

Initial Teacher Education Hackathon



University of Fort Hare
Together in Excellence

PrimTEd spin-offs: PrimTEd 2.0 testing and Maths4Primary Teachers

24 June 2022

Prof Nicky Roberts
University of Fort Hare

Project leader: PrimTEd 2.0 EFAL and Maths assessments in B.Ed
Principal investigator with Dr Porteus: Maths4Primary teachers

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Initial Teacher Education Hackathon



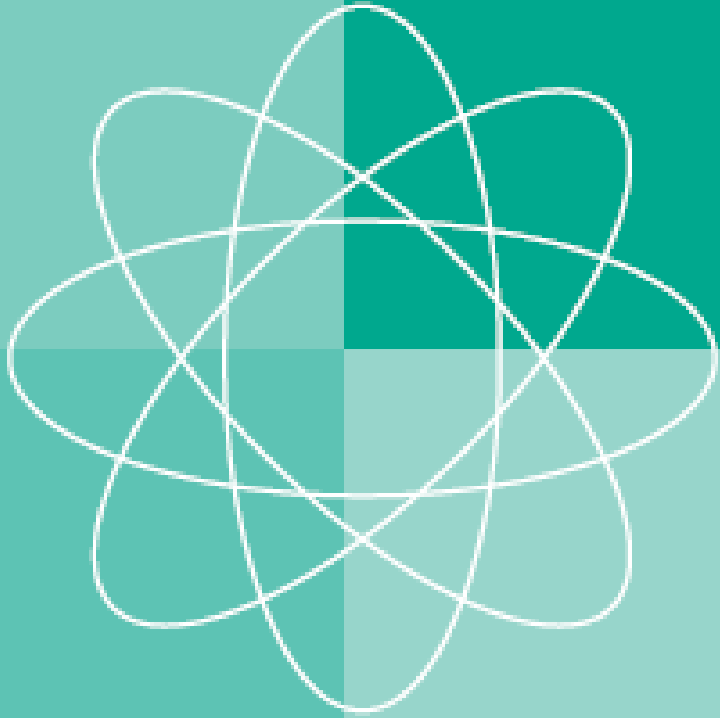
NELSON MANDELA
Institute for
**EDUCATION AND
RURAL DEVELOPMENT**



University of Fort Hare
Together in Excellence

PrimTEd spin-offs:

PrimTEd 2.0 testing



PrimTEd mathematics

14 Universities represented: UJ, UFS, WSU, CPUT, SPU, Stellenbosch, Rhodes, UCT, Wits, UNISA, UWC, UFH, UniZulu, TUT

1. Mirriam Moleko, Mogege Mosimege, Msebenzi Rabaza (UFS)
2. Ravindraw Bappoo, Glynnis Daries Jeffrey Thomas (SPU)
3. Mzi Krexe, Jogymol Alex and Faith Hlungulu (WSU)
4. Zonia Jooste, Sharon Mc Auliffe (CPUT)
5. Kaashief Hassan, Gary Powell, Zain Davis; Cally Kuhne (UCT)
6. Erna Lampen (Stellenbosch)
7. Lynn Bowie, Corin Mathews (WITS)
8. Xoliswa Lydia Mbelani , Lise Westerway (Rhodes)
9. Zingiswa Jojo (UNISA)
- Kathleen Fonseca, Jerry Maseko, Emmanuel Libusha (UJ)
11. Rajen Govender (UWC)
12. Beverley, Karen Hackman, Kim Porteus (UFH)
13. Lynn Kok (Unizulu)
14. Jeanette Ramolla, Anil Kanjee (TUT)

