

PrimTEd

Newsletter 5

June 2019

## Into Phase Four

The PrimTEd project is now well into its Phase Three, the third financial year of its operation since initiation in the second half of 2016. The good

news is that outputs are starting to emerge and we report on some of these in this newsletter. Further good news is that most of the South

African universities involved in initial teacher education are involved with one or more of the seven working groups of the project.



February National Working Committee meeting

## National Working Committee meetings

The NWC has met four times in the Phase Three of the project, thrice in 2018 and once in 2019.

The meeting in April 2018 looked in some detail at the issue of professional standards for teachers and particularly the knowledge and practice standards that would apply to literacy and mathematics teachers.

Also under discussion were the various forces pushing for a core curriculum for the ITE of literacy and mathematics

teachers as well as the various initiatives working on standards to improve the professional standing of teachers. The Committee members' minds were concentrated by Robert Prince's presentation on the latest National Benchmark Test (NBT) results.

These tests assess the entry-level academic and quantitative literacy and mathematics proficiency of students (and thus helps universities improve their selection, academic support and

curriculum development work). The data suggests that relatively few first year education students are ready for university level study.

The next meetings in July, October and then in February 2019 followed up with presentations on the ongoing knowledge and practice standards development by each group. These draft standards will be presented to a wider grouping of stakeholders in mid-April.

# Literacy Work Groups – the Consolidated Literacy Work Group (WG1)



In 2018 the Consolidated Literacy Working Group held two workshops, the first in April on *Early Reading in African Languages* at which an annotated bibliography was launched, and the second, in May, on the draft *Knowledge and Practice Standards for primary teacher education graduates: language and literacy*.

Work then began on refining the Standards document and preparing a draft *Curriculum Framework for literacy teaching in Initial Primary Teacher Education* for which a very successful workshop was held on 25 and 26 January 2019 attended by over 70 people representing 21 universities.



Two other outputs have recently been finalised: *An audit of Foundation and Intermediate Phase B.Ed. programmes at selected South African universities: Languages and Literacies components*

This report is based upon interviews conducted at ten universities and analysis of various textual artefacts (course outlines and files, examples of student work; assessment tasks, study materials, etc).

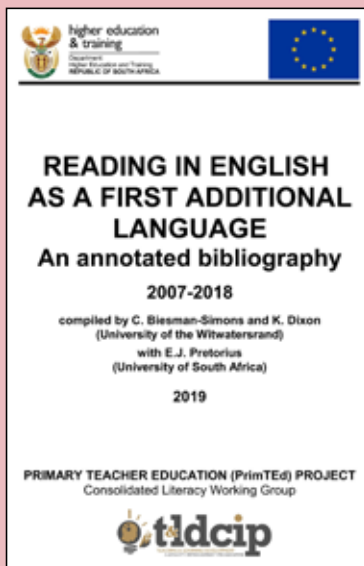
The findings note the large variation in:

- lecturers' academic and professional 'preparedness' for curriculum design and 'delivery' of languages and literacies programmes and modules

- the levels of lecturer 'investment' in the preparation of Foundation or Intermediate Phase language, and literacy teachers
- the level of intellectual leadership in the field
- the location and weighting of languages and literacies modules within the B.Ed. degree and in assessment of student teachers' knowledge and skills as teachers and as assessors of reading and writing
- the separation or connectedness of ITE courses for student teachers specialising in FP or IP
- the attention given to student teachers' development of academic literacy
- curriculum 'coverage', curriculum

- coherence/incoherence across the four years of a B.Ed. curriculum
- the focus on teaching learners to read and to write (theories and practices) and to use reading and writing for learning. In most B.Ed. programmes learning to teach reading is given much more attention than learning to teach writing / composing on the page or screen, though in some, both reading and writing receive limited attention.
- the development of resources / use of published resources to support languages and literacies teacher education

Similar concerns were expressed by the lecturers across universities.

