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FEMALE PERFORMANCE IN THE SENIOR CERTIFICATE EXAMINATION: EXCELLENCE HIDING BEHIND THE AVERAGES

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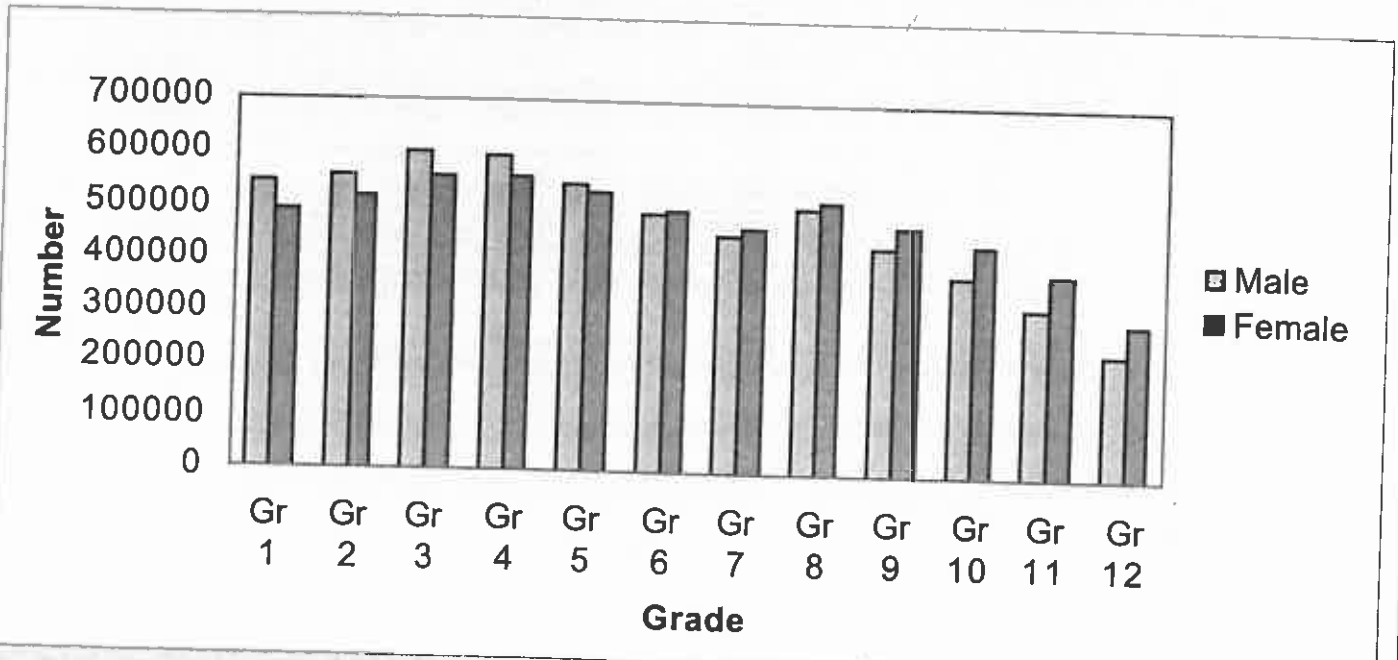
INTRODUCTION

The participation of female learners in South Africa's education system has been high and justifiably there has been concern about the quality of their performance. In general, it has been assumed that gender issues in the classroom have impacted negatively on female performance throughout the education system. Historically a number of indicators have pointed to this and it has been generally thought that female learners' academic achievement at school lags behind that of their male counterparts. Certainly the lower overall pass rate of female learners in the senior certificate examination (SCE) has been cause for the continued assumption that females are performing worse than their male counterparts.

However, in the past two years the Department of Education has published the number of candidates in the SCE who gained a pass with merit (between 60% and 79%) and with distinction (80% and over), and it has transpired with surprisingly little public notice that female candidates are in the majority in both of these categories. It appears that while female candidates writing the SCE are doing worse than their male counterparts on average, something else is happening when the results are disaggregated – certainly at the top end of the spectrum.

These findings are compatible with trends in a number of other countries where female school leavers are achieving higher results overall as well as, in some cases, in highly competitive subjects such as mathematics and physical science. The United States, Canada, most of Western Europe, New Zealand, Australia, Japan and Hong Kong are all seeing higher results in female school attainment in both standardised tests and in school leaving examinations.[1] Despite having a different socio-economic profile and education history, it appears as if South Africa is following this trend.

Figure 1: Number of Male and Female Learners by Grade, 2000



Source: Department of Education, 2002 Annual School Survey data

This article investigates female performance in the South African SCE. It does this by disaggregating the examination results and above all by moving away from the pass rates as the only indicator of performance. In this regard the paper uses the full candidate level database to calculate the average aggregate scores of male and female candidates. The results are spectacular – female candidates, on the basis of the average aggregates, are not performing badly at all. In fact, in some parts of the system they are performing substantially better than their male counterparts. Clearly what is happening – as this analysis shows – is that the education system is retaining more females, albeit including those who attain a poorer quality education, while their male counterparts who would have attained a poorer quality of education are dropping out. As a result the exam pass mark results reflect the average of a larger number of poorly performing female candidates.