First years	Mean				Weighted Mean	Weighted SD	Same universiti					
	2017	2018	2019	2020			2017	2018	2019	2020	Weighted Mean	Weighted SD
		36,7			36,7	11,5						
University G		11,5										
		38,9	40,4		40,0	12,1	47,02	43,8	56,0	46,7	14,8	
University A		11,2	12,3				11,5	17,4	12,1			
		33,3	44,3		40,4	21,3						
University I		11,8	26,4									
			40,7		40,7	13,0	44,75		38,2	38,7	10,6	
University D			13,0				11,9		10,5			
	44,5		46,8	40,3	43,6	14,0			54,3	54,3	16,7	
University C	14,9		15,1	12,6					16,7			
	46,91	48,9	44,8	45,5	46,6	13,8	48,08		56,1	52,2	14,2	
University B	14,77	13,5	14,0	13,3			15		13,5			
		46,1	49,6		47,5	15,1						
University F		16,3	13,4									
			51,2		51,2	16,5						
University J			16,5									
		55,3	48,5		52,0	14,9		64,0	71,1	66,3	11,8	
University H		14,5	15,4					13,2	8,9			
			52,8		52,8	13,8						
University K			13,8									
		54,8	51,0		52,9	17,6			60,5	60,5	13,4	
University E		18,2	17,0						13,4	13,4		
			62,0		62,0	12,8						
University L			12,8									
									51,9	51,9	15,1	
University M									15,12			
TOTAL	45,9	49,1	47,0	42,3	46,3	14,8	47,7	49,0	44,3	51,2	13,9	

General pedagogic standards	Standards for the mathematical acting and thinking
<ol style="list-style-type: none"> 1. Plan effective learning experiences 2. Take learners' knowledge into account 3. Engage learners productively with mathematics 4. Teach a balanced mathematics curriculum 	<ol style="list-style-type: none"> 1. Playful engagement to search for and develop mathematical insight 2. Represent and use mathematics 3. Reason mathematically 4. Reflect for action
Standards for the number and algebra	Standards for the geometry and measurement
<ol style="list-style-type: none"> 1. Knowledge and use of the emergent number awareness of learners 2. Knowledge and use of the emergent number awareness of learners 3. Knowledge of the relationship between multiplication and division. 4. Knowledge of operations with rational numbers 5. Knowledge of operations on integers 6. Understand and apply overarching mathematical ideas to school arithmetic 7. An introduction to algebra 	<ol style="list-style-type: none"> 1. Knowledge of Geometrical Properties 2. Knowledge of Measurement 3. Knowledge of Transformations

This needs time.

1. Suggested credit weighting of 100 credits for maths over 480 credit degree
2. That the B.Ed (IP) makes mathematics compulsory

Summary: number of Maths credits required for primary teachers' B.Eds

Note: the values in brackets represent the total number of credits needed to graduate with the degree)

Institution	B.Ed (Foundation Phase)	B.Ed (Intermediate Phase)
	26 (486)	26 (486)
	60 (480)	56 (480)
	80 (480)	n/a
	48 (488)	48 (504)
	65 (480)	29 (480) – non Maths specialisations 56 (480) – Maths specialisations
	48 (480)	72 (480)



PrimTEd Language and Literacy

11 Universities represented:

UJ, CPUT, SPU, TUT, NWU, NMU, Wits, UniZulu, UNISA, UFH, UWC

1. Charis Allison, Makeda Phekani, Elizabeth Henning, Fikile Semelani (UJ)
2. Zama Jane Mthembu, Anil Kanjee (TUT)
3. Candice Livingston, Hanlie Dippenaar, Sibongile Xamlashe (CPUT)
4. Carisma Nel (NWU)
5. Sarah Murray (Rhodes)
6. Someka Ngece, Lucy Sibanda (SPU)
7. Eileen Scheckle (NMU)
8. Yvonne Read (Wits)
9. Thabile Mbatha (uniZulu)
10. Sive Makaleni, Nicky Roberts, Brian Ramador (UFH)
11. Thelma Mort, et al. (UNISA)
12. UWC

