Darius Samojlowicz

Executive Officer, MANSW

Latest Discussions



RE: EoP1: GeoGebra Manipulatives

"The doing" has always been the best part of classes. You look at engagement levels of students across all subject areas, a commonality ...

Connect with a mentor

[Deborah Hennessy](#)

[Narelle Morris](#)

[David Watson](#)

[Lee Hyland](#)

[Cassie Portelli](#)

Announcements



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Most Active

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[Robert Seguin](#)

Reflections

1

This course has opened my mind and my resource bank, to more hands-on activities and engaging ways of teaching and learning mathematics. I have been open with my students about my completion of this course, and we have been able to build stronger relationships and rapport when strategies have not worked. Through feedback from my students, they are more excited to attend math lessons, have felt more confident in their understanding and have felt more confident to fail and continue to learn, as they have seen their teacher (me) doing the same. A big

2

Undertaking the Professional Certificate in Mathematics course has been a game changer. It has not only provided critical learning experiences but supported a shift in my attitude and confidence towards teaching Mathematics as well as opening doors to a community of passionate people and a plethora of resources. In a relatively short time, my teaching and student engagement in the one Mathematics class I have, has improved. As always, there is still loads of room for further refinement but this course has got the ball rolling and it is gathering speed.

3

it is about knowing how to teach the content. Firstly, the seemingly discrete mathematical domains are deeply interconnected, as clearly depicted in the video "Math Connections" shared by Youcubed in 2014 (Youcubed at Stanford, 2014). I watched my faculty colleagues intuitively making these connections when I observed their lessons through the lens of the CRIG model (Gronow et al., 2022).

What 'important' themes do you see?



5

Culturally Responsive approaches have always been on my radar. However, sadly it had fallen down the list of priorities and given all the pressures that exist in modern day education I am sure I am not alone in this. Listening to Chris Matthews speak and hearing of some ideas has brought down a 'fear of disrespect' barrier for me. I was very keen to trial the 'Maths in Indigenous Art' lesson [Maths in Indigenous Art](#) (Resource 3) and gained even further insights since. I was quite positive that I would get asked 'Miss, why are we doing Indigenous art in maths?' or 'what has indigenous art got to do with cartesian planes?' Instead, the students appeared to thoroughly enjoy looking at the artworks,

6

talking to one of my students during lunch duty. He relayed that the student said 'we were doing maths, and art - painting indigenous animals - and it was really good'. I think the biggest learning from this module was to have the confidence to try culturally responsive activities because the benefits are multifaceted and putting it in the 'too hard basket' achieves and changes nothing.

7

4. Speed is not indicative of mathematical ability: Contrary to popular belief, being quick in solving mathematical problems does not necessarily reflect deep understanding or proficiency. This message highlights the importance of thoughtfulness and thoroughness in mathematical reasoning.

4

The personal and professional connection I've established with my mentor has proven invaluable as I continue to expand upon it. Despite our recent acquaintance spanning only a few weeks, her profound



Where to next

1 Integrating effective teaching models: I plan to integrate the 'Concrete-Representational-Abstract' (CRA) approach and the 'Launch, Explore, Summarise' teaching models into my junior classes to enhance student understanding and engagement.

2 The 3 strategies that I will be pursuing beyond this course are the CRIG model, CRA model and the 8 effective mathematics teaching practices. I had begun implementing the CRIG model throughout this course and have seen the benefits to implementing this strategy in our classroom. My goal is to continue working on this model by ensuring that within each concept I implement the CRIG model into my sequence of lessons. I aim to implement more of the CRA (concrete, representational,

What 'important' themes do you see?



3 mathematics and past results. Students have told me I move too fast and I think that has been the reason why some students disengage. So, my goal is to slow down the teaching and from one of the course videos it states that completing problems slowly and understanding it is better for learning than moving through quickly. In the next school holidays, I plan to sit down and list the topics and write a

4 other effective pedagogies' (Russo et al., 2018, p.33). My new goal is to build a comprehensive collection of engaging games appropriate for teaching secondary mathematical concepts. In this course we have been introduced to a fantastic range of resources, including games, and shown how they are tightly linked to the curriculum outcomes. I would like to, and will need to, spend more time exploring these resources so that I know how to use them well before introducing them to students. The most valuable part of being introduced to these resources is feeling confident that they

How might you help your OOF colleagues?