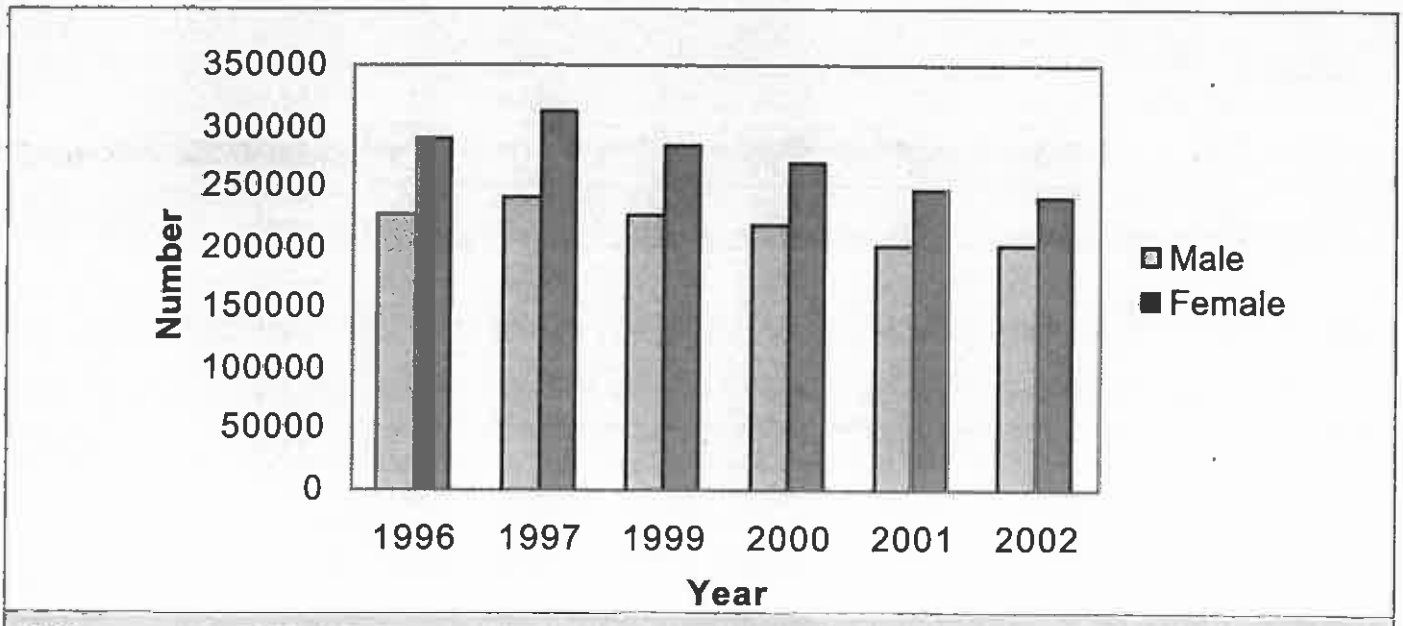
Disaggregating the data by type of SC result attained, race and province shows some fascinating insights – female candidates are performing as well as, if not better than, their male counterparts in most instances. To understand the dynamics in the SCE better we begin the paper by looking at the participation of female learners in the school system. The paper then looks at the descriptive statistics that are publicly available and finally in more detail at the average aggregates by province, race and gender. The paper concludes by looking at female performance in mathematics and physical science.

In a continuing and most commendable effort to promote transparency and further research that monitors the education system, the Department of Education has made the 2002 SCE database available to this study.(1) Included in this database are all the subject results of every candidate writing the 2002 SCE and, for the first time, the race of every candidate. This makes it possible to begin to understand and monitor the achievement of learners by race and gender. This is in no way intended to be punitive and it must be clearly understood that the education system has only begun to turn the tide of the apartheid legacy. Hopefully our findings here can be considered a baseline for watching the system improve each year.

FEMALE PARTICIPATION RATES AT SECONDARY LEVEL

The number of female learners has been greater than that of male learners for a number of years. This is most pronounced in secondary schooling and in 2000, there were 2,1m female secondary learners (53% of the total) and 1,87m male secondary learners. Figure 1 shows that in the primary grades there are more male than female learners, whereas in the secondary grades there are more female learners. This might, at first glance, be attributed to a greater number of female learners repeating. However, this is not the case – the average age of female learners is between a quarter and half a year lower than that of male learners in all rades. In addition,

Figure 2: Male and Female Enrolment in the SCE, 1996 - 2002



Note: Data was not published by gender in 1998.
Source: Department of Education, Results of the Senior Certificate Examinations 1996 - 2002.

TABLE 1 NUMBER OF CANDIDATES, PASSES AND ENDORSEMENTS BY GENDER, 1996 - 2002

Year	Gender	Candidates	% of total candidates	Passes	% of total passes	Endorsements	% of total endorsements
1996	Male	228 082	44.0%	133 321	47.8%	39 034	48.9%
	Female	289 950	56.0%	145 637	52.2%	40 734	51.1%
1997	Male	242 617	43.6%	124 290	47.5%	33 516	48.6%
	Female	313 729	56.4%	137 110	52.5%	35 491	51.4%
1999	Male	226 425	44.3%	118 441	47.4%	30 304	47.6%
	Female	285 049	55.7%	131 390	52.6%	33 421	52.4%
2000	Male	219 969	44.9%	134 622	47.5%	32 969	48.0%
	Female	269 972	55.1%	148 672	52.5%	35 657	52.0%
2001	Male	202 212	45.0%	128 629	46.4%	31 539	46.6%
	Female	247 159	55.0%	148 577	53.6%	36 168	53.4%
2002	Male	202 730	45.7%	143 289	46.9%	35 392	47.2%
	Female	241 091	54.3%	162 485	53.1%	39 656	52.8%

Note: Data was not published by gender in 1998.
Source: Department of Education, Results of the Senior Certificate Examinations 1996 – 2002.

female learners are much more closely clustered around the appropriate age for a particular grade. While there are no gender data available on the number of learners repeating, it appears that male learners – due to the greater number of overage male learners in each grade – actually start repeating grades early on, continue to do so and then begin to drop out in the secondary grades.

What appears to be happening is that female learners – even those who are getting a poor quality of education – are remaining in the school system, while their male counterparts – who might otherwise also have risked failing the SCE – are dropping out of school.

This pattern of female retention is not easy to explain and there is a dearth of school and/or household level studies on this matter. We suggest that while female learners are retained, their male counterparts have become disillusioned and leave to seek employment. And indeed, historically, there has been a labour market for men without some sort of school-leaving certificate. Other factors in the retention of female learners would be the more homebound nature of young women and the historical labour market in teaching, nursing and social work for women, which requires a school-leaving certificate. Truscott (1994) concurs with this view, citing increased employment opportunities for women between the 1960s and 1980s, especially in teaching and nursing, as a large contributing factor to their staying in school. She also suggests that the relative increase in *lobola* for women with post-secondary education plays a role in the retention of girls in the school system.