CALS/Persuasive language	Mean (SD)					Weighted Mean	Fourth years	Mean (SD)				Weighted Mean
	First years	2017	2018	2019	2020			2017	2018	2019	2020	
Rural HDI			57,7			57,7						
University D			15,6			15,6						
Urban comprehensive				75,8	71,5	73,5		91,1			82,7	
University C				13,3	15,2	14,9		5,1			10,9	
Urban comprehensive		47,0	76,8	80,3	73,5	68,9		47,0		80,5	72,6	
University B		14,7	10,4	10,6	12,7	12,1		11,5		11,8	11,7	
Urban HAI				74,0		74,0						
University J				13,7		(
Urban HAI			74,2			74,2						
University E			15,1			15,1						
Urban HAI								78,5			78,5	
University N												
Rural HDI											57,8	
University G											23,1	
TOTAL		47,0	69,6	78,1	72,5	68,6		47,0	84,8	80,5	72,0	
						14,0					20,7	

Knowledge	Practice
Graduate teachers have knowledge of language and literacy and how to teach learners to read and write.	Graduate teachers can organise systematic language and literacies instruction with a focus on reading and writing, guided by the requirements of the curriculum.
English First Additional Language (EFAL)	First Additional Language (FAL)
Graduate teachers demonstrate that they understand the knowledge, skills and processes required to teach English as a First Additional Language	Graduate teachers demonstrate that they understand the knowledge, skills, and processes required to teach African languages or Afrikaans as First Additional Languages.

This needs time.

1. Suggested credit weighting of 100 credits for language and literacy over 480 credit degree

In the long term we hope that:

ITE lecturers monitor their B.Ed students' English and Mathematics proficiency, by participating in standardised PrimTEd English and Mathematics online assessments annually.

In the short term we encourage

ITE lecturers across South African Universities to collaborate to develop and trial Mathematics and English test questions which will form an item bank to set annual PrimTEd tests available online

We therefore aim to create or produce:

1

PrimTEd CoPs of INVOLVED and MOTIVATED ITE lecturers

2

PrimTEd COP MEMBERS who are trained and supported

3

PrimTEd ASSESSMENT ITEMS that have been collaboratively designed and trialed

4

PrimTEd ASSESSMENT REPORTS which are used

5

PrimTEd RESEARCH OUTPUTS that encourage ongoing reflection and improvement

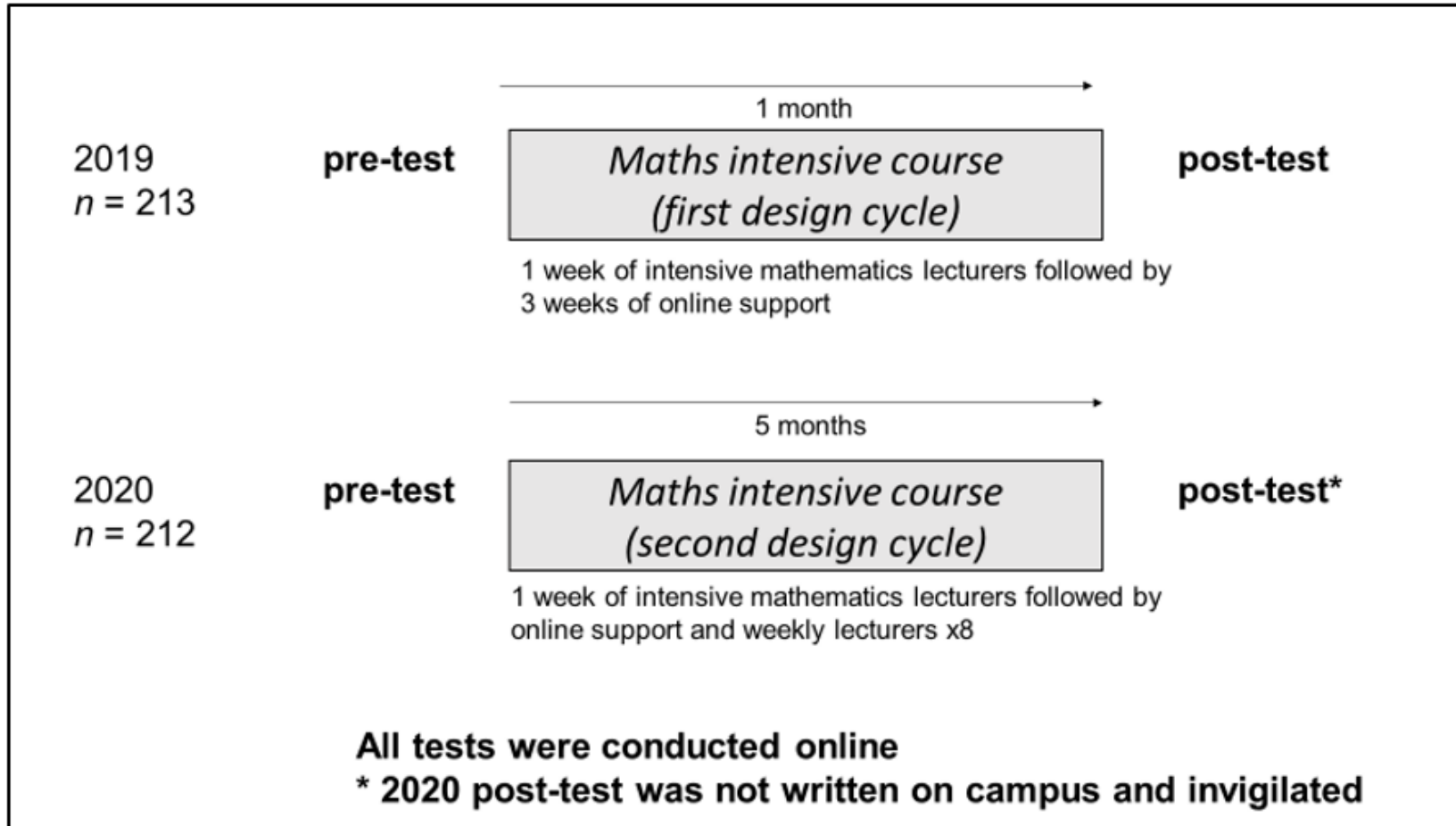
PrimTEd 2.0



PrimTEd spin-offs:

**Maths4Primary
Teachers**

Maths Intensive



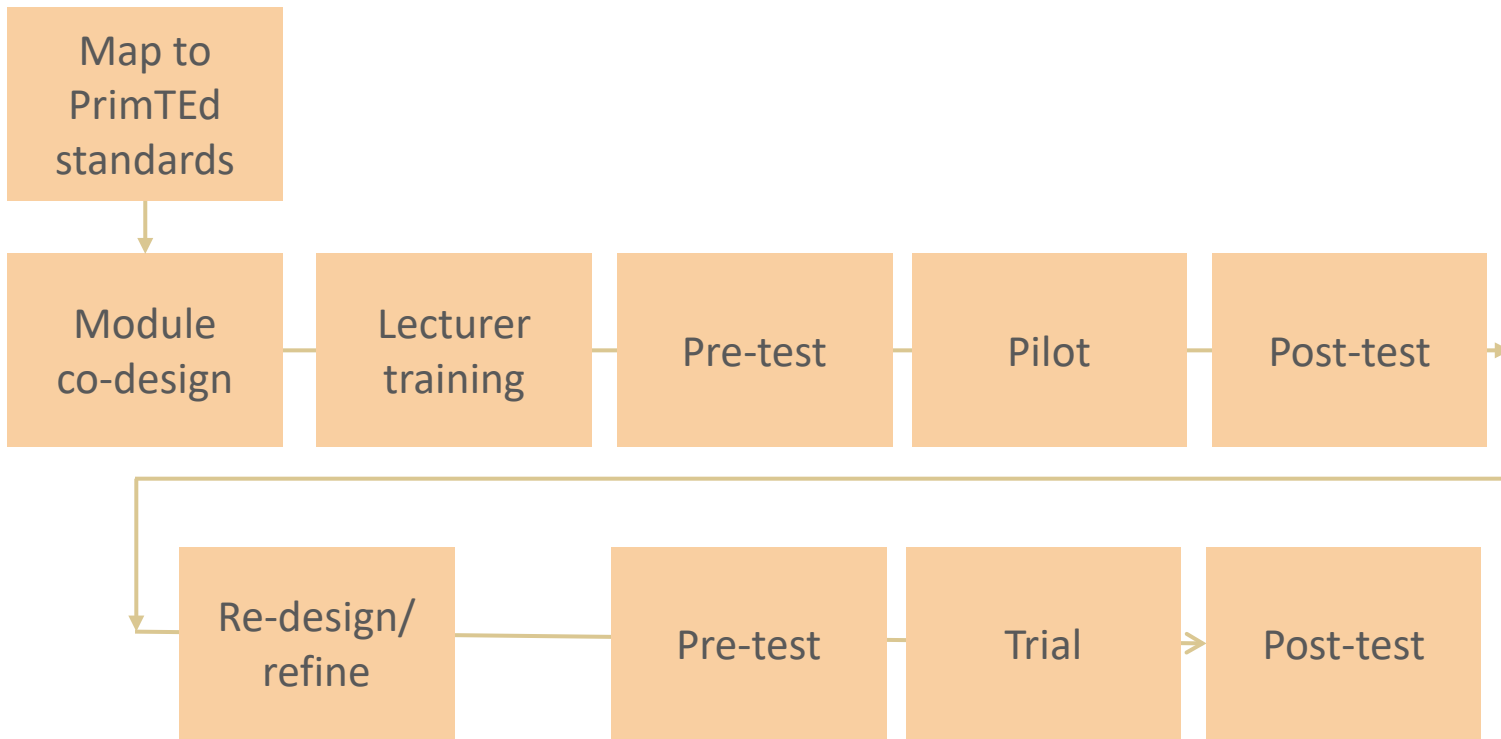
45% to 74%
+29pp

48% to 80%
+32pp

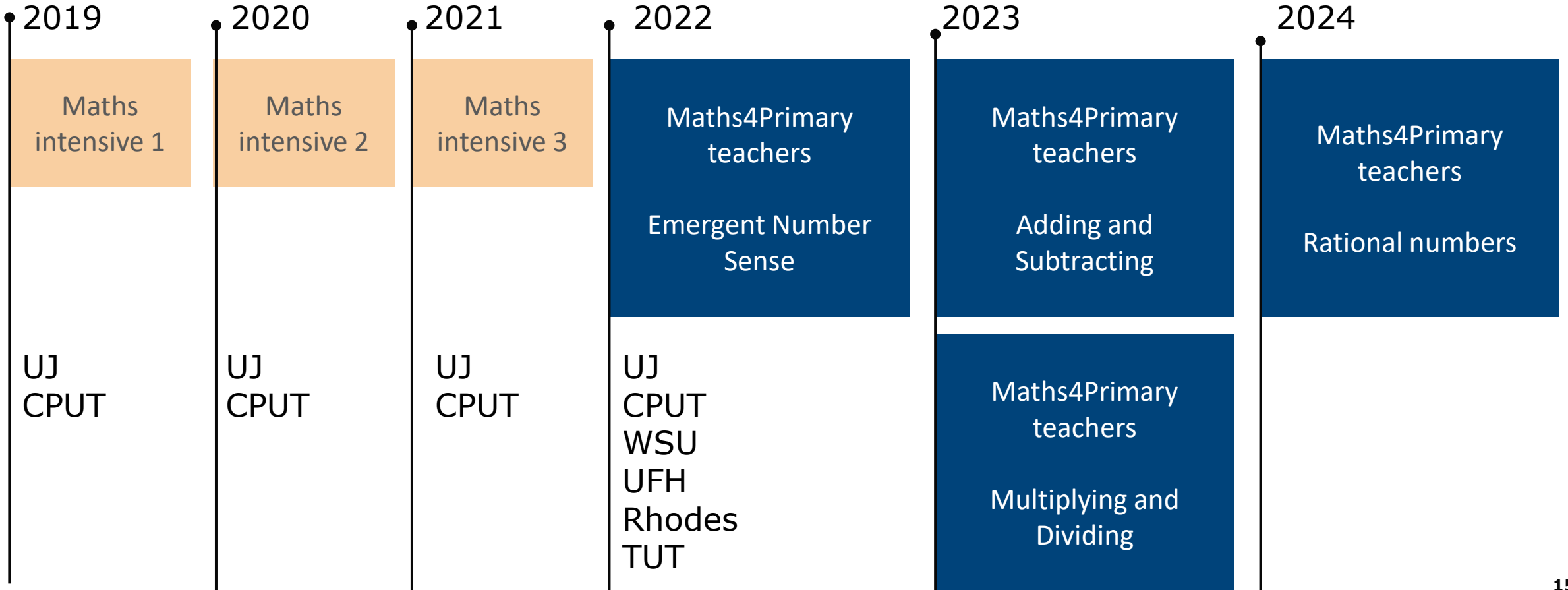


Roberts, N. & Maseko, J. (2022) Maths intensive: second design trial in response to PrimTed mathematics assessment *Journal of Education*

Maths4Primary Teachers



STRAND	STANDARD	General guide	Foundation Phase				Intermediate Phase					
			1st	2nd	3rd	4th	1st	2nd	3rd	4th		
Number and Algebra		60-70%	64	0	0	0	0	64	0	0	0	0
	NA Standard 6: Additive relations with natural numbers	10										
	Knowledge of the relationship between addition and subtraction.											
	NA Standard 7: Multiplicative relations with natural numbers	10										
	Knowledge of the relationship between multiplication and division.											
	NA Standard 9: Rational numbers	15										
	Knowledge of operations with rational numbers.											
	NA Standard 8: Integers	5										
	Knowledge of operations on integers.											
Geometry and measurement		20-30%	20	0	0	0	0	24	0	0	0	0
	GM 1: Knowledge of Geometrical Properties	10										
	The properties of geometric elements make those geometric elements what they are. Initial properties are most likely to be those attributes which are											
