

APPENDIX 5

A LETTER FROM THE HUMAN SCIENCES RESEARCH COUNCIL WITH REGARD TO RESEARCH ON TEACHERS' APPLICATION OF SCIENCE PROCESS SKILLS TO THE TEACHING OF GEOGRAPHY IN SECONDARY SCHOOLS



HSRC
RGN

1999-03

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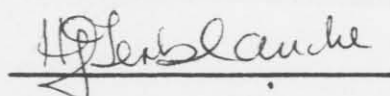
Dear Mr A. M. Rambuda

RESEARCH INFORMATION

Your request for a computer print-out refers.

According to the records of the **Database of Current and Completed Research in the Human Sciences**, no previous research has been done on this topic.

Yours sincerely



NEXUS DATABASE SYSTEM

APPENDIX 6

A LIST OF SCHOOLS THAT OFFERED GEOGRAPHY IN THE FREE STATE EDUCATION DEPARTMENT IN 1999

FREE STATE PROVINCIAL GOVERNMENT

Education

Private Bag X20565 • Bloemfontein • 9300 • South Africa
55 Elizabeth Street • CR Swart Building • Bloemfontein
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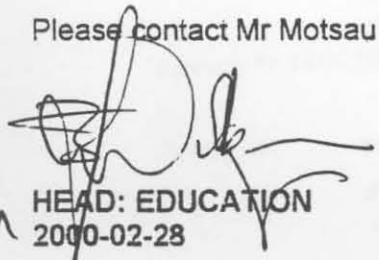
Mr A Rambuda
Vista University
PO Box 1881
WELKOM
9450

Dear Mr Rambuda

ENQUIRES ABOUT GEOGRAPHY

Enclosed please find some statistics with regard to Geography as a school subject. Please accept my apologies for not responding at an earlier stage. We are experiencing a severe manpower problem and enquiries such as yours must be addressed in between our other commitments. Unfortunately I do not have information about teachers teaching geography as a subject.

Please contact Mr Motsau at the Examination Section Tel. 051-4048250



HEAD: EDUCATION
2000-02-28



EDUC_DISTRICT:	School_Name:	Gr10	Gr11	G12	Tot
BETHLEHEM	0001 BEACON S/S	41	49	12	101
	0002 BETHLEHEM C/S	33	0	0	33
	0003 CLARENS C/S	33	49	81	163
	0004 DEO GLORIA CHRISTIAN C/S	1	0	0	1
	0005 DINARE S/S	136	94	65	295
	0006 ED-U-COLLEGE	0	0	5	5
	0007 GLENASH CF/S	119	82	89	290
	0008 IPOKELLENG S/S	64	58	42	164
	0009 ITHABISENG S/S	48	25	7	80
	0010 KOALI S/S	237	142	177	556
	0011 LEKGULO S/S	107	119	89	315
	0012 MAKGABANE S/S	94	72	28	194
	0013 MOHATO S/S	244	88	94	426
	0014 NKARABENG S/S	35	0	0	35
	0015 NTHABISENG S/S	43	102	42	187
	0016 PAUL ERASMUS S/S	23	17	9	49
	0017 REHOTSE S/S	61	0	18	79
	0018 REKGOTSOFTSE S/S	80	76	70	226
	0019 SEANAKWENA S/S	155	233	36	424
	0020 THABO-THOKOZA S/S	155	69	73	297
	0021 TISETSANG S/S	249	214	235	798
	0022 TSEKI S/S	93	95	51	239
	0023 VOORTREKKER S/S	30	56	49	135
	0024 WITTEBERG S/S 2'	40	70	38	148
Summary for 'EDUC_DISTRICT:' = BETHLEHEM (36 detail records)		2121	1809	1310	5240
BFN EAST	0025 CHRISTIAAN DE WET C/S	28	16	0	44
	0026 KGORATHUTO S/S	106	97	61	264
	0027 LEFIKENG S/S	68	48	25	141
	0028 LOUW WEPENER C/S	21	38	28	87
	0029 METSIMAPHODI S/S	89	53	52	234
	0030 MPATLENG S/S	79	86	92	257
	0031 NTEMOSENG S/S	137	140	66	343
	0032 NTUMEDISENG S/S	170	151	70	391
	0033 POPANO S/S	109	53	35	202
	0034 QIBING S/S	210	117	45	372
	0035 REAMOHETSE S/S	105	102	23	230
	0036 SEEMAHLE S/S	209	214	109	532
	0037 SENAKANGWEDI S/S	198	0	0	198
	0038 SETJHABA-SE-MAKETSE C/S	31	15	23	69
	0039 THAPELONG S/S 15'	33	23	13	69
Summary for 'EDUC_DISTRICT:' = BFN EAST (26 detail records)		1593	1198	642	3433
BFN SOUTH	0040 ALBERTINA SISULU S/S	12	34	35	81
	0041 BEANG TSE MOLEMO S/S	60	18	17	95
	0042 CALCULUS S/S	32	71	81	184