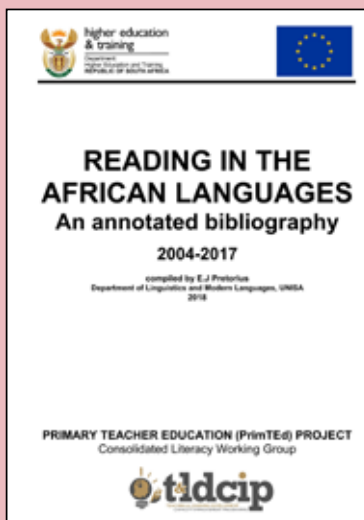


# An annotated bibliography of *Reading in English as a First Additional language*

This annotated bibliography gives a summary account of South African research that has been done on early reading in English (taught as a First Additional Language) from 2007 to 2018.

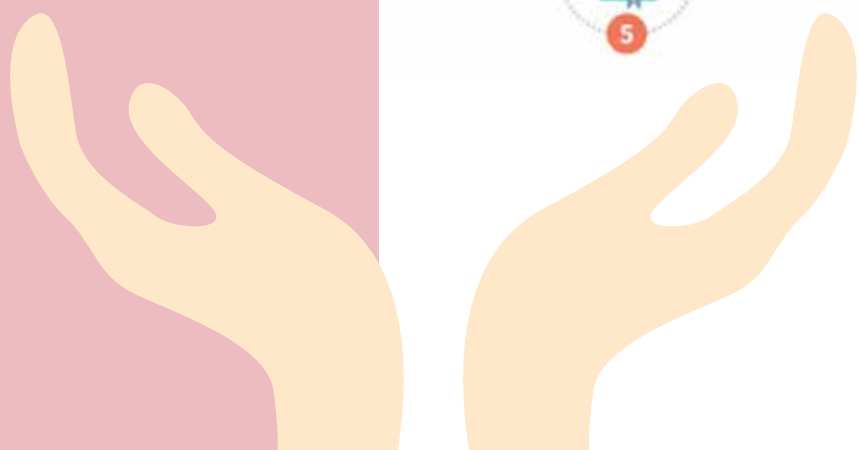
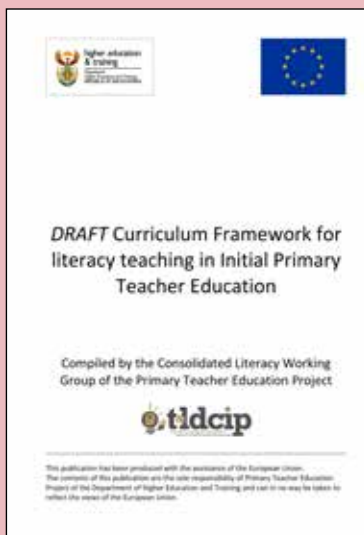
## The National reading Coalition

The National Reading Coalition was launched on 15 February 2019 and attended by over 400 participants from across the country in a show of support to address as a nation the challenge of low levels of literacy as highlighted in the 2016 PIRLS evaluation.



The NRC has six nodes or focus areas: Initial Teacher Education, Continuing Professional Development, Research, Policy, and Community Support, with the Access group focusing on availability, affordability and accessibility of reading material.

The NRC will focus initially on 25% of school circuits in the country (mostly in Limpopo, North West and Mpumalanga) – not only in schools, but also in libraries, homes, and community centres through a coordinated plan delivered collaboratively by key players in the literacy field.