	GM 2: Knowledge of Measurement	10										
Understand that measurement is a number that indicates a comparison between the attribute of an object being measured and the same attribute												
	GM 3: Knowledge of Transformations	10										
	Transforming geometric objects involves changing their position (translation), orientation (rotation, reflection), size (dilation), and/or shape (deformation).											
Probability and statistics		4-12%	4	0	0	0	0	12	0	0	0	0
	Statistics	8										
	Probability	2										
Knowledge and practice standards		12%	12					12				
TOTAL		100%	100	0	0	0	0	100	0	0	0	0



Practice 1.2

Game 1.2

1,2,3 Who has less? Ngubani



1,2,3 Compare? How many missing?



Lets talk maths

In English, the number names are units- which is 'tens'.

11 = 1 ten-and-1 = 'eleven'

12 = 1 ten-and-2 = 'twelve'

13 = 1 ten-and-3 = 'thirteen'

23 = 2 tens-and-3 = 'twenty-three'

This makes learning the counting song

In IsiXhosa, the number names for numbers (we say the counting units, which is 'ishumi')

11 = **lshumi elnanye** = lshumi elnanye

12 = **lshumi unya bini** = lshumi elnesbini

13 = **lshumi elnesithathu** = lshumi elnesithathu

This makes learning the counting song in ones pronounce each syllable and make the tens str

