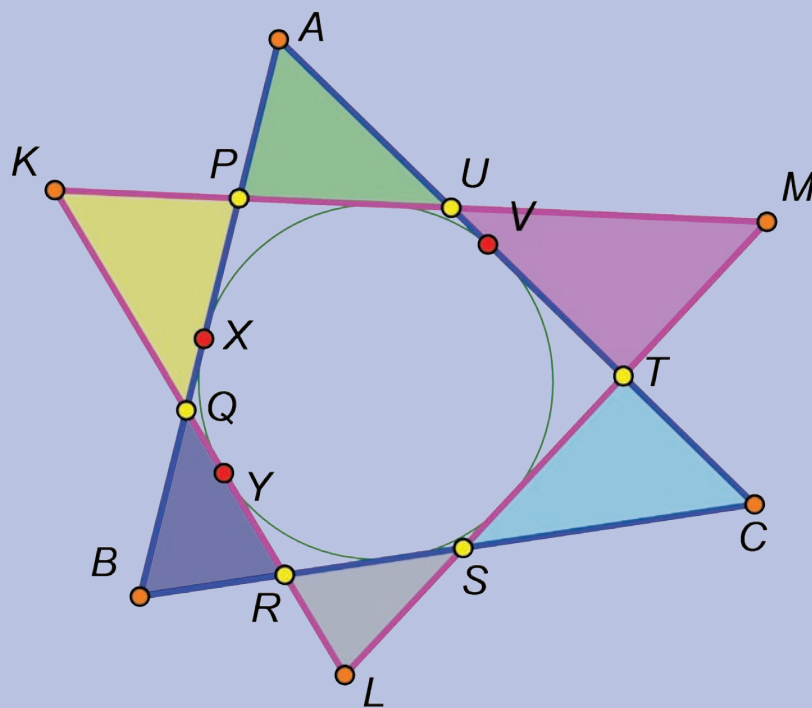


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ANAs: Possibilities and Constraints for Mathematical Learning

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The introduction of the Annual National Assessments (ANAs) began in 2011. The ANA was explicitly focused on providing system-wide information on learner performance for both formative purposes, such as providing class teachers with information on what learners were able to do, as well as summative purposes, such as providing progress information to parents and allowing for comparisons between schools, districts and provinces (Department of Basic Education (DBE), 2011). The ANAs were written by all government school learners in Grades 1-6 as well as Grade 9 in September 2012. The ANAs focused on Literacy and Numeracy in the Foundation Phase, and Language and Mathematics in the Intermediate Phase. The 2012 national report of the ANAs (DBE, 2012) is available for downloading at <http://www.education.gov.za>.

Assessments such as the ANAs of course have an influence on what happens in schools and in classrooms. In our work as the SA Numeracy Chairs at Rhodes and Wits University respectively we collaborate with teachers in 22 primary schools, of which 12 are located in the broader Grahamstown area and 10 in the Johannesburg area. The schools represent a mixture of both township and suburban schools in both Chair projects. Across both our projects we found during 2012 that several weeks of school time were taken up with the preparation and writing of the ANAs. A range of 1 to 8 weeks (with a mean of 3.97 weeks) were reported by our teachers to be taken up on the ANAs. In our respective teacher development programmes (namely, the Numeracy Inquiry Community of Leader Educators (NICLE) and the Wits Maths Connect - Primary) our teachers shared a range of different experiences of the ANAs. Together with the teachers we decided that it was important to capture/document the range of views and experiences by gathering this data in the form of questionnaires that teachers completed across our two projects. The questions asked related to the following range of issues concerning teacher experiences of the ANAs:

- the purpose and value of the ANAs
- the use and value (if any) of exemplar papers given before the ANAs
- the administration of the ANAs
- the marking of the ANAs
- teaching time taken up by ANAs (including preparation, administration, marking and preparing results)
- correspondence with topics taught by teachers
- the extent to which ANAs reflect learners' mathematical/numeracy competence
- any other experiences/issues in relation to the ANAs

Participation in the questionnaire was voluntary. 54 teachers from across 21 schools completed the questionnaires. Here we share with you the various key themes that emerged, including examples of what teachers wrote in relation to these themes. Thus, rather than discussing the entire range of data received, we primarily share those recurrent experiences that teachers communicated. We believe that dialogue is important in relation to the effect of the ANAs and we hope that this paper will stimulate teachers in other schools and districts to get together to share their experiences and then to feed these experiences back to districts. Our hope is that this will support the ongoing reflection and revision of the ANA process.