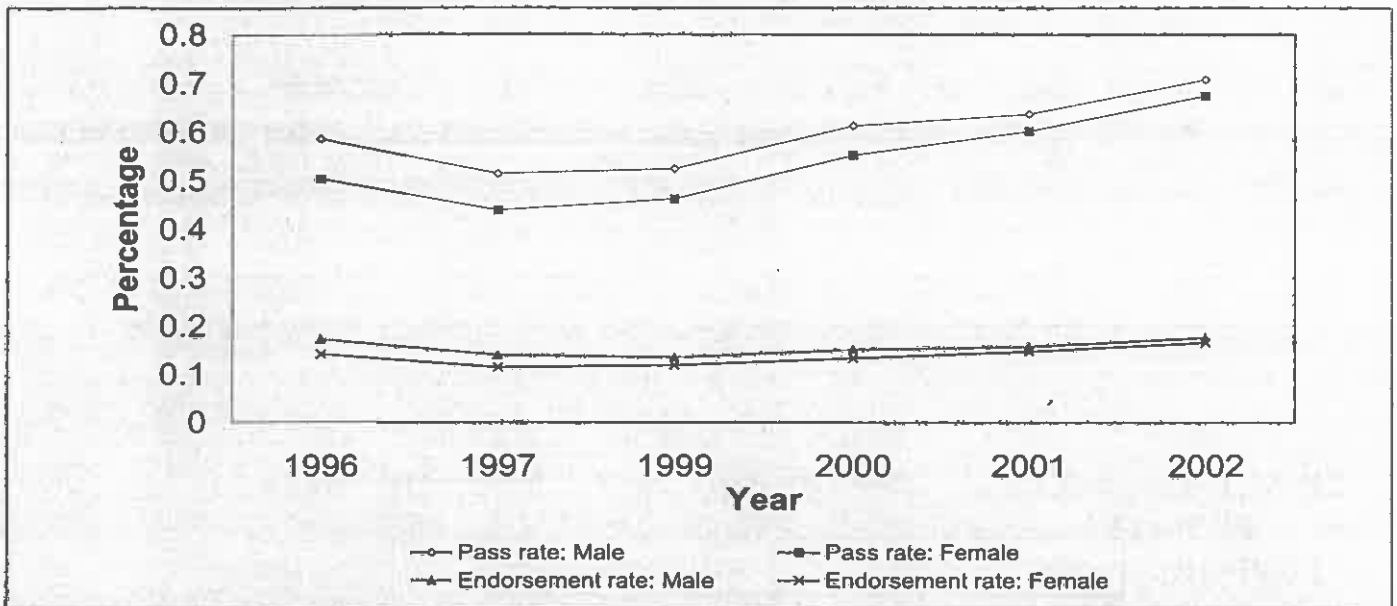
Female retention is also reflected at SCE level, where more female than male candidates are enrolled – this has been the case for a number of years. Figure 2 shows this graphically from 1996 to 2002. The gap between the number of male and female candidates has been decreasing over this time period, which may be due to the general discouragement and dropout of candidates unlikely to succeed in passing the SCE. As we will see, this is more likely to affect female than male candidates.

THE PERFORMANCE GAP DECREASES

Notwithstanding the fact that more female candidates write and in fact pass the SCE, the percentage of female candidates passing and gaining an endorsement continues to be lower than that of male candidates (see table 1). However, over the past six years this gap has been narrowing. As suggested above, this may be due to a decrease in the number of weaker female candidates rather than an improvement in their performance.

As can be seen in figure 3, the difference between male and female pass and endorsement rates has been decreasing steadily since 1996. In 1996 there was an 8.2 percentage point difference between male and female pass rates, which decreased to 3.3 percentage points in 2002. The difference between the percentage of male and female candidates obtaining an endorsement decreased from 3.1 to 1.0 percentage points over this period.

Figure 3: Pass Rates and Endorsement Rates by Gender, 1996 - 2002



Note: Data was not published by gender in 1998.
Source: Department of Education, Results of the Senior Certificate Examinations 1996 - 2002.

TABLE 2 NUMBER OF CANDIDATES GAINING MERIT AND DISTINCTION BY GENDER, 2001 & 2002

Year	Gender	Merit	% of total gaining merit	Distinction	% of total gaining distinction
2001	Male	13 260	41.9%	2 490	38.9%
	Female	18 413	58.1%	3 917	61.1%
	Total	**31 673**	**100.0%**	**6 407**	**100.0%**
2002	Male	15 815	43.1%	3 390	40.3%
	Female	20 840	56.9%	5 022	59.7%
	Total	**36 655**	**100.0%**	**8 412**	**100.0%**

Source: Department of Education, Results of the Senior Certificate Examinations 2001 - 2002.

MORE FEMALES IN THE MERIT AND DISTINCTION CATEGORIES

In 2001 and 2002, the Department of Education published the SCE results by merit and distinction and showed the gender performance within this. An SCE with merit entails an average of a C (60%) or a B (70%) and an SCE with distinction entails an average of an A (80%). It became clear for the first time that female candidates at the top end of the SCE performance were doing appreciably better than male candidates.

Table 2 shows that in 2001, of the 31 673 candidates gaining a merit, 58% were female. Of the 6 407 candidates gaining a distinction, 61% were female. This pattern was repeated in 2002: of the 36 655 candidates gaining a merit, 57% were female, and of the 8 412 candidates gaining a distinction, 60% were female.

These results were somewhat unexpected and are the first nationally valid indication to become publicly available that barriers to female education attainment in respect of 'higher quality' are being addressed, either systematically or through the growing confidence of female learners.

TABLE 3 NUMBER OF CANDIDATES AND AGGREGATE MARK OBTAINED BY CANDIDATES WHO FAILED AND WHO PASSED, WITH AND WITHOUT ENDORSEMENT, 2002

Gender	Candidates	Average aggregate	Failed	Average aggregate	Passed	Average aggregate	Passed with endorsement	Average aggregate	% pass	% endorsement
Female	243 164	887	79 116	625	124 138	907	39 910	1 346	67.5%	16.4%
Male	204 488	891	59 807	621	109 088	906	35 593	1 299	70.8%	17.4%
Total	**447 652**	**889**	**138 923**	**623**	**233 226**	**906**	**75 503**	**1 324**	**69.0%**	**16.9%**

Source: Calculated from the Department of Education 2002 SCE database.

DISAGGREGATING FEMALE PERFORMANCE

What starts to emerge from this picture is that there are two extremes of female performance – where females at the top end are outperforming their male counterparts and where females at the bottom end appear to be doing worse. It is worth disaggregating the results somewhat in an attempt to understand more of these dynamics.

Because the percentage of females passing is somewhat skewed by the higher number of weaker female candidates retained in the system, the following sections will focus in large part on the aggregate or total marks obtained by candidates – this is the combined mark of all subjects. Candidates writing the SCE for endorsement are required to take at least four subjects on the higher grade – this constitutes at least an aggregate mark of 2 100 of which 950 marks is the minimum aggregate required to pass. (Candidates with 940 marks are awarded a pass as long as the specific subject requirements have been met.) Candidates writing the SCE without endorsement may take their subjects on the higher or standard grade and the minimum aggregate mark out of which candidates are awarded an SC is 1 800. The requirement for an SCE pass is 720 marks.

While the average aggregate mark is also skewed by the number of female candidates in the lower aggregate mark range, it is interesting to disaggregate the average aggregate and look at gender performance. Table 3 shows that the average aggregate of all female candidates is lower than that of all male candidates, due to the average being pulled down by the larger number of weaker female candidates – as is the case with the percentage of candidates who pass. However, if one looks at the average aggregate of those who fail and of those who pass with and without endorsement, the picture changes somewhat. Female candidates' average aggregate marks are slightly higher than those of males in respect of those who failed, the same for those who passed and higher for those who gained an endorsement.