5 The next step in my journey needs to be developing my deep content knowledge in Mathematics, so I must begin further tertiary study in Mathematics if I want to go back to teaching Mathematics at a school. Combined with my pedagogical knowledge and experience, this would ensure that I met all the required levels of expertise in the areas of my GPK, PK, and CK.



2. Behind the scenes

- The Grant
- Key MC resources
- Conceptualising
- Course approval process
- Design and implementation
- Delivery



The Grant



Australian Government
Department of Education

Offshore and Higher Education Microcredentials

The Australian Government will provide \$32.5 million from 2021-22 to 2025-26 to support higher education and training providers to develop and deliver microcredentials for the international and domestic education sectors. There are three components:

1. Development of international microcredentials for delivery offshore
2. A pilot to test the development and delivery of microcredentials for domestic learners
3. Accelerating expansion of the Government's Australian Skills Classification.

Pilot of Domestic Microcredentials

The Government will provide \$18.5 million to establish a pilot for the development and delivery of microcredentials for the domestic market, aimed at exploring a systemic approach to supporting microcredentials in the higher education sector.

- Under the pilot, higher education providers can apply for a share of \$2 million in funding to develop microcredentials in partnership with industry, with funding of up to \$100,000 for each microcredential.
- \$16.5 million will be provided from 2022-23 to 2025-26 to support the delivery of microcredentials to up to 4,000 students.

Piloted microcredentials will be in areas of national priority. The department will work with Jobs and Skills Australia to determine the skills needs and fields of study to be included ahead of the funding rounds.



The Grant



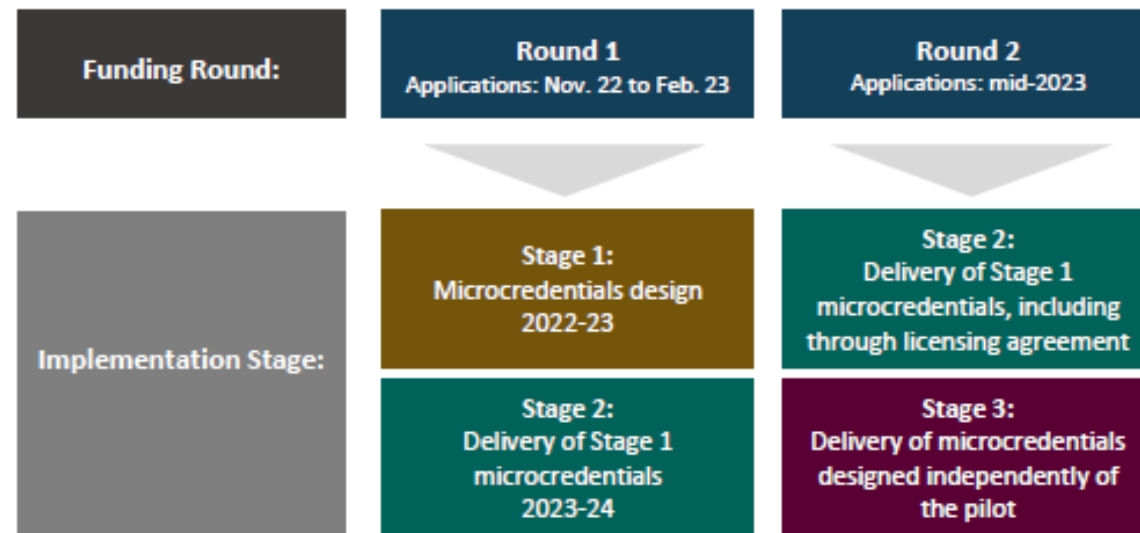
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Figure 1: Microcredentials Pilot in Higher Education Funding Rounds and Implementation Stages



The Grant



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Microcredentials Pilot in Higher Education recipients:

Field of national priority targeted:	Higher Education provider:	Microcredential course:



The Grant



Australian Government
Department of Education

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PART A OF ANNEXURE

DETAILS OF GRANT

1. The Recipient

1.1 The Recipient is Southern Cross University 41 995 651 524.

2. Project

2.1 The Project is entitled: **Microcredentials Pilot in Higher Education – Professional Certificate in Teaching Mathematics for Out-Of-Field Teachers**

