

The Grade 9 Maths ANA – What Can We See After Three Years?

Craig Pournara, Sihlobosenkosi Mpofo & Yvonne Sanders

School of Education, University of the Witwatersrand

craig.pournara@wits.ac.za sihlobosenkosi@gmail.com Yvonne.gubler@gmail.com

INTRODUCTION

The Annual National Assessments (ANA) were introduced to address South Africa's poor performance in international mathematics assessments such as TIMSS and SACMEQ. The Grade 9 test was first written in 2012 with a national average of 12.7%. In 2013 the average increased to 13.9% but then dropped to 10.8% in 2014. The overall picture is one of very poor performance with the result that many questions are being asked about the value and purpose of the ANA.

The Department of Basic Education (DBE) identifies three purposes for the ANAs: (1) a measure for the state to gauge improvement in the education system, based on learner performance year-on-year; (2) a diagnostic assessment to identify areas of weakness in learners' performance; and (3) to provide a model of good assessment practice. While these are all important goals, they are not necessarily achievable through a single instrument. However, this is not the focus of our article. Our purpose here is to report on a content analysis of the three ANA papers which we undertook in the first quarter of 2015, paying particular attention to cognitive demand and levels of difficulty. We share our findings on these aspects, as well as on trends that arise as we look across the first three years of the Grade 9 Maths ANA.

CLASSIFICATION OF ITEMS

Classification of items into taxonomies is never a simple matter, and there are no perfect taxonomies. We have attempted to use existing taxonomies with which teachers are familiar but we are not suggesting that these are definitive levels or categories.

LEVELS OF COGNITIVE DEMAND

Levels of cognitive demand describe the nature of the item in terms of the mathematical demand. An early Grade 9 ANA document (DBE, 2011) distinguishes three levels: knowledge of basic concepts, application of concepts and non-routine problem solving. However, we chose to work with the four levels of cognitive demand as described in the CAPS document since these are the levels that teachers work with regularly.

- *Knowledge* – requires straight recall, use of mathematical facts, identification and direct use of formulae.
- *Routine procedure* – well-rehearsed and familiar algorithms, simple calculations that may involve several steps, use of formulae requiring change of subject.
- *Complex procedure* – several calculations that are not all of the same type, complex calculations, route to solution is not entirely obvious, connecting representations, developing proof, requires conceptual understanding.
- *Problem solving* – unseen, non-routine problems, route to solution is not suggested, also requires conceptual understanding.

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John Loughran, Mary Lynn Hamilton



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International Handbook of Teacher Education John Loughran, Mary Lynn Hamilton, 2016-05-04 The International Handbooks of Teacher Education cover major issues in the field through chapters that offer detailed literature reviews designed to help readers to understand the history issues and research developments across those topics most relevant to the field of teacher education from an international perspective This volume is divided into two sections The organisation and structure of teacher education and knowledge and practice of teacher education The first section explores the complexities of teacher education including the critical components of preparing teachers for teaching and various aspects of teaching and teacher education that create tensions and strains The second examines the knowledge and practice of teacher education including the critical components of teachers professional knowledge the pedagogy of teacher education and their interrelationships and delves into what we know and why it matters in teacher education *Education in a New South Africa* Robert J. Balfour, 2015-09-24 A collaborative series with the University of Cambridge Faculty of Education highlighting leading edge research across Teacher Education International Education Reform and Language Education **The Education Triple Cocktail** Brahm Fleisch, 2018-08-15 The Education Triple Cocktail brings together rigorous quantitative and qualitative research on a new approach to improving foundational teaching and learning for schoolchildren living in working class poor and remote rural communities in resource constrained systems like South Africa At the core of this book is the theory and evidence for a powerful new interlocking and mutually reinforcing change model Inspired by the AIDS treatment story the three pronged approach of structured daily lesson plans appropriate and high quality educational materials and one on one instructional coaching to help teachers transform their instructional practices in early grade classrooms shows that it will improve learning outcomes For education systems defined by low levels of early grade learning and profoundly unequal outcomes The Education Triple Cocktail offers a theoretically informed evidence based way forward This book will be of immense use to teachers students of Education policymakers and parents **World Yearbook of Education 2021** Sotiria Grek, Christian Maroy, Antoni Verger, 2020-11-26 Providing a comprehensive introduction to the topic of accountability and datafication in the governance of education the World Yearbook of Education 2021 considers global policy dynamics and policy enactment processes Chapters pay particular attention to the role of international organizations and the private sector in the promotion of performance based accountability PBA in different educational settings and at multiple policy scales Organized into three sections chapters cover the global local construction of accountability and datafication global discourse and national translations of performance based accountability policies and enactments and effects of accountability and datafication including controversies and critical issues With carefully chosen international contributions from around the globe the World Yearbook of Education 2021 is ideal reading for anyone interested in the future of accountability and datafication in the governance of education *Improving Primary Mathematics*

Education, Teaching and Learning Mellony Graven, Hamsa Venkat, 2017-01-19 This book focuses on how to improve the teaching and learning of primary level mathematics education within resource constrained contexts It builds on two large numeracy projects within South Africa which speak to broader global concerns and highlight how research and development not only enables one to meet ethical imperatives but also explore how further interventions can be developed Teacher and research communities must work together to create mutually beneficial relationships and establish a cohesive understanding of the requirements of primary mathematics education

Using Evidence in Policy and Practice Ian Goldman, Mine Pabari, 2020-06-10 This book asks how governments in Africa can use evidence to improve their policies and programmes and ultimately to achieve positive change for their citizens Looking at different evidence sources across a range of contexts the book brings policy makers and researchers together to uncover what does and doesn't work and why Case studies are drawn from five countries and the ECOWAS west African region and a range of sectors from education wildlife sanitation through to government procurement processes The book is supported by a range of policy briefs and videos intended to be both practical and critically rigorous It uses evidence sources such as evaluations research synthesis and citizen engagement to show how these cases succeeded in informing policy and practice The voices of policy makers are key to the book ensuring that the examples deployed are useful to practitioners and researchers alike This innovative book will be perfect for policy makers practitioners in government and civil society and researchers and academics with an interest in how evidence can be used to support policy making in Africa The Open Access version of this book available at <https://doi.org/10.4324/9781003007043>

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Annual Performance Plan Mpumalanga (South Africa). Department of Education, 2015

Annual Report Mpumalanga (South Africa). Department of Education, 2016

Handbook of Australian School Psychology Monica Thielking, Mark D. Terjesen, 2017-01-26 This handbook addresses the current state and practice of school psychology with a focus on standards unique to Australia including historical legal ethical practical and training factors It provides a compilation of the most current research based practices as well as guidelines for evidence based assessment and intervention for common conditions e.g. autism depression learning disabilities and for delivering appropriate services to targeted student populations e.g. LGBT gifted medical issues Chapters discuss the application of national and international school psychology practices within the Australian educational and psychological structure The handbook also examines the lack of formal resources specific to Australia's culture and psychology systems with its unique mix of metropolitan cities and the vast geographic landscape that spans regional and remote areas It offers numerous case studies and innovative school mental health programs as well as recommendations for professional development and advocacy that are unique to Australian school psychology Topics featured in this Handbook include Evidence based assessment and intervention for dyscalculia and mathematical disabilities Identification and management of adolescent risk taking behaviors and addictions

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