A note at the outset is that these views are by no means considered representative of the general population of teachers. Rather, we hope that the data we share will serve as a stimulus for further engagement and discussion among teachers as to the extent to which these experiences resonate with or depart from their own experiences.

In the table below we provide an overview of comparative positive and negative recurrent responses across a range of issues relating to teacher experiences of the 2012 ANAs:

Positive points	Negative points
ANAs are good for: <ul style="list-style-type: none"> - Standardizing content coverage - Making explicit one's expectations about what will be assessed - providing information on learners' levels of understanding - Providing guidance on content coverage 	Language within questions blocks access to question meaning for learners with weak reading and writing skills (this was a particular issue at Grade 3 level). This in turn is linked to lack of time for paper completion for weaker learners. Learners needed some 'explanation' of the task in order to access the question, thereby disrupting the validity of assessment of learner understanding.
Predominant view of strong correspondence between content coverage in class and ANA questions.	ANA timing in September results in difficult and rushed 4 th term content coverage or alternatively in non-alignment with content coverage.
Only one positive comment related to the smooth administration of the ANAs in a particular teacher's school.	Bureaucratic arrangements (monitoring another class, seating arrangements within classes, lack of reading out of and explaining questions) seen as anxiety inducing for Foundation Phase learners in particular. Disrupts duty of care.

Examples of the kinds of positive points summarized above are as follows:

'The values and purpose of ANA are good because they help educators to do curriculum pacing very well and to cover the content prescribed for that class or grade' (Gauteng teacher)

'Good. They will standardize the content for each grade.' (EC teacher)

'ANA is a good tool to test our learners' ability on how well they are doing in mathematics' (Gauteng teacher)

'The purpose is to assess the learners and to ensure that content of work is covered. And to see where problem areas are.' (EC teacher)

The following comments, whilst buying into the purpose of the ANA, raise implementation issues:

'[The purpose of ANA is] to see if learners know the work and understand it. We need what you call pacesetters at the beginning of the year. The paper is based on the whole year's work. Some of the work we did not cover yet because we are left with the fourth term still.' (EC teacher)

'I think the ANA will be more successful if they had given the pacesetters in the beginning of the year plus example questions. I did not like the idea that we had to facilitate other grades instead of staying in my class.' (EC teacher)

Noting similar concerns in more negative ways, one teacher responded as follows:

'They were not useful because they cover the whole year's work in September; I can't rush to finish everything in September, because in that way I will be teaching the syllabus, not the learners.' (EC teacher)

Language issues were also raised, particularly in relation to learner difficulties with reading and writing demands, and the consequences of this for anxiety:

'ANA is confusing learners, because Grade 1 to Grade 3 [learners] are very small they are used to their teachers explaining for them so ANA does not allow the teachers to read the instructions for the learners, especially Grade 3. These learners are small - they still need guidance when writing exams.' (EC teacher)

Of interest, several Eastern Cape teachers pointed to the differential value of the ANA for weak and strong learners. For weak learners, comments related to weak reading and writing skills. For example:

'The 'clever' kids did it with ease, but some learners whose writing and reading is poor needed help.' (EC teacher)

'It helped the clever kids, but for those with writing and reading problems it was not easy as they took long to read and write.' (EC teacher)

Perhaps some of these comments relate to some of the raw data provided by some NICLE teachers which show that several learners achieved 0% for the ANAs across several grades, indicating an inability to access what was required of them. This was not however the case on alternative orally administered numeracy tests that were administered within the broader research project.

Related to the above were a wide range of comments and phrases relating to how the administration of ANAs led to learner anxiety and teacher frustration at not being able to provide care for their learners, particularly in the Foundation Phase, as teachers were not allowed to be present in administration of ANAs to their own classes. Phrases such as: *'learners were very anxious/agitated/nervous and scared'* came up repeatedly. Teachers expressed frustration, using phrases such as: *'my mind was thinking about my own class as there was a stranger in front of them'*, *'some learners become nervous with a new teacher in their class'*.

We now turn our focus to the ANA exemplar papers. The table below summarizes the positive and negative responses in relation to the provision of exemplar ANA papers and the marking memorandums.