2.2 As part of the Project, the Recipient must undertake the following activities:

- a) Develop the microcredential course Professional Certificate in Teaching Mathematics for Out-Of-Field Teachers (Stage 1).
 - i. The content and objectives of the microcredential course must be closely aligned to the content and objectives of a 'higher education award' as defined in section 5 of the *Tertiary Education Quality and Standards Agency Act 2011*, as specified at Appendix A.
 - ii. The microcredential will target a national priority field of education *07 Education*.
 - iii. The microcredential targets an occupation/s as specified at Appendix A identified in national shortage, including in regional areas, in Jobs and Skills Australia's Skills Priority List 2022.
 - iv. The microcredential course material must be structured around Teaching and Education under the Australian Government, National Skills Commission, *Australian Skills Classification*, to provide clearly defined skill outcomes.
 - v. The microcredential course material must demonstrate how students will achieve the learning outcomes or proficiencies of the microcredential.
 - vi. The microcredential must comply with the requirements specified in Chapter 4 of the *FEE-HELP Guidelines 2017* and subsection 76(8) and (9) of the *Higher Education Support (Other Grants) Guidelines 2022* (the Other Grants Guidelines).
 - vii. The microcredential must be listed on the Government's *Microcred Seeker* website.
- b) Deliver the microcredential between commencing February 2024 (Stage 2).
 - i. Students are to be sourced by the Recipient.




Key MC resources

National Microcredentials Framework

! If you have trouble accessing this document, please [contact us](#) to request a copy in a format you can use.

A nationally consistent framework for defining microcredentials across higher education, vocational education, and industry.

Download PDF (542.58kb) 

Download DOCX (689.55kb) 



Key MC resources



The screenshot shows a website header with a dark blue background. On the left is a logo consisting of several white curved lines. To the right of the logo is a navigation menu with the following items: ABOUT, FACTS & PUBLICATIONS, POLICY & SUBMISSIONS, CAMPAIGNS & PROJECTS, OUR UNIVERSITIES, MEDIA, EVENTS, and CONTACT. In the top right corner of the header, there is a light blue button labeled 'STUDY IN AUSTRALIA' and a magnifying glass icon. Below the header, the main content area has a white background. On the left side of this area, there is a link labeled '← BACK' and a 'Share' section with icons for Facebook, Twitter, LinkedIn, and Email. The main heading is 'GUIDANCE FOR PORTABILITY OF AUSTRALIAN MICROCREDENTIALS'. Below the heading is a paragraph of text: 'Microcredentials are a rapidly expanding form of alternative qualification across a range of fields in higher education. They are small, discrete pieces of learning that can be combined with other pieces to demonstrate knowledge, skills and competencies, which learners, employers and educational institutions can use.'

STANDARD 1: MICROCREDENTIALS HAVE CLEAR EVIDENCE OF ACHIEVEMENT OR LEARNING OUTCOME.

Principle: What does a learner know and is able to do on successful completion?

Fundamentally, a credential or qualification attests that a learner has satisfactorily demonstrated that they have achieved learning outcomes or proficiencies. Issuers of credentials should ensure that credentials are associated with information that enables others to easily understand what knowledge, skills and attributes can be expected of a learner that has been issued with a microcredential. Issuers should also ensure that relevant information that provides evidence of student achievement against learning outcomes is provided.



Key MC resources



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STANDARD 2: MICROCREDENTIALS HAVE AN UNDERSTANDABLE UNIT OF EXCHANGE

Principle: What level and depth of learning is achieved?

Learners are likely to draw on a range of sources and providers in their educational journey. Prior learning may be used to satisfy prerequisites for enrolment or be the basis for credit awarded towards degree completion. Accredited institutions must be satisfied that students have a reasonable chance of success and that graduates meet the learning outcomes of the award. To permit and enhance portability, a person (other than the issuer) must have a reasonable basis on which to determine the relative academic value or credit of a microcredential. Some providers already offer credit for microcredentials at an internally-consistent rate of exchange – for example, a microcredential may attract a number of credit points towards a larger qualification type. Some microcredentials may 'stack', whereas some may contribute towards ongoing professional development requirements.



Key MC resources



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STANDARD 3: MICROCREDENTIALS ARE QUALITY ASSURED AND VERIFIABLE, WITH SUFFICIENT, RELEVANT METADATA

Principle: What assures validity and integrity of the credential?

A microcredential is an attestation from an issuing authority that a learner has satisfactorily demonstrated the level of achievement specified by the credential. The utility of the attestation is inherently associated with the level of trust that learners, employers and other institutions have in the issuing authority.