EDUC_DISTRICT:	School_Name:	Gr11	G12	Tot	
BFN SOUTH	0043 DR VILJOEN C/S	55	39	28	122
	0044 EDENBURG (REITZ-STEYNSTR)	30	24	22	76
	0045 FICHARDTPARK S/S	67	76	79	222
	0046 HENDRIK POTGIETER A/S	0	1	20	21
	0047 IKAELELO S/S	40	43	11	94
	0048 JIM FOUCHÉ S/S	48	45	42	135
	0049 KAGISHO CS/S	41	40	36	117
	0050 LERE LA THUTO S/S	121	191	76	388
	0051 LEREKO S/S	109	77	34	220
	0052 PELLISSIER C/S	13	11	7	31
	0053 RELEBOHILE SIBULELE C/S	49	49	13	111
	0054 ROUXVILLE S/S	106	41	34	181
	0055 SAND DU PLESSIS C/S	61	67	62	210
	0056 SPRINGFONTEIN S/S	88	63	31	182
	0057 ST BERNARDS S/S	30	36	29	95
	0058 THABO-VUYO S/S	32	22	18	72
	0059 TROMPSBURG S/S	0	0	4	4
	0060 UITKOMS CF/S	8	0	0	8
	0061 WONGALETHU S/S	60	63	0	123
	0062 ZASTRON C/S	15	18	12	45

Summary for 'EDUC_DISTRICT:' = BFN SOUTH (39 detail records)

1077 1029 711 2817

BFN WEST

0063	AKADEMIA S/S	69	43	34	146
0064	ARAMELA C/S	140	140	20	300
0065	BFN CHRISTIAN (ACE) C/S	0	1	0	1
0066	BLOEMFONTEIN S/S	100	77	49	226
0067	BOARAMELO C/S	38	35	34	107
0068	BOSHOF C/S	26	29	7	62
0069	BREBNER S/S	81	66	53	200
0070	C&N H/MEISIESKOOL ORANJE	21	40	41	102
0071	CHRISTIAN BROTHERS COLLE	15	11	13	39
0072	DR. BLOK S/S	95	28	10	133
0073	EUNICE S/S	60	38	32	130
0074	FAME COLLEGE	13	25	50	88
0075	GREY-KOLLEGE S/S	45	84	77	206
0076	HEADSTART HIGH	97	100	87	284
0077	HEATHERDALE CS/S	58	78	45	181
0078	IKANYEGENG C/S	25	25	15	65
0079	NOSENG C/S	76	55	38	169
0080	KAELANG S/S	145	151	112	408
0081	KAGISANO C/S	32	28	13	73
0082	K.GHOLOLOSEGO S/S	8	13	7	28
0083	KOFFIEFONTEIN C/S	11	11	4	26
0084	LEKHULONG S/S	294	187	128	609
0085	LUCKHOFF I/S	59	42	0	101
0086	MATSHEDISO S/S	79	121	69	269
0087	MOEMEDI S/S	118	103	56	277
0088	OLIJEN S/S	85	46	5	136



EDUC_DISTRICT:	School Name:	Gr11	G12	Tot
BFN WEST	0089 * OPPERMANS C/S	0	0	35
	0090 PANORAMA SECONDARY C/S	22	13	44
	0091 PETUNIA S/S	102	70	214
	0092 PRESIDENT STEYN C/S	37	19	82
	0093 REFIHLETSE C/S	41	27	81
	0094 REIKAELETSE S/S	32	31	79
	0095 SEHUNELO S/S	103	100	258
	0096 SENTRAAL S/S	58	81	195
	0097 SENZILE C/S	0	0	23
	0098 ST ANDREW'S C/S	21	33	83
	0099 ST MICHAEL'S C/S	10	12	35
	0100 STAATSPRES. SWART C/S	20	28	62
	0101 TATELLO	2	1	3
	0102 VULAMASANGO S/S	123	143	356

Summary for 'EDUC_DISTRICT:' = BFN WEST (62 detail records)

2396 2135 1385 5916

EDUC_DISTRICT:	School Name:	Gr11	G12	Tot
HARRISMITH	0103 ABERFELDY CF/S	50	32	108
	0104 DIRKIE UYS C/S	15	12	33
	0105 EERAM CF/S	61	39	134
	0106 HARRISMITH HOERSKOOL S/S	22	32	64
	0107 X HARRISMITH S/S	210	144	474
	0108 HLAJOANE S/S	88	72	236
	0109 INTABAZWE S/S	97	73	237
	0110 IPHONDLE S/S	186	144	392
	0111 LERATO THANDI CS/S	99	88	239
	0112 MAANANKOE S/S	94	104	272
	0113 MAKWANE I/S	26	0	26
	0114 MANTHATISI S/S	69	65	176
	0115 MAPEKA I/S	105	0	105
	0116 MASOPHA S/S	53	39	133
	0117 METSI-MATSHO S/S	131	154	371
	0118 MMATHABO S/S	87	192	387
	0119 MOLAPO S/S	200	183	600
	0120 MOOKODI S/S	75	59	192
	0121 NEW HORIZON COLLEGE S/S	40	51	137
	0122 PHOFUNG S/S	262	98	438
	0123 RANTSANE S/S	68	100	228
	0124 SASAMALA S/S	115	111	303
	0125 SEROALI S/S	109	45	186
	0126 SHAKHANE S/S	185	90	345
	0127 SIBONAKALISO CF/S	0	10	28
	0128 TSHIRELA S/S	59	68	202
	0129 TSHOLO S/S	114	166	369