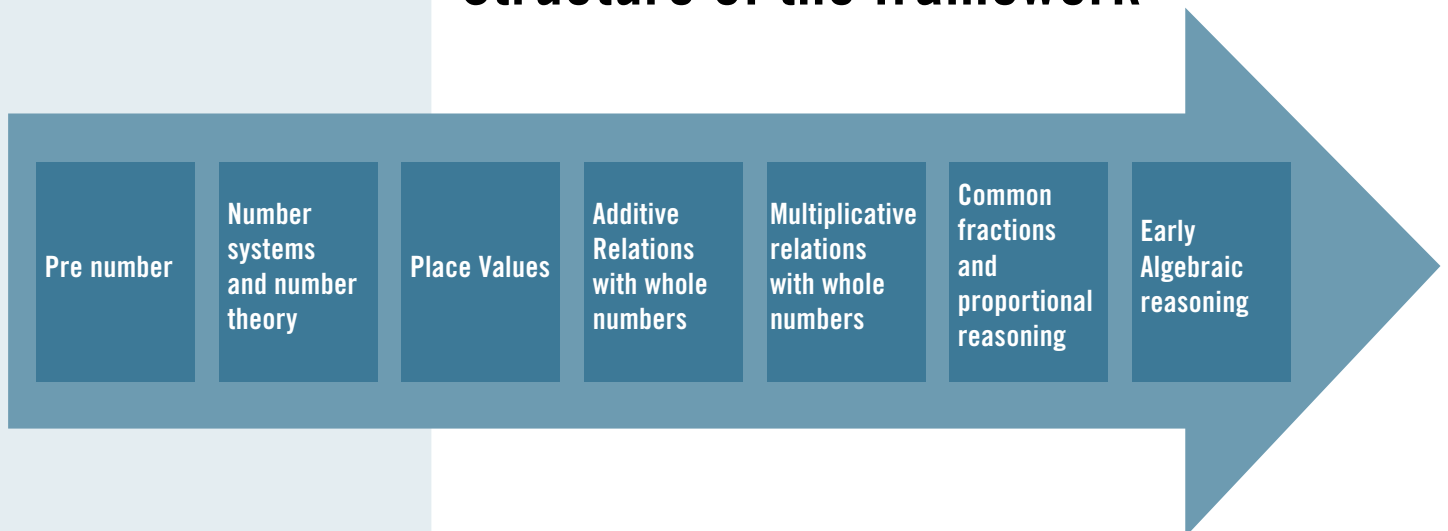


# Working Group on Number sense

During 2018 the number sense working group held regional and national meetings April and May and a writing retreat in June. The group has been aiming at developing common core standards for number sense, an assessment framework, and materials for teaching.

Ideas of *number sense* were interrogated with the aim of establishing a working description of the idea. In addition, the national group considered the possible elements of a framework for the analysis of curricula across institutions, informed by propositions derived from our review of the literature. An analysis was then made of the curricula of five institutions

## Structure of the framework



The construction of the national standards is guided by four questions:

- (1) What should teachers be able to teach?
- (2) What do we know about the general computational resources that ground the content to be taught?
- (3) What do we know about the computational resources that young children already possess prior to schooling?
- (4) What do teachers need to know to exploit the computational resources that children possess?

Course outlines and materials used on the Foundation Phase and Intermediate Phase programmes of five HEI institutions were used to constitute an archive for a series of inter-related case studies and the analysis of the documents is continuing.



“ What are the ‘big ideas’ in geometry and which teaching approach is best – integrationist or separationist ”

# Working Group 3 (WG3): Shape, Space and Measurement

This group has been looking at two key issues in the teaching of Geometry and Measurement: what are the “big ideas” in geometry and which teaching approach is best – integrationist (knowledge content and pedagogy are taught in an integrated way) or separationist (taught separately). Investigation here provided the basis for the group’s work on developing geometry and measurement standards for student teachers.

## Towards standards

Knowing mathematics includes understanding specific concepts and procedures as well as the process of doing mathematics.

The working group has defined three sets of **content standards** for knowledge that pre-service teachers are expected to know and be able to teach in order to qualify as a teacher:

- Knowledge of Geometric Properties
- Knowledge of Transformations
- Knowledge of Measurement

Each set is disaggregated into a number of standards.

The exploration and development of standards commenced with the definition of 11 mathematical **processes** which are central to the study of Geometry and Measurement:

- visualizing
- reasoning and justification
- generalizing geometric ideas
- classifying and defining geometric objects
- investigating invariants
- analysing and interpreting geometric figures
- use of technology
- mixing deduction with experimentation
- problem solving
- nurturing productive dispositions.

Without having **process standards** related to these key processes, the teaching of mathematics all too easily degenerates into the mindless application of recipes.

# Developing the geometry materials



“ The teaching toolkits are designed to provide support to the student teachers during their teaching practice in schools. ”

The group has been working on materials to support the implementation of the standards by teacher educators and student teachers.

The first stage was developing a materials development checklist and a template for developing geometry **teaching units** and **toolkits**.