Portability of microcredentials is enhanced when there is a high level of trust between the issuing authority and another body seeking to recognise the credential. Accredited higher education and further education institutions have nationally recognised validation of their award credentials or self-accrediting status creating high levels of trust between them. However, microcredentials are non-award credentials and institutions may apply alternative arrangements. Issuers may need to provide additional information about quality assurance measures where alternative schema for approval and oversight are employed.



Key MC resources

The image shows two screenshots of the 'microcred seeker' website. The top screenshot displays a search results page with a sidebar on the left containing various industry categories like Telecommunications, Manufacturing, Mining, etc. The main content area shows two course cards. The first card is for a 'Competent' level course, 'Professional Certificate in Teaching Mathematics (Out-of-Field Teachers)', offered by Southern Cross University. It has a duration of 12 Months and a price of \$1000. The second card is for a 'Novice' level course, 'MathTrackX: Polynomials', with a duration of 4 Weeks and a price of \$840. Both cards indicate that credit may be available and are stackable with other microcredentials.

The bottom screenshot shows a detailed view of the 'Professional Certificate in Teaching Mathematics (Out-of-Field Teachers)' course page. It features the Southern Cross University logo and the course title. The page includes a breadcrumb trail: Home / Explore / Professional Certificate in Teaching Mathematics (Out-of-Field Teachers). Below the title, there are navigation tabs for Overview, Assessment, Course Credit, and Enrolment. The course details listed are: Start date: 10 Mar 2025, Delivery: Online, Duration: 12 Weeks, and Price: \$1156. A note at the bottom indicates that credit may be available.



Course approval process



Course approval process – PD Course Procedures

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PROFESSIONAL DEVELOPMENT COURSES PROCEDURES

Hide Navigation

- Section 1 - Purpose and Scope
 - Purpose
 - Scope
- Section 2 - Definitions
- Section 3 - Design and Development of Professional Development Courses
 - Course Concept Process
 - Course Design and Development Process
 - Course Name, Aim, Educational Approach and Learning Outcomes
 - Course Requirements
 - Course Structure, Content and Learning Activities
 - Assessment
- Section 4 - Approval and Administration
- Section 5 - Roles and Responsibilities
- Section 6 - Associated Documents

This is the current version of this document. To view historic versions, click the link in the document's navigation bar.

SECTION 1 - PURPOSE AND SCOPE

Purpose

- (1) The purpose of these Procedures is to ensure that non-award professional development courses and other similar non-accredited courses are designed to meet the requirements of the [Curriculum Policy](#).

Scope

- (2) These Procedures apply to all non-award courses, except for pathway programs, developed by Southern Cross University.

[Top of Page](#)

SECTION 2 - DEFINITIONS

- (3) The [Definitions \(Academic\) Policy](#) applies to these Procedures.
- (4) The term "professional development course" is used in these Procedures to refer to both non-award professional development courses and other similar non-accredited courses of the University.

[Top of Page](#)

SECTION 3 - DESIGN AND DEVELOPMENT OF PROFESSIONAL DEVELOPMENT COURSES

Course Concept Process

- (5) Professional Development Course Concept Proposals will be developed with information to allow evaluation of:



Course approval process – Constructive alignment

CLOs

Specialisations: Effective Professional Learning, Pedagogical Knowledge and Teacher as Researcher

CLO1: Exercise critical analysis, problem solving, and decision-making skills to realistic situations appropriate to cultural, inclusive and social contexts to inform educational practice.

CLO2: Demonstrate advanced cognitive, and technical skills to investigate, analyse and synthesise knowledge for innovative and creative responses to local and global challenges in an educational setting.

Specialisation: Effective Professional Learning

CLO3: Evaluate, reflect and communicate evidence and theoretical understandings to inform and transform practice in a specialised area of education.

CLO4: Apply academic knowledge and skills to develop deeper understanding, build professional identity and contribute to ongoing professional learning.

Specialisations: Pedagogical Knowledge and Teacher as Researcher

CLO3: Evaluate advanced theoretical understandings and transform the information for practical applications of a specialised area of education.

CLO4: Apply academic knowledge and skills to communicate and interpret evidence-based research which informs professional decision making and ongoing professional learning.