Summary for 'EDUC_DISTRICT:' = HARRISMITH (44 detail records)

2620 2169 1631 6420

EDUC_DISTRICT:	School Name:	Gr11	G12	Tot
KROONSTAD	0130 AFRIKAANSE H/SKOOL KROO	25	26	80
	0131 BODIBENG S/S	84	145	359
	0132 BOTHAVILLE S/S	38	0	38



EDUC_DISTRICT:	School_Name:	Gr11	G12	Tot	
KROONSTAD	0133 BRENTPARK C/S	53	71	25	149
	0134 CALCULUS KOLLEGE C/S	17	21	6	44
	0135 CVO SKOOL VIERFONTEIN	6	2	0	8
	0136 DIPHETOHO S/S	60	26	44	130
	0137 DR ML MAILE S/S	171	113	27	311
	0138 DR REGINALD CINGO CS/S	45	55	20	120
	0139 EDENVILLE C/S	19	41	25	85
	0140 HARRY LEBONA S/S	46	0	0	46
	0141 JSM SETILOANE S/S	0	37	12	49
	0142 KANANELO S/S	429	213	37	679
	0143 KGABARENG T/S	27	17	8	52
	0144 KGOLAGANO S/S	140	114	110	364
	0145 KROONSTAD CS/S	20	25	17	62
	0146 MAMELLANG-THUTO S/S	76	51	17	144
	0147 MATSERIPE S/S	107	105	55	268
	0148 MOPHATE S/S	65	48	36	149
	0149 MOTSWELA S/S	93	115	72	280
	0150 NGWATHE S/S	32	44	46	122
	0151 NIEKERKSRUS AS/S	14	16	23	53
	0152 OZIEL SELELE CS/S	69	75	48	192
	0153 PHEPHETSO S/S	114	83	65	262
	0154 REHAUHETSWE AS/S	0	0	13	13
	0155 SALOMON SENEKAL C/S	31	19	12	62
	0156 THABANG S/S	51	132	0	183
	0157 THAKAMESO CS/S	50	74	19	143
	0158 ZENITH C/S	6	8	14	28

Summary for 'EDUC_DISTRICT:' = KROONSTAD (49 detail records)

1888 1676 911 4475

EDUC_DISTRICT:	School_Name:	Gr11	G12	Tot	
LADYBRAND	0159 ALBERT MOROKA S/S	36	141	135	362
	0160 BOITUMELO S/S	29	34	29	92
	0161 CHRISTIAN LIPHOKO I/S	102	35	0	137
	0162 FICKSBURG CS/S	19	26	26	73
	0163 GORONYANE S/S	55	109	84	248
	0164 KAELELO I/S	15	0	0	15
	0165 ITOKISETSENG BOKAMOSO S/	37	0	0	37
	0166 JEVINGTON CF/S	27	0	0	27
	0167 KEIKELAME I/S	12	0	0	12
	0168 KING'S CHRISTIAN I/S	3	1	0	4
	0169 LADYBRAND S/S	42	32	30	104
	0170 LE RENG S/S	26	62	23	111
	0171 MARALLANENG S/S	0	0	69	69
	0172 MODDERPOORT IF/S	31	35	20	86
	0173 MOROKA S/S	155	172	144	481
	0174 PHETOGANE S/S	106	93	57	256
	0175 REUTLWAHETSE S/S	96	55	40	191
	0176 RT MOKGOPA S/S	195	202	185	562
	0177 SEHLABENG S/S	171	72	29	272
	0178 TRYDOM I/S	107	78	0	185



EDUC_DISTRICT:	School_Name:	Gr11	G12	Tot
LADYBRAND	0179 TAUNG S/S	73	30	204
	0180 TLOKOLA S/S	56	187	298
	0181 TLOTLANANG C/S	10	40	77
	0182 TLOTLISONG No1 S/S	80	26	173
	0183 TSHEPANG S/S 25	139	115	325

Summary for 'EDUC_DISTRICT:' = LADYBRAND (37 detail records)