This suggests that even female candidates who are failing are attaining a similar level of subject knowledge as their male counterparts. Certainly female candidates gaining an endorsement are achieving more than their male counterparts.(2)

Another way to understand the difference in performance and the impact of the bulge of poorer female performance would be to look at the aggregate marks of male and female candidates at the 10th, 25th, 50th, 75th and 90th percentiles (see table 4). From the 10th to the 50th percentile the aggregate marks of females are some 10 to 20 marks lower than males. By the 75th percentile the gap is narrowing, and in the 90th percentile female performance is 33 marks better than that of males. In other words, the bottom three-quarters of female candidates are attaining a lower aggregate than the lower three-quarters of male candidates. However, the top quarter of female candidates are attaining a higher aggregate than their

TABLE 4 CANDIDATES' AGGREGATE MARKS BY PERCENTILE AND GENDER, 2002

Percentiles	Female	Male
10th	586	592
25th	689	703
50th	828	847
75th	1 019	1 026
90th	1 278	1 245

Source: Calculated from the Department of Education 2002 SCE database.

male counterparts. This result must still be seen in the context of a greater proportion of female candidates in the lower end of the system – and, as was seen in table 3, the *average aggregate* of these candidates is on a par with their male counterparts.

This pattern of performance is repeated in most provinces, with female candidates' average aggregate the same or slightly lower than male candidates for those passing without endorsement, and higher for those passing with endorsement. The exception is Limpopo, where the average aggregate of females gaining an endorsement is lower than that of male candidates (see figure 4).

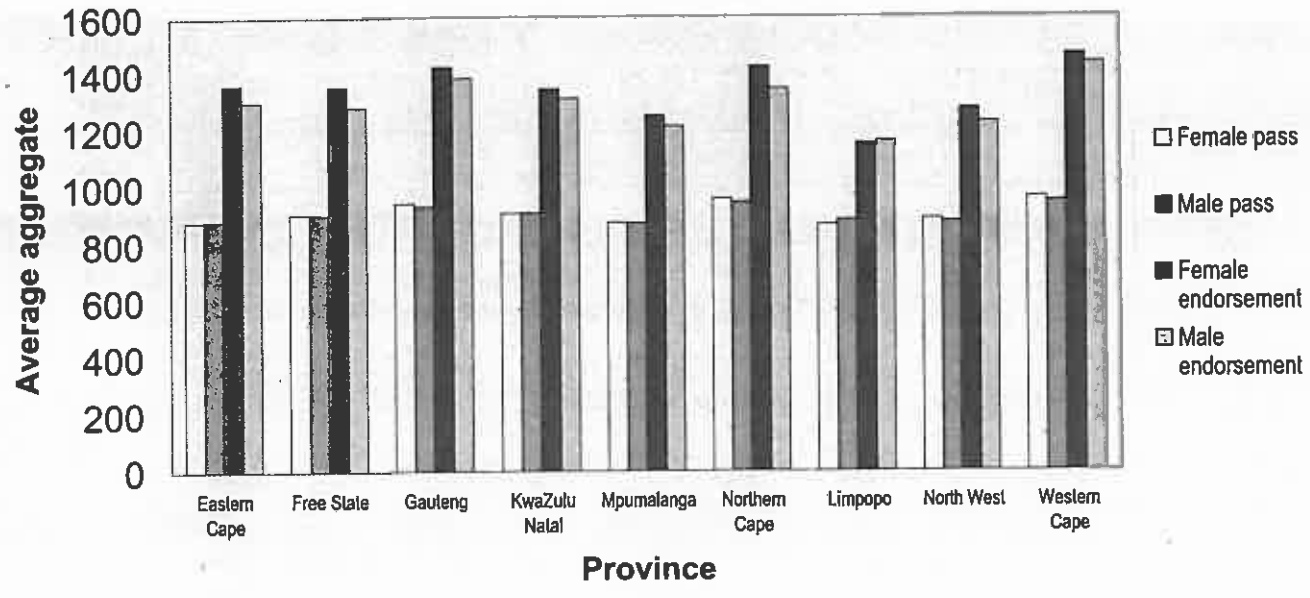
Table 5 shows that in terms of the proportion of candidates gaining an SCE pass with endorsement, there is great variation between the provinces. Within this there is also considerable variation in respect of gender. The national endorsement rate for male candidates is 16.6% and for female candidates 15.6%. The Western Cape, KwaZulu-Natal and Gauteng have proportionally more females gaining an endorsement than males, while Mpumalanga and Limpopo have a significantly lower proportion of females than males gaining an endorsement.

In order to understand these dynamics somewhat it is instructive to disaggregate the results by race. Table 6 shows that the overall aggregate of African females is lower than that of African males. However, the aggregate of African females failing is higher than that of males who fail, that of African females passing is lower than that of males, and African females gaining an endorsement have a higher average aggregate. However, while the average aggregate may be higher, there are substantially fewer African females gaining an endorsement. Only 9.4% of all African female candidates gain an endorsement, compared with 12.2% of their male counterparts.

The average aggregate of coloured, Indian and white females, on the other hand, is higher than their male counterparts at all levels. While the proportion of Indian females gaining an endorsement is much higher than Indian males, the average aggregate is only 18 marks higher. White females are outperforming their male counterparts by far, with 54% gaining an endorsement compared with 45% of white males. Their average aggregate is an overall 118 marks higher, and white females passing with endorsement have an average aggregate 59 marks higher.

This is quite an astonishing feat of 'excellence hiding behind the averages'. In an analysis that could not have been achieved by merely looking at the pass rates, it emerges that in almost all cases the disaggregated average aggregate of female candidates is higher than that of male candidates. With the exception of African females, the proportion of female candidates gaining an endorsement is substantially higher than that of males.

Figure 4: Provincial Average Aggregate for Candidates Passing and Candidates gaining an Endorsement by Gender, 2002



Source: Calculated from the Department of Education 2002 SCE database.

TABLE 5 CANDIDATES BY GENDER AND PROVINCE AND AGGREGATE MARK OBTAINED BY CANDIDATES WHO FAILED AND WHO PASSED, WITH AND WITHOUT ENDORSEMENT, 2002

Province	Gender	Total	Average aggregate	Failed	Average aggregate	Passed	Average aggregate	Passed with endorsement	Average aggregate	% pass	% endorsement
EC	Female	37 237	773	18 560	593	15 902	881	2 775	1 363	50.2%	7.5%
	Male	28 434	784	13 036	586	12 923	884	2 475	1 303	54.2%	8.7%
FS	Female	13 066	899	4 102	625	6 596	907	2 368	1 356	68.6%	18.1%
	Male	12 227	904	3 279	622	6 535	905	2 413	1 285	73.2%	19.7%
GT	Female	36 200	985	8 017	637	20 037	945	8 146	1 426	77.9%	22.5%
	Male	30 298	962	6 527	631	17 526	935	6 245	1 386	78.5%	20.6%
KN	Female	52 052	909	15 214	628	27 009	908	9 829	1 347	70.8%	18.9%
	Male	46 234	895	13 453	620	24 849	910	7 932	1 314	70.9%	17.2%
LP	Female	38 526	837	12 954	652	19 898	869	5 674	1 156	66.4%	14.7%
	Male	32 923	881	8 782	654	17 331	885	6 810	1 166	73.3%	20.7%
MP	Female	21 895	791	10 206	617	9 572	877	2 117	1 253	53.4%	9.7%
	Male	17 923	808	7 337	612	8 390	875	2 196	1 216	59.1%	12.3%
NC	Female	3 154	1 011	338	651	2 248	960	568	1 425	89.3%	18.0%
	Male	2 754	995	260	652	1 979	948	515	1 349	90.6%	18.7%
NW	Female	19 976	860	6 770	649	10 466	888	2 740	1 278	66.1%	13.7%
	Male	16 518	863	4 957	642	9 002	880	2 559	1 230	70.0%	15.5%
WC	Female	21 058	1 056	2 955	639	12 410	966	5 693	1 468	86.0%	27.0%
	Male	17 177	1 038	2 176	641	10 553	952	4 448	1 438	87.3%	25.9%

Source: Calculated from the Department of Education 2002 SCE database.