ULOs

EDUC2003 Mathematics: Secondary Curriculum and Pedagogy I

LO1: demonstrate a working knowledge of the concepts and content of the Mathematics Years 7-10 syllabus, its history and status within the K-12 continuum of learning and be able to apply that understanding in order to meet the diverse needs and cultural backgrounds of learners and to engage all students in active learning

LO2: prepare detailed, engaging, coherent and effective lessons plans and units of work that relate to selected content and learning outcomes

LO3: demonstrate effective teaching and learning strategies based on the NSW Quality Teaching Framework and a range of other current pedagogical frameworks designed to encourage the development of knowledge, understanding, skills,

LO4: discuss strategies to assess student achievement of learning outcomes, including assessment 'of', 'for' and 'as' learning, to recognise how learners use their current understanding to discover, develop and incorporate new skills,

LOs EDUC3003 Mathematics: Secondary Curriculum and Pedagogy II

LO1: critically engage with a range of issues in teaching mathematics, and assess the appropriateness of resources (including ICT) that link to informed and effective teaching and learning across the mathematics Years 11-12 syllabuses and demonstrate and apply knowledge of syllabus cross-curriculum priorities and general capabilities

LO2: prepare detailed, engaging, coherent and effective lessons plans and units of work that relate to selected content and learning outcomes in the mathematics Years 11-12 syllabuses that address theoretical and practical elements of a syllabus and that meet the diverse needs and cultural backgrounds of learners, and engage all students in active learning needs and cultural backgrounds of learners, and engage all students in active learning

LO3: demonstrate effective teaching and learning strategies, based on the NSW Quality Teaching Framework, PEEL and a range of other current pedagogical frameworks designed to encourage the development of knowledge, understanding, skills, and student engagement

LO4: discuss strategies to assess student achievement of learning outcomes, including assessment 'for' and 'of' learning, to recognise how learners use their current understanding to discover, develop and incorporate new skills, knowledge and understanding, and to report on the achievement of learning outcomes



Course approval process – Constructive alignment

CLOs

Specialisations: Effective Professional Learning, Pedagogical Knowledge and Teacher as Researcher

CLO1: Exercise critical analysis, problem solving, and decision-making skills to realistic situations appropriate to cultural, inclusive and social contexts to inform educational practice.

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CLO4: Apply academic knowledge and skills to develop deeper understanding, build professional identity and contribute to ongoing professional learning.

Specialisations: Pedagogical Knowledge and Teacher as Researcher

CLO3: Evaluate advanced theoretical understandings and transform the information for practical applications of a specialised area of education.

CLO4: Apply academic knowledge and skills to communicate and interpret evidence-based research which informs professional decision making and ongoing professional learning.

PCTM – Enhanced (see yellow)

Note. The intent here is to retain the original LOs as they form part of the Grant Conditions, and therefore to add to them as little as possible, so that they are better aligned to EDUC2003 and EDUC3003, and the CLOs, and in ways that provide a greater flexibility in types of assessment.

LO1 Apply knowledge of mathematics teaching content and teaching strategies to develop engaging teaching activities for students engaging with the Years 7 to 10 mathematics learning area of the Australian Curriculum.

LO2 Organise mathematics teaching content into coherent, well-sequenced, and engaging learning and teaching program, including individual and sequenced lesson plans informed by effective pedagogical frameworks and approaches.

LO3 Design and implement learning and teaching programs using knowledge of mathematics curriculum, assessment and reporting requirements, including students with diverse needs and cultural backgrounds.

LO4 Apply knowledge and understanding of effective teaching strategies to support students' numeracy and mathematical achievement in ways informed by their emerging identity as a mathematics teacher, incorporating their experience and expertise in their non-mathematical area/s of specialisation.