1710 1442 1249 4401

EDUC_DISTRICT:	School_Name:	Gr11	G12	Tot
ODENDAALSRUS	0184 BULTFONTEIN C/S	31	16	81
	0185 CONCORDIA S/S	64	36	159
	0186 ELDORET S/S	0	12	12
	0187 HANOVER CF/S	21	30	81
	0188 HOERSKOOL WESSELS MARE	23	10	51
	0189 HOOPSTAD C/S	17	12	40
	0190 PHATELENG S/S	30	0	30
	0191 IPCPENG S/S	130	0	130
	0192 ITHABELENG S/S	194	106	588
	0193 TOKISETSENG CF/S	43	11	73
	0194 JC MOTUMI S/S	171	0	243
	0195 KUTLOANONG S/S	120	49	310
	0196 LA WESI S/S	120	71	338
	0197 MONYAKENG S/S	125	282	644
	0198 MOOKODI S/S	97	194	448
	0199 MOSALA S/S	81	38	162
	0200 NALEDI-YA-BOTJABELA S/S	82	164	374
	0201 PHEHELLO S/S	69	71	139
	0202 REARABETSWE S/S	198	98	487
	0203 REPHOLOSITSWE S/S	42	103	198
	0204 SANDVELD C/S	15	4	29
	0205 SEKGWENG IF/S	20	0	20
	0206 SELLO IF/S	5	0	5
	0207 SEQHOBONG S/S	76	61	247
	0208 SIYASIFUNELA S/S	54	0	54
	0209 TAIWE S/S	37	46	147
	0210 TIKWANE CS/S 20	39	40	165
	0211 WINBURG C/S	23	5	53

Summary for 'EDUC_DISTRICT:' = ODENDAALSRUS (44 detail records)

1927 1952 1459 5338

EDUC_DISTRICT:	School_Name:	Gr11	G12	Tot
PHUTHADITJHABA	0222 BLUEGUMBOSCH S/S	94	25	186
	0223 CLUBVIEW S/S	56	54	174
	0224 DIKWENA S/S	192	100	465
	0225 KGOLATHUTO S/S	0	70	70
	0226 LETSIE S/S	120	17	224
	0227 MAMPOI S/S	125	128	474
	0228 MOTTEKA S/S	54	27	134
	0229 NKHOBISO S/S	95	69	203
	0230 REAHOLA S/S	69	21	186
	0231 SELELEKELA S/S	121	13	197
	0232 THAHAMESO S/S	183	154	447



EDUC_DISTRICT:	School_Name:	Gr11	G12	Tot	
PHUTHADITJHABA	0233 THOKOANA MAKAOTA S/S	154	241	139	534
	0234 TLHORONG S/S	301	121	114	536
	0235 TSEBO S/S	127	238	109	474
	0236 TSHIBOLLO S/S	94	178	57	329

Summary for 'EDUC_DISTRICT:' = PHUTHADITJHABA (25 detail records)

1785 1731 1097 4613

EDUC_DISTRICT:	School_Name:	Gr11	G12	Tot	
REITZ	0237 BONGANE-LEBOHANG S/S	83	69	34	186
	0238 ESIZIBENI S/S	203	124	102	429
	0239 ETEMBENI IF/S	20	0	0	20
	0240 EVUNGWINI S/S	45	124	157	326
	0241 FALESIZWE S/S	80	208	93	381
	0242 IKAHENG ZAKHENI S/S	42	42	40	124
	0243 INTUTHUKO-KATLEHO S/S	57	112	0	169
	0244 KOGOTSO-UXOLO S/S	29	16	20	65
	0245 LEIFO IZIKO S/S	0	88	103	196
	0246 LERATSWANA S/S	85	53	38	182
	0247 LINDLEY S/S	19	10	10	39
	0248 MATLWANGTLWANG S/S	78	70	65	213
	0249 PHUKALLA S/S	61	23	34	118
	0250 REFENG THABO S/S	45	38	31	114
	0251 REITZ C/S	21	18	7	46
	0252 RETSHEDISITSWE S/S	68	112	40	220
	0253 STEYNSRUS C/S	16	19	4	39
	0254 TWEELING C/S	6	1	4	11
	0255 VILLIERS C/S	15	20	11	46
	0256 WILGERIVIER C/S	14	19	14	47

Summary for 'EDUC_DISTRICT:' = REITZ (34 detail records)

987 1172 812 2971

EDUC_DISTRICT:	School_Name:	Gr11	G12	Tot	
SASOLBURG	0257 AFRIKAANSE H/SKOOL SASOL	51	44	46	141
	0258 BARNARD MOLOKOANE S/S	192	88	76	346
	0259 BOIPHILELE S/S	40	64	77	181
	0260 BOITLAMO S/S	29	16	14	59
	0261 CEDAR S/S	40	31	0	71
	0262 HEILBRON C/S	19	17	31	67
	0263 KWAKWATSI S/S	80	53	32	170
	0264 LE NOTSI S/S	104	23	20	212
	0265 NKGOPOLENG S/S	44	44	42	130
	0266 NOMSA S/S	40	35	22	97
	0267 PARYS-SKOOL S/S	56	46	41	143
	0268 PELE-YA-PELE S/S	41	30	36	107
	0269 PHEHELLANG S/S	65	55	79	199
	0270 PHIRITONA S/S	156	139	81	376
	0271 REBATLA THUTO S/S	94	84	39	217
	0272 SANDERSVILLE C/S	15	0	0	15
	0273 SAREL CILLIERS C/S	17	12	0	29
	0274 SASOLBURG S/S	63	70	69	202
	0275 SCHOOL OF DESTINY	1	1	0	2
	0276 SEDIBA-THUTO S/S	77	53	46	176