TABLE 6 NUMBER OF CANDIDATES BY RACE, GENDER AND AGGREGATE MARK OBTAINED BY THOSE WHO FAILED AND THOSE WHO PASSED, WITH OR WITHOUT ENDORSEMENT, 2002

Race	Gender	Total	Average aggregate	Failed	Average aggregate	Passed	Average aggregate	Passed with endorsement	Average aggregate	% pass	% endorsement
African	Female	191 144	807	75 672	624	97 299	878	18 150	1 193	60.4%	9.5%
	Male	158 581	829	56 044	618	83 070	887	19 438	1 187	64.6%	12.3%
Coloured	Female	18 168	966	2621	647	12 305	937	3 241	1 337	85.6%	17.8%
	Male	14 501	934	2359	643	9 983	919	2 157	1 319	83.7%	14.9%
Indian	Female	8 180	1 205	503	680	2 870	955	4 797	1 412	93.7%	58.6%
	Male	6 993	1 102	779	662	3 086	920	3 119	1 394	88.7%	44.6%
White	Female	25 207	1 331	177	718	11 343	1 108	13 633	1 529	99.1%	54.1%
	Male	24 097	1 213	527	704	12 678	1 020	10 835	1 470	97.6%	45.0%
Other/ Unknown	Female	553	862	143	653	321	892	89	1 211	74.1%	16.1%
	Male	413	858	98	651	271	881	44	1 229	76.3%	10.7%

Source: Calculated from the Department of Education 2002 SCE database.

While disaggregating the results by race and gender for each province is rather cumbersome, it is instructive to see where the candidates gaining endorsement are being produced – both in terms of absolute numbers and in terms of proportion of candidates. Figure 5 and table 12 show that the bulk of African candidates gaining endorsement are from KwaZulu-Natal and Limpopo. However, having pointed this out, only 10% of African candidates in KwaZulu-Natal gain an endorsement whereas 20% of African males and 14% of African females in Limpopo gain an endorsement. (Limpopo's achievement is a fairly recent development – the number of candidates gaining an endorsement in Limpopo increased by 14% between 2001 and 2002, or from 13% to almost 18% of its candidates. In addition, the number of candidates in the province declined by 13% between 2001 and 2002.)

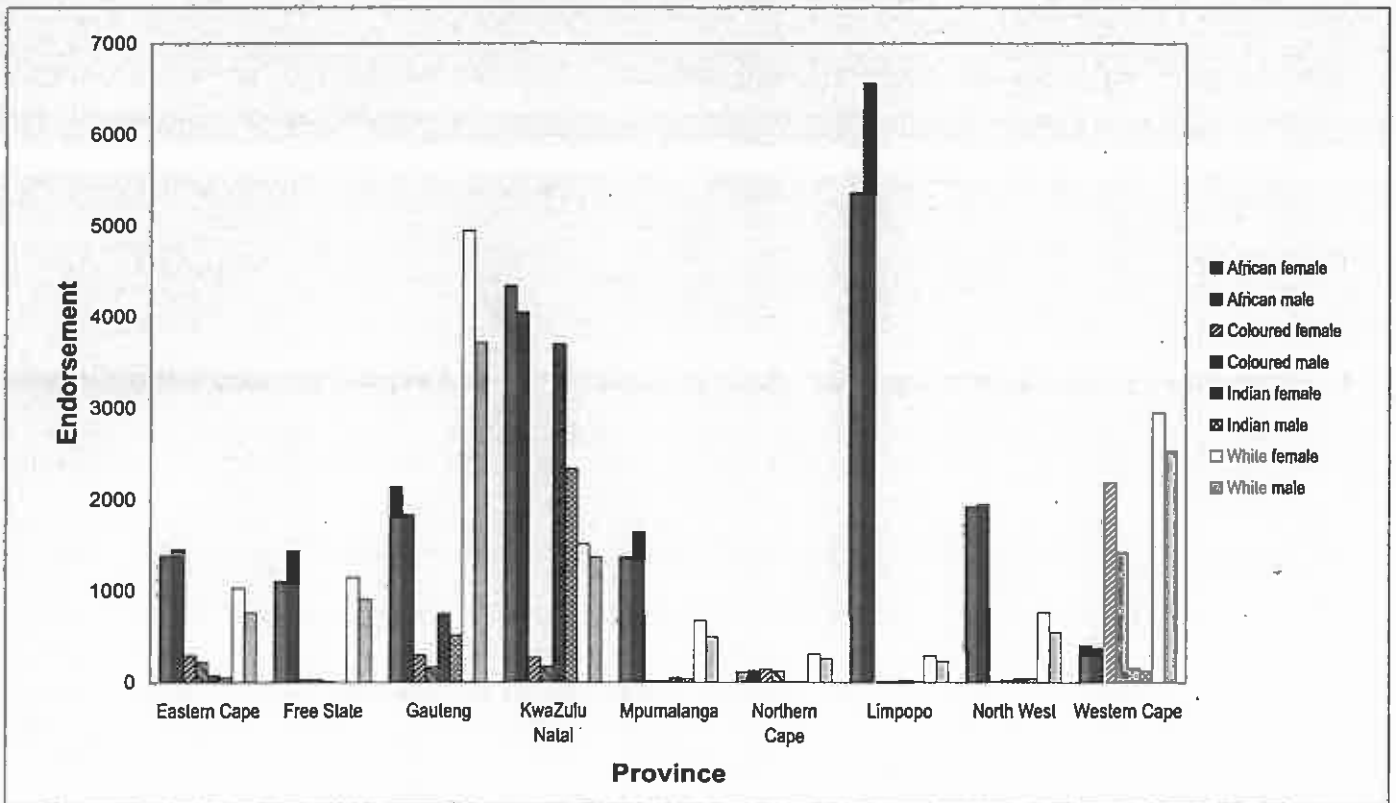
RESULTS BY RACE AND FORMER DEPARTMENT

Table 7 shows the number of candidates by race and former department administering the school – all former African departments, House of Assembly (HoA), House of Delegates (HoD) and House of Representatives (HoR).(3) What is not entirely surprising is that African, coloured and Indian pass and endorsement rates are higher in former HoA schools than in the respective racially based former departments. What is surprising is a significantly higher subscription of African females than males in former HoA schools – and they appear to do better in these schools than their male counterparts. Approximately 20% of African female candidates and 12% of African male candidates who gain an endorsement are from former HoA schools. Also surprisingly few African candidates are enrolled in former HoD and HoR schools.