Design and implementation

Module Folder	Folder	Subfolder	Content (Tx = text needed)	ID	Content Generation (CG)	DD Code	DD Owner	Priority	Due for QA with LP	Due to digital design	Digital Designing (DD)	DD Code	DD Owner	Due for final QA	Complete by	Progress
Orientation			Welcome members of the development team		Complete	31	LP				Complete	8				
Orientation	1. About the research project		About the research project (if you've not (yet done) emphasise it would be best for them to undertake the survey before continuing with the materials. Also, that the research will inform aspects of the course delivery, and also get them started in considering their way forward)		Complete	32	LP				Complete	8				Screening
Orientation			Organisation of learning materials Overview of the model with ER, CR, Networking and mentors.		Complete	33	LP				Complete	8				video tasks
Orientation			Creating our community, building your network and mentors about what it means and model of CoP and SLS. Not too much detail. Links to more if they want it. Community is what we're doing in the MC with the participants and mentors. Provide some sort of model which shows how this could look.		Complete	34	LP				Complete	8				write notes
Orientation			Reflecting and Creating Value About reflecting and creating value folder		Complete	35	LP				Complete					video
Orientation			Assessments Briefly about the assessments - point to the materials and videos in the Assessment folder. MORE ABOUT GETTING THE PORTFOLIO STARTED AND WHAT THEY'RE LOOKING FOR THROUGHOUT THE UNIT - AND WHY THEY'RE DOING IT - LEGACY		Complete	36	LP				Complete	8				text and link to access
Orientation			1. Are you ready? Closing statements - looking forward etc. and introducing the "assessing your learning process" - and how not going towards marks, just as a checkpoint Five questions - PDFs that provide feedback on learning		Complete	37	LP				Complete	8				text
M1	OP (HSP Text)		Overview, Purpose and Introduction (including highlights of the orientation - esp. about mentoring)		Complete	38	LP				Complete	8				Assessment tab
			Introduction to Module Folders		Complete						Complete					
M1	1. Accessing the curriculum		1. Overview Overviews what this section is about and what's in each of the subfolders. Who should look at what etc.		Complete	39	LP				Complete	8	AF			
M1	1. Accessing the curriculum		2. The six domains Why we (mathematics teaching professionals) do it this way, how done in AC and NSW (links to other models optional). Emphasise that they are embraced, and to look for		Complete	40	LP				Complete	8	AF			

LP figuring out who to assign to	1
LP to assign to >>>	2
w/task owner not yet started	3
w/task owner started	4
w/task owner in progress	5
w/task owner well in progress	6
w/task owner ready for QA and send me (LP)	7
QA in process before passing to DDT (LP/AK)	8
Passed to Digital Design team (DDT)	9
LP add community and networking	
Complete	10

Who
AF
DL
DS
DS to allocate
LP
MAV
ML
LP/AK
PR
TBD
DF

[Content being generated]	0
AK to assign DD team	1
AK to assign to >>>	2
DD team not yet started	3
DD team started	4
DD team in progress	5
Almost ready for final QA	6
Final QA with LP/AK	7
Complete	8



Design and implementation

My files > SCU > 1 Teaching > .MATH5001 Professional Certificate > 0. MC OOF MT Project (Conceptualising) > **PCTM Module Materials**

Name	Modified	Modified By	File size	Sharing	Activity
0. Orientation Folder	November 5, 20...	Lewes Peddell	8 items		
00 2025	May 13	Lewes Peddell	1 items		
00. Delivery	March 3	Lewes Peddell	4 items		
1. Module 1					
2. Module 2	November 6, 20...	Lewes Peddell	9 items		
3. Module 3	November 5, 20...	Lewes Peddell	7 items		
4. Module 4	November 5, 20...	Lewes Peddell	7 items		
5. Module 5	November 5, 20...	Lewes Peddell	6 items		
6. Module 6	November 5, 20...	Lewes Peddell	9 items		

Name	Modified	Modified By	File size	Sharing	Activity
1. DPI	November 6, 20...	Lewes Peddell	0 items	Shared	
1.1 Accessing the curriculum	November 6, 20...	Lewes Peddell	4 items	Shared	
2. Special Topic	November 6, 20...	Lewes Peddell	1 items	Shared	
3. Learning design	November 6, 20...	Lewes Peddell	5 items	Shared	
4. Example Practice	November 10, 2...	Lewes Peddell	1 items	Shared	
5. About Unit 1	November 10, 2...	Lewes Peddell	1 items	Shared	
6. Assessment for learning	November 6, 20...	Lewes Peddell	6 items	Shared	

Name	Modified	Modified By	File size	Sharing	Activity
1. Mathematics proficiencies	November 9, 20...	Lewes Peddell	1 items	Shared	
2. Conceptual then procedural	November 9, 20...	Lewes Peddell	1 items	Shared	
3. CRA	November 9, 20...	Lewes Peddell	1 items	Shared	
Media	November 9, 20...	Lewes Peddell	2 items	Shared	
M1.3 Learning Design.docx	November 9, 20...	Lewes Peddell	271 KB	Shared	