EDUC_DISTRICT:	School_Name:	Gr11	G12	Tot	
SASOLBURG	0277 VAAL CHRISTIAN C/K	0	6	3	9
	0278 VAALPARK S/S	33	37	18	88
	0279 WEIVELD AS/S	21	9	4	34
	0280 YAKHISISWE S/S 24	21	53	49	123
Summary for 'EDUC_DISTRICT:' = SASOLBURG (44 detail records)		1289	1080	825	3194
WELKOM	0281 BAHALE S/S	0	0	97	97
	0282 ED-U-COLLEGE	12	13	22	47
	0283 GOUDVELD S/S	55	57	49	161
	0284 HARMONIE S/S	72	50	42	164
	0285 HENNENMAN S/S	36	51	41	128
	0286 HENTIE CILLIERS H/S	55	49	22	126
	0287 KHELENG S/S	201	80	58	339
	0288 LLEBOGANG S/S	130	167	105	402
	0289 LEPHOLA CS/S	92	77	65	234
	0290 LETSETE S/S	168	132	98	398
	0291 MAREMATLOU S/S	95	0	0	95
	0292 NANABOLELA 1 S/S	152	207	76	435
	0293 REATLEHILE S/S	137	190	120	447
	0294 RIEBEECKSTAD S/S	46	60	62	168
	0295 SANDVLIET I/S	14	0	0	14
	0296 ST DOMINIC'S COLLEGE S/S	10	12	15	37
	0297 TETO S/S	89	97	57	243
	0298 THOTAGAUTA S/S	139	77	121	337
	0299 UNITAS CS/S	24	39	17	80
	0300 WELKOM HIGH S/S	19	30	28	77
	0301 WELKOM S/S	93	95	42	230
	0302 WELKOM-GIMNASIUM S/S 22	17	32	8	57
Summary for 'EDUC_DISTRICT:' = WELKOM (40 detail records)		1656	1515	1145	4316
Grand Total	480	21049	18908	13177	53134

APPENDIX 7

A TABLE OF UNIFORM RANDOM NUMBERS

Table of Uniform Random Numbers

68204	38787	73304	44886	92836	43877	61049	49249	66105
61010	78345	75444	91680	33003	24128	97817	77562	62045
04604	93468	78459	27541	19672	14220	25102	42021	19252
36021	25507	64060	72923	58848	10374	63102	41534	92884
28129	43470	94097	16753	56425	75299	93688	75569	52067
09406	06584	46324	13981	06449	42604	13372	69040	95955
86423	81835	64226	20398	65772	91052	73496	14451	95967
13249	58525	81893	32894	68627	75644	45848	61511	90232
75454	17352	56548	39618	86705	50783	48388	82047	14660
06260	46176	99237	69874	84180	32005	66130	18055	99748
38507	92795	80672	00102	22980	69115	95653	05231	94996
03917	26795	59832	19014	96206	45413	76624	71219	65855
17927	32368	08177	31236	45401	26731	92256	99530	43998
26811	88937	37187	39762	29942	40091	65731	95955	23368
18480	28160	81908	30456	22462	15677	55642	67383	86884
37589	91842	76351	90585	45588	42858	37806	67969	50621
79903	34187	26952	75820	96335	90281	04269	85202	94965
46155	30200	75000	28570	47516	06744	72193	01258	85047
60916	73212	15853	28398	04721	69363	47071	65568	88519
34419	82840	88235	61966	86517	23966	45764	42177	17269
08692	26667	12941	14813	30815	26633	68184	80721	80505
92851	44185	90848	18341	77915	00177	64014	35490	02937
97909	07280	72167	10002	27374	92880	60055	94168	30742
28437	22027	07739	30905	33151	73567	82960	50104	67005
48165	28174	17909	11230	00929	54604	32435	54120	85199
99891	30913	06315	30201	72073	39589	62868	66339	15850
98022	13010	67970	99203	12536	88149	44387	20250	50798
91292	54688	47029	38970	77880	77295	11887	17628	93802
89081	34643	12988	12971	87742	57720	24438	64088	49496
32527	74239	20056	46668	94561	70111	92537	83562	11306
01870	21584	48574	09871	74453	24812	45770	95667	52377
84011	87542	96564	64256	64653	90025	61613	94168	83254
01568	29682	67489	62984	51901	30716	24513	46678	67991
40360	19206	40321	16004	64481	16130	03904	15811	19369
09392	39926	79590	23991	82492	13032	67337	54322	06058
77323	20500	52466	33008	84211	26357	79006	41178	35169
47590	01007	65376	18189	84040	39476	25383	45398	64917
29321	65783	71403	32894	32627	39067	47985	51485	27415
09530	05358	58722	31912	73356	65884	12883	36242	29646
65612	06843	72233	73352	66600	23237	71759	76881	19652
40355	85067	40788	40148	46099	48056	27858	58365	30202
24963	49571	82377	08687	73448	95484	15155	41780	71951
87273	44050	71961	48464	84084	65225	62846	11634	04853
31643	44756	12493	09024	74204	69949	67842	36141	08477
58326	55342	31419	80776	64028	59957	52969	71997	71477
02327	00460	39178	09511	92688	88585	99257	98752	39623
19377	49122	60591	79773	66289	89650	49298	13499	53623
95046	30203	47493	74395	45213	66739	45097	91670	62152
65013	71958	48360	70885	60313	44241	18740	05705	07488
86032	89018	97117	35656	20401	86438	87250	04717	67726
11799	15777	11548	45918	45706	88554	75315	70233	72575
17843	64809	00390	11980	66129	07197	36712	55062	61191
42770	65397	45010	06463	86242	06361	14293	36343	97628
02410	96933	57864	93197	88227	57139	66382	95768	60660
70939	20457	62468	68698	74875	61111	59083	09152	93625
85616	15100	26242	28677	74655	05679	56676	67224	75318
85515	33174	05496	78789	81297	73985	82120	94070	20529

