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Expanded Mathematics, Science and Technology Strategy

Schools Seminar

What's Working in School Development

28 February 2008



Overview of the Presentation

- Outlines the strategic objectives of the Mathematics, Science and Technology Education Strategy
- Provides background information and theory informing the Dinaledi school project
- Provides an overview of the support that has been provided for the development of Dinaledi schools
- Presents a summary of the performance of the Dinaledi schools in the Senior Certificate (SC) examination



Strategic Objectives of the National Strategy for Mathematics, Science and Technology Education (2001)

1. Performance targets in all schools
2. In every classroom a qualified and competent teacher
3. Improving the language of teaching and learning (LOLT)
4. Identifying and nurturing talent and potential
5. Co-operation with the Department of Science and Technology - NSW, camps, etc.
6. Partnerships with relevant stakeholders - resources and technical support
7. Evaluation and monitoring of MST in provinces
8. Introduce ICTs in all schools



The Dinaledi School Project

- The Dinaledi schools are intended to raise the participation and performance by historically disadvantaged learners in SC mathematics and physical science
- The project was to support the cost-effective way of channeling scarce resources in the context of competing priorities and limited resources
- The project is a short term approach to provide adequate learning and teaching facilities to limited schools with potential to address the objectives



Selection of Dinaledi schools

- Schools that already offered mathematics and science and have satisfactory classes of a minimum of 35 HG+ SG maths learners
- Schools that displayed basic levels of functionality
- Schools with potential to improve both participation and performance in SC mathematics and physical science



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Number of Dinaledi Schools per phase

Province	2001-2004	2005-2006	2007-2008
Eastern Cape	15	60	60
Free State	6	30	35
Gauteng	11	70	101
KwaZulu-Natal	23	50	84
Limpopo	23	50	51
Mpumalanga	7	30	44
Northern Cape	4	10	17
North West	7	40	51
Western Cape	6	40	45
Total	102	400 (77)	(-29) 488



Number passing Senior Certificate mathematics and science (2001-2007)

Year	Maths HG Passes	Maths SG Passes	Total Maths Passes	Science HG Passes	Science SG Passes	Total Science Passes
2001	19 504	72 301	91 805	24 280	45 314	69 594
2002	20 528	96 302	116 830	24 888	56 741	81 629
2003	23 412	99 426	122 838	26 067	61 756	87 823
2004	24 143	109 664	133 807	26 975	73 943	100 918
2005	26 383	112 279	138 662	29 965	73 667	103 632
2006	25 217	110 452	135 669	29 781	81 151	110 932
2007	25 415	123 813	149 228	28 122	87 485	115 607



Principles of Support and Development of Dinaledi schools

- Teacher competency and commitment is an integral component contributing to the success of curriculum delivery
- Time on task and effective use of time is critical in ensuring curriculum coverage and delivery
- Text availability promotes access and enhances the development of the body of knowledge necessary for skills development



Teacher Development and Support Programmes

- DoE introduced a 100-hour teacher training programme focused on the following:
 - Improving teachers' content knowledge in maths and science
 - Improving the teaching of maths and science
 - Enhance performance of learners in the subjects
- Programme consists of 2 components:
 - Training programme
 - Mentor teacher assistance programme



Availability of Text to support Teaching

- Access to text is a fundamental tool for the support of curriculum
- The DoE has provided textbooks in key subjects
- Schools have been provided with Learning Support Material (LSM):
 - Grade 9 career guidance guides
 - Exemplar question papers to support assessment of the curriculum
 - Supply of ICT/computer resources
- Schools have received scientific calculators to enhance the ability to deal with the subject content



Monitoring of Dinaledi schools

- The purpose of the monitoring process is to support teaching and learning and ensure quality of outcomes
- Monitoring process includes a combination of methods, e.g.:
 - Surveys to schools
 - On-site school visits
 - Telephonic interviews
- Results of monitoring process provide evidence of direct support required by schools and promotes the mobilisation of resources