MATHEMATICS AND PHYSICAL SCIENCE PERFORMANCE BY GENDER

In most subjects the gender profile is similar to the overall performance, with more female candidates enrolled but a lower proportion of female candidates passing overall and a higher proportion of female candidates performing well at the higher grade level. This picture is not quite the same for mathematics and physical science.

Figure 5: Number of Candidates by Race, Gender and Province gaining an Endorsement, 2002



Source: Calculated from the Department of Education 2002 SCE database.

TABLE 7 NUMBER OF CANDIDATES WHO PASSED OVERALL AND WITH ENDORSEMENT, BY RACE, GENDER AND FORMER DEPARTMENT, 2002

Race	Gender		African Depts		House of Assembly		House of Delegates		House of Representatives	
			No.	% pass	No.	% pass	No.	% pass	No.	% pass
African	Female	Candidates	176 574	-	8 488	-	3 002	-	3 057	-
		Total pass	103 109	58.4%	7 849	92.5%	2 267	75.5%	2 224	72.8%
		Pass with endorsement	14 508	8.2%	2 935	34.6%	427	14.2%	280	9.2%
	Male	Candidates	148 312	-	6 076	-	2 150	-	2 014	-
		Total pass	93 713	63.2%	5 604	92.2%	1 649	76.7%	1 542	76.6%
		Pass with endorsement	17 156	11.6%	1 791	29.5%	274	12.7%	217	10.8%
Coloured	Female	Candidates	227	-	4 106	-	250	-	13 584	-
		Total pass	156	68.7%	3 877	94.4%	219	87.6%	11 294	83.1%
		Pass with endorsement	22	9.7%	1 333	32.5%	63	25.2%	1 823	13.4%
	Male	Candidates	208	-	3 417	-	202	-	10 672	-
		Total pass	142	68.3%	3 157	92.4%	163	80.7%	8 678	81.3%
		Pass with endorsement	24	11.5%	901	26.4%	32	15.8%	1 200	11.2%
Indian	Female	Candidates	13	-	1 273	-	6 764	-	120	-
		Total pass	10	76.9%	1 258	98.8%	6 280	92.8%	119	99.2%
		Pass with endorsement	4	30.8%	1 003	78.8%	3 719	55.0%	71	59.2%
	Male	Candidates	14	-	1 032	-	5 811	-	127	-
		Total pass	10	71.4%	1 012	98.1%	5 060	87.1%	123	96.9%
		Pass with endorsement	7	50.0%	717	69.5%	2 320	39.9%	75	59.1%
White	Female	Candidates	0	-	25 096	-	0	-	0	-
		Total pass	-	-	24 941	99.4%	-	-	-	-
		Pass with endorsement	-	-	13 630	54.3%	-	-	-	-
	Male	Candidates	0	-	23 983	-	0	-	0	-
		Total pass	-	-	23 473	97.9%	-	-	-	-
		Pass with endorsement	-	-	10 824	45.1%	-	-	-	-

Note: Totals are not exactly the same as previous tables due to missing data in some categories.
Source: Calculated from the Department of Education 2002 SCE database.

Female performance in mathematics has improved substantially over the period 1996 – 2002, with both the number of female candidates participating growing at a faster rate than male candidates and the gender gap in pass rates decreasing. The percentage of female candidates passing higher grade mathematics was higher by 2002 than that of male candidates. This, however, needs to be seen against the background of a relatively greater decrease in the number of female candidates entering for the higher grade. This suggests a discouragement at the school level of female candidates from enrolling in higher grade mathematics.

TABLE 8 NUMBER OF MATHEMATICS CANDIDATES AND PASSES, AVERAGE ANNUAL GROWTH AND PASS RATES BY GENDER, 1996 AND 2002

Mathematics	Gender	1996	2002	Average annual growth	Pass rate 1996	Pass rate 2002
Candidates	Male	103 056	122 902	2.5%	-	-
	Female	111 677	138 087	3.1%	-	-
Passes	Male	48 701	63 299	3.8%	47.3%	51.5%
	Female	42 625	58 518	4.6%	38.2%	42.4%
HG candidates	Male	34 577	18 867	-8.3%	-	-
	Female	30 646	16 598	-8.4%	-	-
HG passes	Male	12 817	10 804	-2.4%	37.1%	57.3%
	Female	9 599	9 724	0.2%	31.3%	58.6%
HG conversion SG	Male	5 497	2 831	-9.0%	-	-
	Female	3 799	2 156	-7.8%	-	-
SG candidates	Male	68 479	104 035	6.2%	-	-
	Female	81 031	121 489	6.0%	-	-
SG passes	Male	30 387	49 664	7.3%	44.4%	47.7%
	Female	29 227	46 638	6.9%	36.1%	38.4%

TABLE 9 NUMBER OF PHYSICAL SCIENCE CANDIDATES AND PASSES, AVERAGE ANNUAL GROWTH AND PASS RATES BY GENDER, 1996 AND 2002

Physical science	Gender	1996	2002	Average annual growth	Pass rate 1996	Pass rate 2002
Candidates	Male	65 121	80 422	3.1%	-	-
	Female	57 400	73 433	3.6%	-	-
Passes	Male	42 899	52 668	3.0%	65.9%	65.5%
	Female	31 211	42 983	4.7%	54.4%	58.5%
HG candidates	Male	37 941	28 279	-4.1%	-	-
	Female	32 328	22 713	-4.9%	-	-
HG passes	Male	15 140	13 979	-1.1%	39.9%	49.4%
	Female	10 322	10 909	0.8%	31.9%	48.0%
HG conversion SG	Male	10 312	7 933	-3.7%	-	-
	Female	8 030	6 089	-3.9%	-	-
SG candidates	Male	27 180	52 143	9.8%	-	-
	Female	25 072	50 720	10.6%	-	-
SG passes	Male	17 447	30 756	8.4%	64.2%	59.0%
	Female	12 859	25 985	10.6%	51.3%	51.2%

Source Tables 8 and 9: Department of Education, ibid, 1997 and 2003

The participation of female candidates in physical science is interestingly different to that of mathematics. While the number of female candidates enrolled for and passing physical science has increased more rapidly compared with male candidates, the gap between the male and female pass rates is wider than in mathematics (see table 9).