Exemplar papers	
Positive	Negative
Useful for: - revision of content - getting learners familiar with the format of the 'exam' and the style of questions; helpful for dealing with learner anxiety - preparation for ANA 'exam' as high degree of overlap between exemplars and ANA mentioned quite frequently - providing teachers with guidance on content coverage - some reports of improving performance	Difficulties attributed to: - Need to rush through exemplars - Reading exemplars problematic for many learners - Bureaucratic difficulties with photocopying and access to paper - Some reports of learners not improving in spite of exemplars

Marking memorandums	
Positive	Negative
<p>Generally easy to use with fair mark allocations</p> <p>'Easy to follow' was a phrase that appeared repeatedly</p>	<p>Singular methods being provided was noted as being a problem – some 'appropriate' alternative methods were left out</p> <p>A few inaccuracies with some ambiguity or lack of clarity of language</p> <p>Some concerns over mark allocations in some instances</p>

In particular we note that several teachers commented on the high degree of similarity between the exemplar ANA questions and the final paper questions (some as positive and others as negative comments). For example:

'Learners benefitted a lot from the [exemplar] questions because some of them were in the final exams' (Gauteng teacher)

'Was useful to use because some of the questions repeated to 2012 ANA question paper.' (Gauteng teacher)

'Just a duplicate of the ANA papers' (EC teacher)

'Some, they were useful because they were asked in the pre-ANA & the ANA.' (Gauteng teacher)

A further problem relates to singularity of methods that were viewed as 'acceptable' and provided as correct answers in the memos:

'They were useful because they set a good example of the exact way in which questions were to be asked so it trained my learners.' (Gauteng teacher)

'Multiplication in Grade 3 was difficult to mark as [a specific] method was given on the memorandum and learners did use different methods taught.' (Gauteng teacher)

Concluding remarks

The power of the influence of national assessments on the teaching of learners, not to mention the teaching time that is given to these assessments, should not be underestimated. Four key issues are raised that we have forwarded to departmental structures for consideration. These relate to:

- the reading of questions for Grade 3s
- the timing of the ANAs and the relationship to content coverage
- the importance of breadth of questions (not to be confused with content coverage)
- acceptance of a variety of correct methods

We elaborate briefly on these issues below.

The decision that Grade 3 Foundation Phase learners do not have the questions read to them (as is the case with Grade 1 and Grade 2 learners) was raised by teachers across both projects as problematic in three ways: (i) learners' poor language proficiency, (ii) learners' poor reading skills (i.e. access to what is required), and (iii) care for learners (see previous quotes). The issue of care was particularly pronounced for Grade 3 learners who were not used to assessments such as the ANAs. Other teachers coming in to

assess them and not having teachers mediate what learners were required to do through verbal instruction or reading of questions were noted as particularly problematic. The quote below captures this:

“Anxiety was a big factor. Children were nervous. Learners’ behavior was different as when writing internal tests/exams. I did not like the fact that we did not facilitate our own classes. We needed to shift classes. Children were confused. Especially Foundation Phase learners. Foundation Phase learners need their own educators. I neglected my own assessment for third term... Learners had ‘exam fear!’ Poor learners!” (EC teacher)

On the second point, the timing of the ANAs must be chosen to correspond with what teachers can be expected to have covered by the time of writing. Additionally, some teachers indicated the wish to be given clear guidelines (or pace-setters) at the start of the year. A number of quotes indicate teacher frustration with not being able to complete all the work by September.

On the third point, relating to the breadth of question, given the widespread acceptance of the usefulness and purpose of the ANAs (as evidenced by previous quotes) special attention must be given to the influence of these assessments on classroom practice. Teacher utterances largely indicate acceptance of ANA questions as valid exemplars of ‘the’ appropriate standard, format, scope and coverage expected of teachers in relation to their teaching. Thus we argue that extremely careful consideration must be given to the choice of questions ensuring both range in format, style, scope and content if we are to avoid a situation of teaching becoming limited to what is assessable within a limited time ANA assessment. Thus ‘reverse recontextualisation’ (Barbosa, 2013), that is considering the imagined effect of the ANAs in the classroom, must be considered. Should ANA exemplars and ANAs over the years be too similar across style, scope, content and format each year there is a danger that while we will see improvements in performance these improvements will not necessarily be matched by improved mathematical learning and competence, and several key processes and skills (such as mental arithmetic and investigative problem solving) could disappear from classrooms.

Additionally, with regard to the fourth point, teachers raised concerns that the ANA exemplar and paper memos did not accept alternative methods for working with calculations. This is problematic given the research evidence that multiple representations are an important part of mathematical learning. In practical terms it is also highly discouraging for teachers and learners to be marked down for answers that have been correctly produced.

On a final note we hope and trust that this paper stimulates constructive deliberations in the ongoing review of the ANA process.

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