Providing for Flexibility and Differentiation

- DoE developed a framework for private donors to support Dinaledi schools
- One of the principles of the Adopt-A-School project was to introduce flexibility and differentiation of support
- The Adopt-A-School programme assists direct intervention to schools to raise level of development in key areas



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Results

Performance of the Dinaledi schools



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Number passing maths in relation to total enrolments

Year	Total candidates writing	Total passing	Total writing maths	Total maths passes	% passing maths: all writing SC	% passing maths of all writing maths
2003	443 821	322 492	258 323	122 838	27,6	38
2004	467 985	330 717	276 094	133 807	28,5	40
2005	508 363	347 184	303 152	138 662	27,2	39,8
2006	528 525	351 503	317 642	135 669	25,6	38,5
2007	564 775	368 217	347 570	149 228	26,4	40,5



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Number of maths HG passes from 2004-2007: Dinaledi Schools since 2005

Province	2004	2005	2006	2007	Change
Eastern Cape	227	320	440	336	109
Free State	132	170	186	228	96
Gauteng	663	760	648	668	5
KwaZulu-Natal	670	856	879	850	180
Limpopo	338	609	550	723	385
Mpumalanga	234	217	249	232	-2
Northern Cape	41	41	62	58	17
North West	345	342	445	376	31
Western Cape	387	320	453	372	-15
Total	3037	3635	3912	3843	+806



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Number of mathematics HG passes in 2006 and 2007: Dinaledi schools in 2007

Province	No of Schools	2006	2007	Change
Eastern Cape	14	154	133	-21
Free State	10	161	125	-36
Gauteng	30	1173	1147	-26
KwaZulu-Natal	12	411	371	-40
Limpopo	14	151	144	-7
Mpumalanga	15	33	61	28
Northern Cape	13	110	103	-7
North West	4	38	28	-10
Western Cape	5	144	134	-10
Total	117	2375	2246	-129



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Number of SG maths passes in 2006 and 2007 for Dinaledi schools since 2005

Province	No. of schools	2006	2007	Difference
E Cape	60	3766	4002	236
Free State	35	2018	1808	-210
Gauteng	101	6226	7275	1049
KZN	84	4077	4991	914
Limpopo	51	1525	1972	447
Mpumalanga	44	1520	1630	110
N Cape	51	561	633	72
North West	17	2473	2690	217
W Cape	45	2180	2644	464
TOTAL	488	24346	27465	3119



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Number of SG maths learners in Dinaledi schools with A, B and C symbols in 2007

Province	As	Bs	Cs
Eastern Cape	217	202	429
Free State	95	89	173
Gauteng	396	416	752
KZN	251	257	481
Limpopo	102	89	215
Mpumalanga	75	79	156
Northern Cape	23	25	50
North West	119	120	238
Western Cape	77	73	129
Total	1 355	1 350	2 623



Summary of Dinaledi performance 2007

- The number of HG maths passes in the 371 Dinaledi schools that were in the project from 2005-2007 increased by 803 in the period
- The number of HG mathematics passes in the 488 Dinaledi schools declined by 188 from 2006 to 2007
- The number of SG mathematics passes in the 488 Dinaledi schools increased by 3 119 from 2006 to 2007



Incentives – Most Improved Schools Awards 2006 and 2007

- 20 Dinaledi schools received R100 000 cash to reward performance in HG mathematics
- Based on numbers of African/Coloured Mathematics HG and SG, HG weighted (3x) and A, B, C
- 2007 – all schools with increases in HG passes will receive R1 000 for each additional learner passing compared to 2006





Lessons Learnt for Future Development

- The Dinaledi school project has provided symbolic impact regarding quality of mathematics and science in schools
- Dinaledi school project shows that school development approach should be differentiated in terms of support
- Reward of performance reinforces good performance
- School development requires effective participation of all levels of coordination and support (school/district/province) both for curriculum support and governances