Tables 10 and 11 show the number of higher grade mathematics and physical science candidates by race as well as the number passing and the percentage pass rate. Again there is a markedly better performance at the higher grade by Indian and white female candidates.

TABLE 10 HIGHER GRADE MATHEMATICS CANDIDATES, NUMBER PASSING AND NUMBER CONVERTING TO A STANDARD GRADE PASS BY RACE AND GENDER, 2002

		Candidates	%	HG pass	Pass rate	Converting to SG pass No.	%
African	Female	7 184	42.7%	1 638	22.8%	1 300	18.1%
	Male	9 634	57.3%	2 999	31.1%	1 978	20.5%
	Total	16 818	100.0%	4 637	27.6%	3 278	19.5%
Coloured	Female	742	49.1%	511	68.9%	141	19.0%
	Male	769	50.9%	556	72.3%	148	19.2%
	Total	1 511	100.0%	1 067	70.6%	289	19.1%
Indian	Female	2 231	52.9%	1 614	72.3%	416	18.6%
	Male	1 987	47.1%	1 421	71.5%	353	17.8%
	Total	4 218	100.0%	3 035	72.0%	769	18.2%
White	Female	6 334	50.0%	5 632	88.9%	604	9.5%
	Male	6 329	50.0%	5 394	85.2%	746	11.8%
	Total	12 663	100.0%	11 026	87.1%	1 350	10.7%
Other/unknown	Female	31	45.6%	18	58.1%	3	9.7%
	Male	37	54.4%	15	40.5%	10	27.0%
	Total	68	100.0%	33	48.5%	13	19.1%
Total	Female	16 522	46.8%	9 413	57.0%	2 464	14.9%
	Male	18 756	53.2%	10 385	55.4%	3 235	17.2%
	Total	**35 278**	**100.0%**	**19 798**	**56.1%**	**5 699**	**16.2%**

TABLE 11 HIGHER GRADE PHYSICAL SCIENCE CANDIDATES, NUMBER PASSING AND NUMBER CONVERTING TO A STANDARD GRADE PASS BY RACE AND GENDER, 2002

		Candidates	%	HG pass	Pass rate	Converting to SG pass No.	%
African	Female	13 319	44.2%	2 654	19.9%	5 262	39.5%
	Male	16 837	55.8%	4 475	26.6%	6 508	38.7%
	Total	30 156	100.0%	7 129	23.6%	11 770	39.0%
Coloured	Female	786	45.4%	570	72.5%	187	23.8%
	Male	945	54.6%	681	72.1%	213	22.5%
	Total	1 731	100.0%	1 251	72.3%	400	23.1%
Indian	Female	2 617	50.7%	1 973	75.4%	538	20.6%
	Male	2 540	49.3%	1 736	68.3%	623	24.5%
	Total	5 157	100.0%	3 709	71.9%	1 161	22.5%
White	Female	5 815	43.0%	5 098	87.7%	649	11.2%
	Male	7 706	57.0%	6 206	80.5%	1 355	17.6%
	Total	13 521	100.0%	11 304	83.6%	2 004	14.8%
Other/unknown	Female	57	43.5%	17	29.8%	20	35.1%
	Male	74	56.5%	24	32.4%	25	33.8%
	Total	131	100.0%	41	31.3%	45	34.4%
Total	Female	22 594	44.6%	10 312	45.6%	6 656	29.5%
	Male	28 102	55.4%	13 122	46.7%	8 724	31.0%
	Total	**50 696**	**100.0%**	**23 434**	**46.2%**	**15 380**	**30.3%**

Source for Tables 10 and 11: Calculated from the Department of Education 2002 SCE database.
Note: The total number of candidates and passes does not reflect exactly those figures published by the DoE due to excluding those candidates who gained a condoned pass. (A condoned pass is given to a candidate who may have failed a single subject but has a sufficient aggregate mark and satisfies all other conditions to pass overall.)

CONCLUSION

A number of interesting issues emerge from this analysis. What has previously been assumed – by analysing the gender difference in the SCE pass rate – to be poorer female performance is clearly not the case. By using other indicators and disaggregating the data somewhat it is clear that female candidates throughout the system are attaining the same or better results than male candidates. That there are more weaker female candidates writing the SCE is clear, however, largely because they are staying in school when their male counterparts are dropping out.

It is likely that this trend is similar to what is happening in some of the other countries mentioned earlier. In this event, female performance is set to strengthen even further against male performance. It would be instructive to understand the classroom, family and individual determinants underlying this phenomenon – not only to understand how the system is failing male learners but to ensure that the potential of all learners is developed.

FOOTNOTES

(1) The full candidate level database has been made available by the Department of Education through Phambili Information Technologies, the agent employed to manage and maintain the database. This database contains the subject level record of each candidate writing the SCE.

(2) A brief investigation of Independent Examinations Board candidates shows that there are slightly more female candidates enrolled, and that the pass rates of male and female candidates are comparable. As such we conclude that male candidates who might be performing at the top end are not more inclined to be enrolled in the IEB. In other words, there does not appear to be an exit of otherwise top performing male candidates from the SCE system. Enrolments in the IEB examinations are unlikely to introduce a bias in our results.

(3) Former department was derived by a combination of assessing the predominant race of the school from the SCE 2002 database and linking this database to the School Register of Needs 2000 database, which gives the former department of each school. It was unfortunately impossible to extract independent schools from the database, and these had to be flagged as former African, HoA, HoD and HoR by their predominant race.

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- Department of Education, 2000 School Register of Needs data.
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TABLE 12 CANDIDATES BY PROVINCE, RACE AND GENDER AND AGGREGATE MARK OBTAINED BY CANDIDATES WHO FAILED AND WHO PASSED, WITH AND WITHOUT ENDORSEMENT, 2002