Continued

73466	06254	88113	98367	22018	99372	70171	52705	61202
72255	50729	05681	37216	09363	02385	93098	09502	92589
08121	48330	86725	52922	90349	81934	14849	68005	06791
94005	85164	22994	58921	85943	67506	79730	85382	61568
09108	52299	25991	00940	22493	60987	93573	79469	97147
85687	31723	67907	55306	71748	85048	17690	04784	98470
26190	02164	95889	89712	89795	73001	82210	39357	23867
34208	07539	60907	60693	01965	43492	46688	28891	23410
13032	78798	21733	35703	71707	11931	93513	78339	74754
16801	05582	47975	25046	59220	08275	67901	94954	36662
88735	91500	41654	97225	61188	24527	35220	99794	56097
82127	17594	94217	55324	06134	25207	26758	08687	06929
29284	42271	45833	19481	56972	99042	45304	39832	40188
56300	60964	13751	72385	91180	42371	55924	95783	33096
33132	33229	39955	16779	99286	23392	24255	90856	60004
65296	94444	32091	90681	95823	73091	92912	85979	30232
11069	52931	26381	71830	50467	47783	25223	81796	97745
06720	69637	99670	58392	57943	75965	14740	74814	75598
62719	14295	16605	13146	36992	50560	50121	90278	98283
95556	36672	87202	92730	81961	38894	61358	44519	71529
12490	12304	28804	42772	27104	35518	67361	84159	52442
29865	28847	70904	96638	54226	44701	67589	27352	81078
74486	63507	92193	65022	09583	43615	59910	05301	69347
01878	56351	68618	84432	30948	65180	75446	95963	75619
65405	25720	09364	51333	03752	65756	51967	92469	47296
31711	35173	45290	49326	50368	63829	05640	26675	27367
41028	50367	01904	68068	02324	58723	96333	77032	47878
76916	55336	48767	76915	79711	05182	70489	10244	45078
16404	93068	91519	85895	34872	24701	60932	91141	33252
06776	51133	76482	14812	19777	19614	51100	52943	04068
76818	05839	26058	80972	43337	24203	72345	37967	88138
16916	64028	38968	02783	63049	12261	89587	88988	88834
33696	41621	16648	11837	08094	38217	32919	16625	91567
00143	56431	90537	95332	29879	29363	48055	86410	10594
15932	59628	00086	74633	81208	05470	56385	23601	70545
86111	14530	39958	36155	60613	73849	74842	31030	30448
46218	36313	62063	59326	93522	48983	50335	30178	42755
84153	32199	77166	63912	07984	55369	56520	14633	00252
81439	35471	29742	57110	13710	21351	29816	32783	69004
92339	82043	80136	97269	28858	03036	01304	51363	40412
78421	33809	92792	96106	95191	43514	08320	25690	76117
44265	86707	80637	44879	81457	06781	11411	88804	62551
89430	51314	76126	62672	31815	12947	76533	19761	93373
36462	19901	02919	29311	31275	83593	34933	95758	63944
55996	59605	51680	27755	06077	12797	67082	12536	64069
69338	43838	06320	63988	16549	27931	27270	94711	47834
40276	17751	72508	23027	70257	42812	87319	09160	02913
67834	93014	07816	93085	14552	10115	87740	44125	51227

APPENDIX 8

A LETTER FOR APPLICATION TO UNDERTAKE RESEARCH AT SECONDARY SCHOOLS IN THE FREE STATE

P.O. Box 1881
Welkom
9460

09 December 1999

The Head: Free State Department of Education & Culture
P.O. Box 20565
BLOEMFONTEIN
9300

Dear Mr van Rooyen

Re: Request for Conducting Research within the Free State Department of Education

I, the undersigned and lecturer at Vista University: Welkom campus, hereby request for permission to conduct research studies at some of the schools under your jurisdiction.