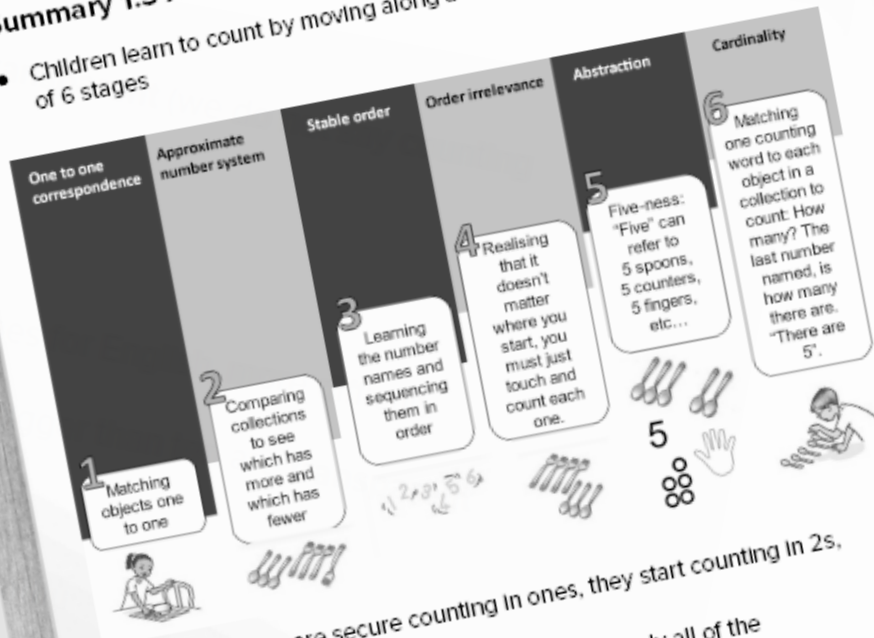
Number names are **regular** if the rules for creating consistent. Transparency and regularity are important in classrooms in South Africa.

In urban contexts you will probably have children in your same language as you. When they tell you how to count think about regularity and transparency.

- Both children
- What's the difference?
- Do again! Faster!

Summary 1.3 A learning trajectory for counting

- Children learn to count by moving along a counting trajectory of 6 stages



- Once children are secure counting in ones, they start counting in 2s, 5s and 10s
- Children can count with meaning when they apply all of the counting principles:

- ▶ One-to-one correspondence principle
- ▶ Stable order principle
- ▶ Cardinality principle
- ▶ Abstraction principle
- ▶ Order-irrelevance principle

How confident do you feel about this unthamo?



Current conditions create a juncture to redefine how we prepare primary teachers

1

COVID-19 having accelerated the need for quality blended learning

3

Cross-university collaboration, interest, and support for alternative options

4

2

Mounting assessment evidence of the inadequacy of maths, Lang and literacies in current BEds

New B.Ed policy framework MrTEQ
(Minimum Requirements for Teacher Education Qualifications)

Minimum of 120 credits: Mathematics
Minimum of 120 credits: African languages and English

Key messages



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1. Current B.Ed programmes do not resolve schooling system pitfalls; +4pp on PrimTEd maths in 3 years
2. Serious constraints on time/credit allocated to Maths and Langs & Lits in B.Eds
3. ITE academic capacity and appetite for collaboration and PD
4. PrimTEd standards for **Maths** and **Languages & Literacies**

ISERP

Maths4Primary teachers
1st year

L&L4Primary teachers
1st year

Maths4Primary teachers
2nd 3rd 4th years

L&L4Primary teachers
2nd 3rd 4th years

Bilingual
B.Eds

Embedded /
learning
schools



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Dr Nondwe Ngibe

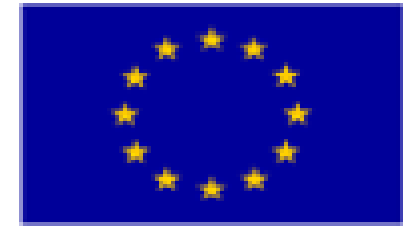
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higher education
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