The teaching units are sets of materials that focus on what teacher educators do with pre-service teachers when they engage with them during contact (and/or non-contact time). They outline the content knowledge and pedagogical content knowledge (integrated together) required by teachers of Geometry and Measurement. Three teaching units are being prepared on Properties, Measurement, and Transformations.

The teaching toolkits are designed to provide support to the student teachers during their teaching practice in schools. They focus on the key sub-topics within each of the main **CAPS** topics addressed by the teaching units.

Each toolkit consists of a descriptions of mathematical ideas, concepts and skills; descriptions of “errors and misconceptions” related to the topic learners hold and/or might develop; cues to prior knowledge; something about learning theory related to the topic; lesson plans and activities for the topics; teaching guidelines, and suggestions on how to use resources and technology; questions and prompts to deepen learners’ engagement with the topic; and material strategies for the formative assessment of learning; etc.

The toolkits constitute a sub-set of the teaching units: while the latter are exhaustive, dealing with all issues in primary school mathematics (and in **CAPS** in particular), the toolkits address only these key topics.

Teaching units	Toolkits
Measurement	Length
	Capacity and Volume
	Time
	Perimeter, Surface Area and Volume
Properties	Properties of 2D shapes
	Properties of 3D shapes
Transformations	Transformations
	Viewing of objects
	Position and Movement



“The majority of learners though they may be able to calculate by following rules, do not develop the capacity to think mathematically”

# Working Group 4 (WG4): Mathematical Thinking

This working group has identified the elements for a proposed Mathematical Thinking Standards. Learners need to participate in a culture and practice of authentic mathematical thinking and activity. To do this, **teachers themselves need to have experienced and participated in the processes and practices that constitute authentic mathematical activity and support mathematical thinking.** That is, teachers themselves need to have the capacity and experience to be able to engage effectively in mathematical thinking in appropriate contexts.

This working group is addressing the problem that the majority of learners, though they may be able to calculate by following rules, do not develop the capacity to think mathematically.

The draft standards developed by this group focus on the process of developing mathematical thinking through playful engagement in developing and searching for mathematical insight through processes of acting, exploring, connecting and clarifying.



An important meeting was held on 17 April to introduce several sets of teacher knowledge and practice standards developed as part of TLDCIP/PrimTEd to various stakeholders including teacher unions, the Human Resources Development Council, SACE, private Higher Education Institutions, and representatives from the DBE and some provincial education departments.

Presentations from the meeting are available on the PrimTEd website.

# Cross-cutting Work Groups

## Cross-Cutting Work Group 2 (CCWG2): Assessment



This group continues to be a very active and has done significant work on online mathematics tests and the CALS academic language tests. The *Core Academic Language Skills Instrument (CALS-I)* was designed to measure high utility academic English language skills that support reading comprehension across the content areas in grades 4 to 8. It has been adapted for South African use.

These tests are aimed at getting a sense of where education students are and whether they have become more proficient in their own mathematical and language use by the end of their studies.

Two 2018 papers, a SAERA 2019 presentation, and a presentation to the Education Dean's Forum give the essentials of the finding from three institutions on mathematics -- that students enter the Bachelor of Education with very little knowledge of the primary school curriculum in maths, and by their 4th year they know very little more.

The assessment instruments check Foundation and Intermediate Phase knowledge on whole numbers, rational numbers, patterns and functions, and geometry and measurement at various levels of cognitive demand, looking also at the pedagogical focus.

What was striking was the general lack of any significant improvement in knowledge shown by the 4th year students. Fourth year students were not even proficient in lower cognitive demand tasks. They had difficulties with number and with flexible calculations with whole number as a problem.

In a broader ranging paper by Jogymol Alex and Nicky Roberts that looked at the results from two institutions in 2017 and seven in 2018 and found that the majority (7 in every ten) first year ITE students in 2018, across 7 South African universities, showed poor mathematical knowledge for teaching. The low knowledge benchmark of prospective teachers entering the B.Ed. programmes has implications for the design of these programmes. Sufficient time is required for teachers to be able to develop deep understanding of the mathematics content. They need time and intensive instructional support to know *how* to do the primary school mathematics themselves, to know *why* these processes make sense, to know how to represent these solutions using multiple *representations*, to know how the particular aspect of content *connects* to other topics and grades, and to know at what stage children are ready to learn this content.