		Total candi-dates	Average aggre-gate	Fail	Average aggre-gate	Pass	Average aggre-gate	Endorse-ment	Average aggre-gate	% pass	% endorse-ment
EASTERN CAPE											
African	Female	33 292	730	18 206	592	13 704	864	1 382	1 228	45.3%	4.2%
	Male	25 084	746	12 689	584	10 947	873	1 448	1 210	49.4%	5.8%
Coloured	Female	1 945	925	344	646	1 312	913	289	1 313	82.3%	14.9%
	Male	1 644	898	314	635	1 112	892	218	1 304	80.9%	13.3%
Indian	Female	103	1 377	4	672	25	976	74	1 551	96.1%	71.8%
	Male	85	1 221	3	551	34	968	48	1 442	96.5%	56.5%
White	Female	1 897	1 343	6	700	861	1 107	1 030	1 545	99.7%	54.3%
	Male	1 621	1 227	30	701	830	1 021	761	1 471	98.1%	46.9%
FREE STATE											
African	Female	10 321	819	3 901	623	5 313	881	1 107	1 209	62.2%	10.7%
	Male	9 690	848	3 077	620	5 169	888	1 444	1 192	68.2%	14.9%
Coloured	Female	294	881	76	623	194	919	24	1 398	74.1%	8.2%
	Male	290	855	76	616	189	895	25	1 279	73.8%	8.6%
Indian	Female	8	1 290	0	-	3	1 050	5	1 433	100.0%	62.5%
	Male	3	960	0	-	2	879	1	1 122	100.0%	33.3%
White	Female	2 027	1 303	44	692	831	1 068	1 152	1 502	97.8%	56.8%
	Male	1 973	1 186	75	692	991	1 003	907	1 433	96.2%	46.0%
Unknown	Female	416	938	81	655	255	920	80	1 284	80.5%	19.2%
	Male	271	903	51	645	184	893	36	1 315	81.2%	13.3%
GAUTENG											
African	Female	23 427	849	7 400	636	13 888	901	2 139	1 249	68.4%	9.1%
	Male	18 753	853	5 755	627	11 163	905	1 835	1 248	69.3%	9.8%
Coloured	Female	1 923	933	400	644	1 226	929	297	1 336	79.2%	15.4%
	Male	1 352	885	328	633	860	902	164	1 308	75.7%	12.1%
Indian	Female	1 303	1 212	91	655	459	963	753	1 431	93.0%	57.8%
	Male	1 145	1 107	135	667	495	943	515	1 380	88.2%	45.0%
White	Female	9 410	1 306	64	722	4 398	1 087	4 948	1 507	99.3%	52.6%
	Male	8 906	1 187	262	704	4 921	1 008	3 723	1 459	97.1%	41.8%
Other	Female	137	785	62	650	66	864	9	1 137	54.7%	6.6%
	Male	142	814	47	658	87	868	8	1 143	66.9%	5.6%
KWAZULU-NATAL											
African	Female	42 624	837	14 765	626	23 513	896	4 346	1 239	65.4%	10.2%
	Male	37 830	841	12 755	617	21 020	904	4 055	1 223	66.3%	10.7%
Coloured	Female	770	1 082	43	680	461	975	266	1 333	94.4%	34.5%
	Male	622	1 020	52	698	403	948	167	1 292	91.6%	26.8%
Indian	Female	6 359	1 196	400	685	2 255	949	3 704	1 402	93.7%	58.2%
	Male	5 396	1 090	621	660	2 435	910	2 340	1 392	88.5%	43.4%
White	Female	2 299	1 387	6	745	780	1 129	1 513	1 523	99.7%	65.8%
	Male	2 386	1 268	25	782	991	1 027	1 370	1 451	99.0%	57.4%
MPUMALANGA											
African	Female	20034	751	10163	616	8499	851	1372	1126	49.3%	6.8%
	Male	16140	775	7269	611	7222	857	1649	1141	55.0%	10.2%
Coloured	Female	132	952	23	704	94	969	15	1287	82.6%	11.4%
	Male	89	907	16	659	62	906	11	1271	82.0%	12.4%

TABLE 12 Continued

		Total candi-dates	Average aggre-gate	Fail	Average aggre-gate	Pass	Average aggre-gate	Endorse-ment	Average aggre-gate	% pass	% endorse-ment
Indian	Female	96	1 235	3	704	40	1 016	53	1 477	96.9%	55.2%
	Male	77	1 188	10	724	29	1 077	38	1 458	87.0%	49.4%
White	Female	1 633	1 239	17	694	939	1 096	677	1 493	99.0%	41.5%
	Male	1 617	1 111	42	689	1 077	993	498	1 444	97.4%	30.8%
NORTHERN CAPE											
African	Female	1 015	887	204	647	699	904	112	1 220	79.9%	11.0%
	Male	867	928	99	661	641	922	127	1 172	88.6%	14.6%
Coloured	Female	1 446	951	132	656	1 172	938	142	1 333	90.9%	9.8%
	Male	1 253	937	154	645	977	936	122	1 313	87.7%	9.7%
Indian	Female	9	1 390	0	-	3	1 231	6	1 469	100.0%	66.7%
	Male	7	1 269	1	645	1	1 211	5	1 405	85.7%	71.4%
White	Female	684	1 316	2	690	374	1 133	308	1 542	99.7%	45.0%
	Male	627	1 201	6	699	360	1 028	261	1 451	99.0%	41.6%
LIMPOPO											
African	Female	37 714	829	12 937	652	19 412	863	5 365	1 135	65.7%	14.2%
	Male	32 124	875	8 752	654	16 809	881	6 563	1 155	72.8%	20.4%
Coloured	Female	34	956	6	676	22	907	6	1 417	82.4%	17.6%
	Male	31	901	2	662	26	905	3	1 321	93.5%	9.7%
Indian	Female	21	995	0	-	7	1 066	14	1 315	100.0%	66.7%
	Male	22	1 061	2	768	9	1 130	11	1 443	90.9%	50.0%
White	Female	757	1 216	11	763	457	1 098	289	1 529	98.5%	38.2%
	Male	746	1 109	26	742	487	1 033	233	1 451	96.5%	31.2%
NORTH WEST											
African	Female	18 015	820	6 665	649	9 426	868	1 924	1 178	63.0%	10.7%
	Male	14 799	831	4 857	642	7 995	866	1 947	1 163	67.2%	13.2%
Coloured	Female	265	828	88	622	162	899	15	1 261	66.8%	5.7%
	Male	229	874	66	636	137	909	26	1 296	71.2%	11.4%
Indian	Female	64	1 310	2	893	25	1 059	37	1 502	96.9%	57.8%
	Male	58	1 263	2	729	19	963	37	1 480	96.6%	63.8%
White	Female	1 632	1 296	15	740	853	1 106	764	1 521	99.1%	46.8%
	Male	1 432	1 169	32	691	851	1 008	549	1 447	97.8%	38.3%
WESTERN CAPE											
African	Female	4 679	854	1 431	628	2 845	903	403	1 309	69.4%	8.6%
	Male	3 265	887	791	630	2 104	913	370	1 285	75.8%	11.3%
Coloured	Female	11 358	979	1 509	648	7 662	940	2 187	1 341	86.7%	19.3%
	Male	8 989	946	1 351	646	6 217	923	1 421	1 328	85.0%	15.8%
Indian	Female	207	1 329	3	620	53	990	151	1 462	98.6%	72.9%
	Male	191	1 260	5	763	62	972	124	1 424	97.4%	64.9%
White	Female	4 814	1 423	12	758	1 850	1 169	2 952	1 585	99.8%	61.3%
	Male	4 732	1 309	29	678	2 170	1 069	2 533	1 522	99.4%	53.5%

Source: Calculated from the Department of Education 2002 SCE database.

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