1 Personal Demographics

Title: Mr Awelani M Rambuda

Address: P.O. Box 1881
Welkom
9460

Tel: (057) 396 4112 X 267

Institution: University of Pretoria

Degree: PhD

Promoter: Prof WJ Fraser

Title of Thesis: *A Study of the Application of Science Process Skills to the Teaching of Geography in Secondary Schools in the Free State Province*

2 The Research Project

2.1 Rationale

The South African education system is currently undergoing a major transformation process from Christian National Education (CNE) which focuses on a product approach to Outcomes-based Education (OBE) which is a process approach as it focuses on what learners understand and can do. This is a paradigm shift from an education system which encourages rote and passive learning of facts and concepts to an education system which encourages an interactive teaching-learning process through which learners uncover facts and concepts. Research indicates that in secondary school subjects such as geography, learners are taught geographical facts and concepts with minimal understanding. Outcomes-based education has been phased-in with an aim of alleviating the problems mentioned above.

Outcomes-based education has been phased-in with effect from 1998. Before it was phased-

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Outcomes-based education has been phased-in with effect from 1998. Before it was phased-

in, the Department of National Education released a White Paper on education which envisaged an education system which encourages independent and critical thought. Furthermore, the Act also maintains that learners should "...develop the capacity to question, enquire, reason, weigh evidence and form judgements, achieve understanding, recognise the provisional and incomplete nature of most human knowledge, and communicate clearly".

This implies that teachers should teach processes through which knowledge develops. Furthermore, it implies that learners should be able to investigate and discover knowledge through observation, measuring, inferring, manipulating variables and so forth. These activities are science process skills which both teachers and learners have to acquire and master in order to develop the principles of outcomes-based education.

The introduction of science process skills is likely to enable learners to learn geographical phenomena with insight and understanding. Hence, it will not be easy for geography learners to forget the information they have investigated, discovered and 'felt'. Geography education at secondary schools is regarded as a burden to the memory because learners are expected to memorise too many facts. The application of science process skills is likely to reduce problems such as these as science process skills encourage learning by doing. Learning by doing is something which outcomes-based education encourages and develops.

The paradigm shift has to be supplemented by innovative teaching and learning processes as outcomes-based education provides opportunities for logical, rational and critical thinking to learners. It is imperative that innovative teaching and learning strategies include process skills of science which demand more than mere memorization.

The analysis of geography's core syllabus preamble and guidelines indicates that science process skills are supposed to be applied to geography teaching and learning. This is also supported by the critical outcomes of outcomes-based education which have the elements of science process skills. However, the review of literature on geography teaching and the researcher's observation of classroom practice suggest that knowledge transmission by teachers dominates the teaching-learning process in South Africa.

2.2 Aims and Objectives

The purpose of this study is to examine the application of science process skills to the teaching of geography in secondary schools in the Free State Province. It is assumed that the application of science process skills is likely to develop inquiring minds and critical ability. It also assumed that this is likely only if geography teachers develop inquiry teaching and inquiry learning in the learners.

Objectives of the study are:

- to establish if geography teachers are inquiry teachers;
- to examine problems which geography teachers encounter when they develop inquiry learning in their learners;
- to establish difficulties which geography learners experience when engaged in inquiry learning;
- to examine how the problems geography teachers and learners experience

when engaged in inquiry teaching and learning can be alleviated;

- to establish the nature of science process skills applied by geography teachers;
- to examine problems that geography teachers experience when they apply science process skills to the teaching of geography; and
- to examine how the problems geography teachers experience when applying science process skills to the teaching of geography can be alleviated.

2.3 Questions to be Investigated

- Are geography teachers inquiry teachers?
- What problems do geography teachers encounter when they develop inquiry teaching?
- How can the problems geography teachers experience when developing inquiry teaching be alleviated?
- What are the science process skills applied to the teaching of geography in secondary schools?
- What difficulties do geography teachers experience when applying science process skills to the teaching of geography in secondary schools?
- How can the problems which restrict the application of science process skills to the teaching of geography in secondary schools be alleviated?

2.4 Significance of the Study

The recommendations of this study are likely to motivate and encourage geography teachers in the Free State to integrate process skill's instruction in their practice. Furthermore, the application of science process skills to the teaching of geography is likely to contribute to the realization of the principles of outcomes-based education in South Africa in general and in Free state in particular.