The PrimTEd mathematics test has provided a common assessment instrument which is at least showing some of the mathematics that student

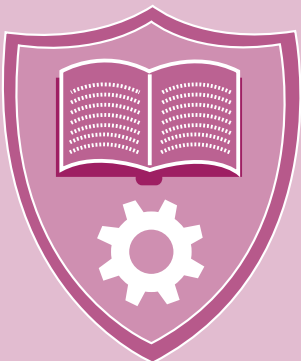
“ What was striking was the general lack of any significant improvement in knowledge shown by the 4th year students. Fourth year students were not even proficient in lower cognitive demand tasks. They had difficulties with number and with flexible calculations with whole number. ”





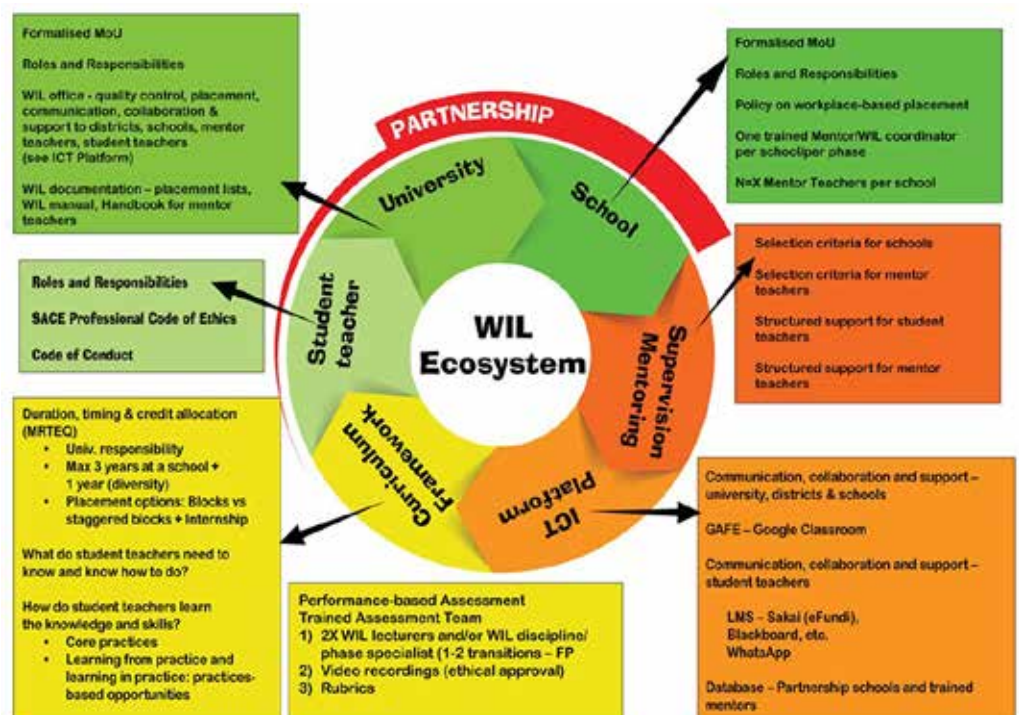
teachers bring with them into the B.Ed. programmes. A mean result of above 45%, at least shows that the instrument is not suffering from floor effects. However, considering that the items were pitched at the level of Grade 4-7 mathematics, with a minority of items relating to mathematics pedagogy; that the majority of prospective teachers are not able to reach a minimum benchmark of 60% is concerning.