Delivery

Module 3: Learning Design for the Mathematics Classroom II

Overview | Purpose | Topics

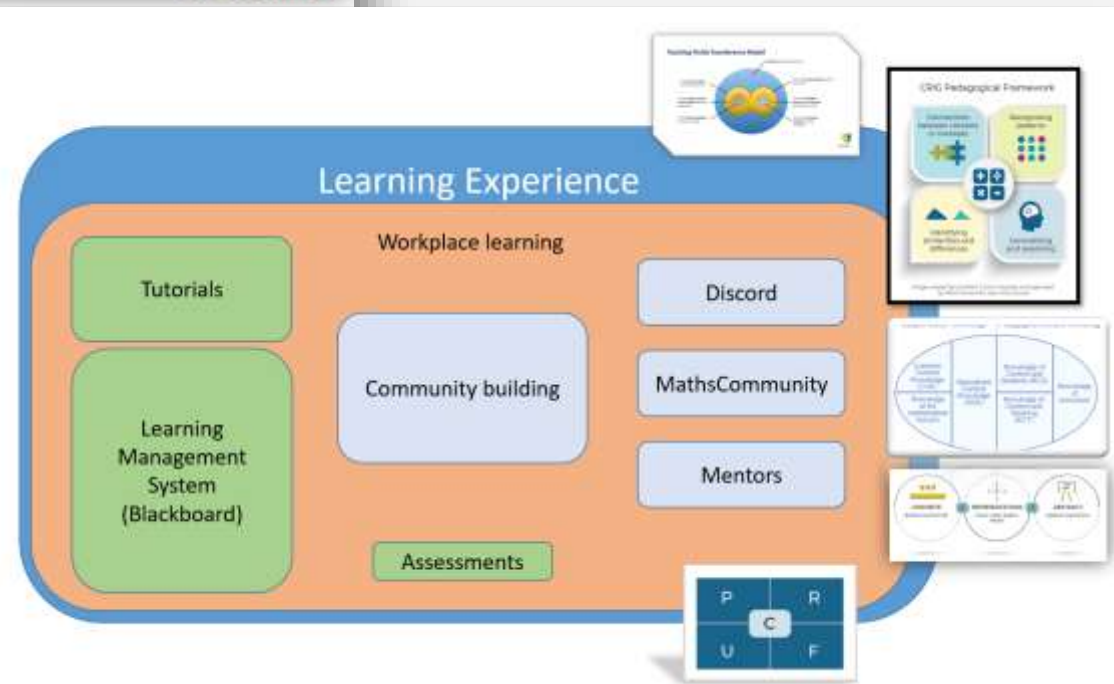
This module provides additional insights into differentiating support for student learning, builds on the MCT model to address misconceptions, and provides ways to engage students through non-traditional problem-solving. It also shows additional approaches to lesson planning and examples of practice in geometry and statistics.

Module 3 folders

- 1. Special Topic: Responding to students with diverse needs and cultural backgrounds
- 2. Learning design: Swift Pa resources, address misconceptions, framework of engagement, Opening up to non-traditional problem solving
- 3. Lesson planning 2: IMPACT!, Worked Examples, Peter's problem-solving, maths lesson planning resources
- 4. Examples of practice: Practical Tip: Not all patterns are linear! Summarising Statistics
- 5. Learning check

Assessment 1. Two sequential lesson plans and reflection

Assessment 2. Portfolio and Reflection



Delivery

The screenshot shows a course page on the Southern Cross University website. The page features a dark blue header with the university logo and navigation buttons for 'Compare courses', 'Apply', and 'Enquire'. The main content area has a blue background with the course title 'Professional Certificate in Teaching Mathematics (Out of Field Teachers)' and buttons for 'Apply for this course' and 'Add to favourites'. A large image of a smiling woman in a black blazer is on the right. At the bottom left, there are icons for 'View Student Handbook', a share icon, and a print icon.

Southern Cross University

Compare courses **Apply** Enquire

Back to course search

Professional Certificate in Teaching Mathematics (Out of Field Teachers)

Apply for this course Add to favourites

View Student Handbook |



Delivery – Digital Badging

DIGITAL BADGES GUIDE



My eQuals Digital Badges Reference Guide

Information supplied in this document as at Nov 2022

Welcome to the Digital Badges provided through *My eQuals* – a simple integrated service offering to manage and award digital badges to your learners. The badges capability is aligned with the [Open Badges](#) standard which is governed by the [IMS Learning Consortium](#). This open standard ensures portability and assurance of any badges issued through the Digital service.

Getting started is as simple as switching on the capability within your My eQuals Organisation Portal, creating your collection of badges and then awarding them to learners.

Information and guidance provided is correct as at the date this document has been provided. Updates and development of the solution will mean that you should refer to the latest content, release notes and available updates on the solution as time progresses.

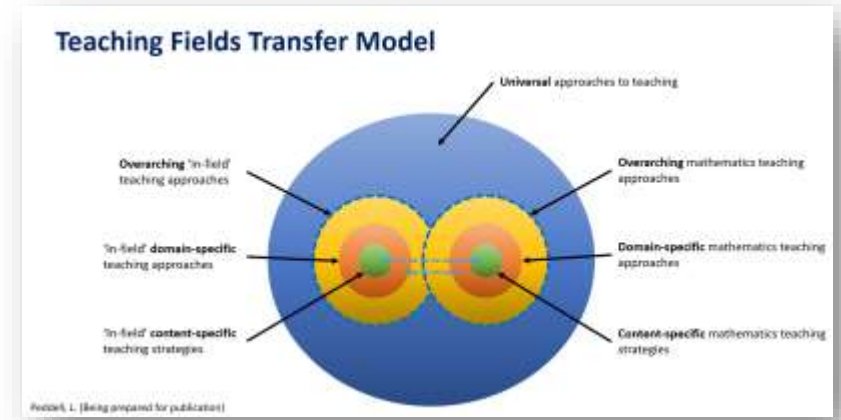


3. Research project (very brief)

Research project (very brief)

Overarching Project Goals

1. Improve **proficiency** in teaching mathematics.
2. Increase **self-efficacy** towards teaching mathematics.
3. Decrease **mathematics anxiety** and **mathematics teaching anxiety**.
4. Increase feelings of **belonging** to a community and network of mathematics teachers (in-field and out-of-field) and resources, with this network sustaining and continually improving practice and enabling contribution to the profession.
5. Increase **identity** as a mathematics teacher (role identity and belonging to a community).
6. Increase **retention** of these teachers in the teaching profession.



Assessment items

Interviews and
Focus Groups –
immediately after

Interviews and
Focus Groups – 3
months after

Research project: Case study

Sarah, a teacher with **18 years of experience**—most of which was spent at an independent Anglican school in Victoria serving over 1,700 students from Pre-Kinder through to Year 12—sought to reconnect with her passion for mathematics and gain formal recognition of her expertise. Her initial academic ambitions shifted toward teaching, yet she felt **her mathematics skills were undervalued in her current role**. Sarah articulated, “I wasn’t valued for my mathematics skills, and I wanted to prove my worth in this field.” This sentiment fueled her decision to enrol in the course and demonstrate her capabilities through formal education.

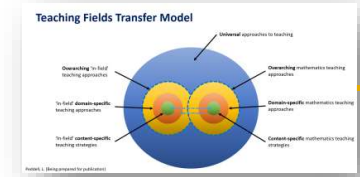
She **faced initial challenges with the digital platform** but navigated these obstacles successfully and completed 90% of the additional coursework. Sarah found the modular format of the course particularly beneficial, stating, “**The modular format was a lifesaver. It broke down the workload into manageable chunks, making it less overwhelming.**” The tutorials, especially those led by the tutor, were particularly well-received. Sarah appreciated the **tutor’s approachable and supportive teaching style**, noting, “Her ability to make complex concepts accessible and her genuine support made a huge difference in my learning experience.”

Notes.

1. This excerpt has been approved for release by the participant
2. The name used here is a pseudonym



Research project: Case study



Sarah also valued the constructive feedback she received from the tutor, which she found to be a significant motivator. She remarked, “Her feedback was always constructive and encouraging. It made me confident in asking questions and pursuing further research beyond the course.”

Although Sarah was **not teaching mathematics at the time**, as she was serving as the Head of Department in a different area, she used the knowledge and strategies from the course in her broader teaching role. She explained, “Even though I wasn’t teaching mathematics directly, the **frameworks I learned about helped me develop new strategies for other subjects.**” This application of knowledge played a crucial role in her being currently considered for a Head of Mathematics Department position. Sarah highlighted, “I used the course content to build a strong vision statement for my interview. It helped me articulate my ideas and demonstrate my readiness for the role.”

Sarah is enthusiastic about continuing her professional development and is considering pursuing a Master’s in education. She is also keen on transitioning into a role focused on training and supporting other teachers. Sarah shared her future goals, stating, “**Transitioning into a role where I can teach other teachers and share my passion for education is something I’m really excited about.**” The course has reignited my motivation for academic and professional growth.”

Notes.

1. This excerpt has been approved for release by the participant
2. The name used here is a pseudonym





Questions

Answers