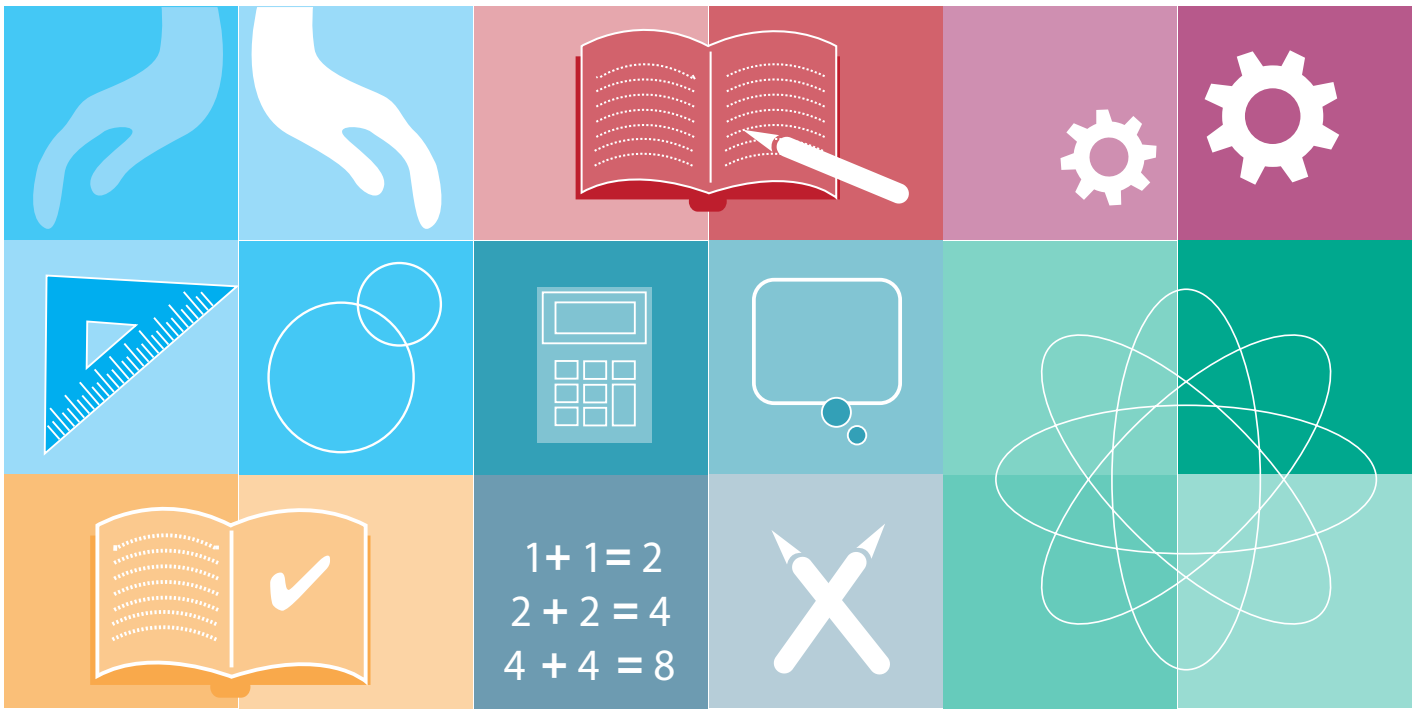
The question arises of how Bachelor of Education programmes are going to work with students with this low level of mathematical knowledge for teaching, so that by the time they exit the four-year programme they will have made substantial improvements in their knowledge. Higher Education Institutions need to reflect on their entrance criteria, and the extent to which their intake is sufficiently proficient in primary level mathematics to be able to benefit from a degree designed to support the teaching of mathematics at primary school. It also needs to be determined whether B.Ed. programmes are appropriately pitched to work with students, at the mathematics level which they have been diagnosed to have. Do the B.Eds. programmes take these low attainment results into account, and provide enough mathematics (both quantity and quality) of mathematics engagement to have shifted the prospective teachers enough?



## Cross-Cutting Work Group 3 (CCWG3): Work Integrated Learning

This group has been developing Work Integrated Learning Guidelines for Initial Teacher Education programmes. A draft document has been produced which covers the following: the WIL policy context, the partnerships in WIL, the place of ICT in WIL, Supervision and mentoring, and a Curriculum Framework.





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Higher Education and Training  
REPUBLIC OF SOUTH AFRICA



## Primary Teacher Education Project

The PrimTEd Project is a component of the Department of Higher Education and Training's Teaching and Learning Development Capacity Improvement Programme (TLDCIP), and as such is under the overall authority of the DHET's Director-General. The PrimTEd Project is managed by the Chief Directorate for Teaching and Learning Development, located in the University Education branch of the DHET.

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