2.5 Population

The population targeted for study is a sample of secondary schools practising geography teachers, geography learners and geography subject advisors in the Free State in all 12 Education District. I will appreciate if you could allocate me a sample which consists of +1 000 geography teachers, +1 000 geography learners and 12 geography subject advisors. I am willing to come to your office to discuss my empirical research requirements with you. Please provide me with address lists for secondary schools and the number of secondary school geography teachers and learners per grade in the Free State Education Department.

2.3 Research Instruments

The research has two phases. Phase one entails gathering information through questionnaires

and interviews. Before the questionnaires are despatched and interviews are conducted, permission to undertake the study will be sought first from district managers and school principals. Questionnaires for geography teachers and learners will be sent to the school principals. Questionnaires for subject advisors will be sent to district managers. The respondents will fill the questionnaires anonymously and questions about qualifications have not been asked. This will be a take home one week exercise. There will be no encroachment on school activities. It is projected that phase one will commence on 1 March 2000 and end on 28 April 2000

Phase two is important for this study. It attempts to check interpretation of respondents' answers through lessons' observation. Analysis of the questionnaires may say something about what teachers and learners are saying but little of what may actually be happening. In order to close the rhetoric-reality gap, I request that I should be allowed to observe \pm 30 geography lessons in secondary schools in Kroonstad, Welkom and Odendaalsrus districts. If my presence in the classrooms is going to disturb facilitation of the lessons, I propose that I should be allowed to give a small tape recorder to the teachers who will then record the lessons on my behalf. The name of the teachers and schools involved will not be recorded, only the lessons' content will be recorded. It is projected that this phase will commence and end in the third school term in 2000.

Please enclosed find the questionnaires for both geography teachers, learners and subject advisers as approved by my promoter. A copy of the thesis and the summary findings of this study will be sent to the Free State Education Department as soon as the study is completed.

Thanking you in anticipation.

Yours sincerely

.....
Mr AM Rambuda
Student

.....
Prof WJ Fraser
Promoter

APPENDIX 10

A LETTER TO THE PRINCIPALS REQUESTING PERMISSION TO UNDERTAKE RESEARCH AT THEIR SCHOOLS

P.O.Box 1881
Welkom
9460

1 March 2000

The Principal

Dear Sir/Madam

Re: Permission to Undertake Research in Your School

I am a PhD research student enrolled at the University of Pretoria. I am involved in a project which is attempting to describe and explain the application of science process skills to the teaching of geography in secondary schools in the Free State. As such, the project is likely to provide interesting and useful information which could be of a supportive nature to geography teachers in general and Outcomes-based Education in particular.

I have received permission to undertake the study from the Free State Education Department. Your school has been selected to participate in this study because it is one of the best schools in the province. I will be grateful if you could be of assistance with the research by giving the enclosed questionnaires to geography teachers and 10 learners per Grade.

Completion of the questionnaires should be a take-home one-day exercise. I will be grateful if you could encourage the respondents not to leave any question unanswered. The name of your school, teachers and learners involved will remain completely anonymous. I would greatly appreciate it if you could then return the survey to me in the enclosed self-addressed envelope by 23 March 2000.

Obviously the success of the research will largely be dependent on the number of surveys that are returned. Your assistance in this regard will be greatly appreciated.

Yours sincerely

.....
Mr AM Rambuda

APPENDIX 11

INTERVIEW SCHEDULE FOR GEOGRAPHY TEACHERS

INTERVIEW SCHEDULE FOR GEOGRAPHY TEACHERS

1 What problems do you experience when you develop inquiry teaching?

2 How can one solve these difficulties?

3 What difficulties do your learners experience when they are involved in inquiry learning?

4 How can one solve these problems?

5 What problems do you experience when you apply *Science Process Skills* to the teaching of geography.

6 How can one solve these problems?

APPENDIX 12

INTERVIEW SCHEDULE FOR GEOGRAPHY LEARNERS

INTERVIEW SCHEDULE FOR GEOGRAPHY LEARNERS

1. What problems does your geography teacher experience when (s)he develops inquiry teaching?

2. How can one solve these difficulties?

3. What problems do you experience when you are involved in inquiry learning?

4. How can one solve these problems?

5. What problems do you experience when *Science Process Skills* are applied to the teaching of geography?

6. How can one solve these problems?

APPENDIX 13

SYNOPTIC WEATHER CHART



As from 1 September 1992 the format of the Daily Weather Bulletin has changed. The isobars are drawn at MSL, over the ocean AS WELL AS OVER THE CONTINENT, in 4 hPa intervals. In some places, where necessary, isobars are drawn in 2 hPa intervals.

HOOFFVERANDERING AAN DIE DAAGLIKSE WEERBULLETIN

Vanaf 1 September 1992 het die formaat van die Daaglikse Weerbuletin verander. Die isobare word op seevlak, oor die oseaan SOWEL AS OOR DIE KONTINENT, in 4 hPa intervalle getrek. Op sommige plekke, waar nodig, word die isobare in 2 hPa intervalle getrek.

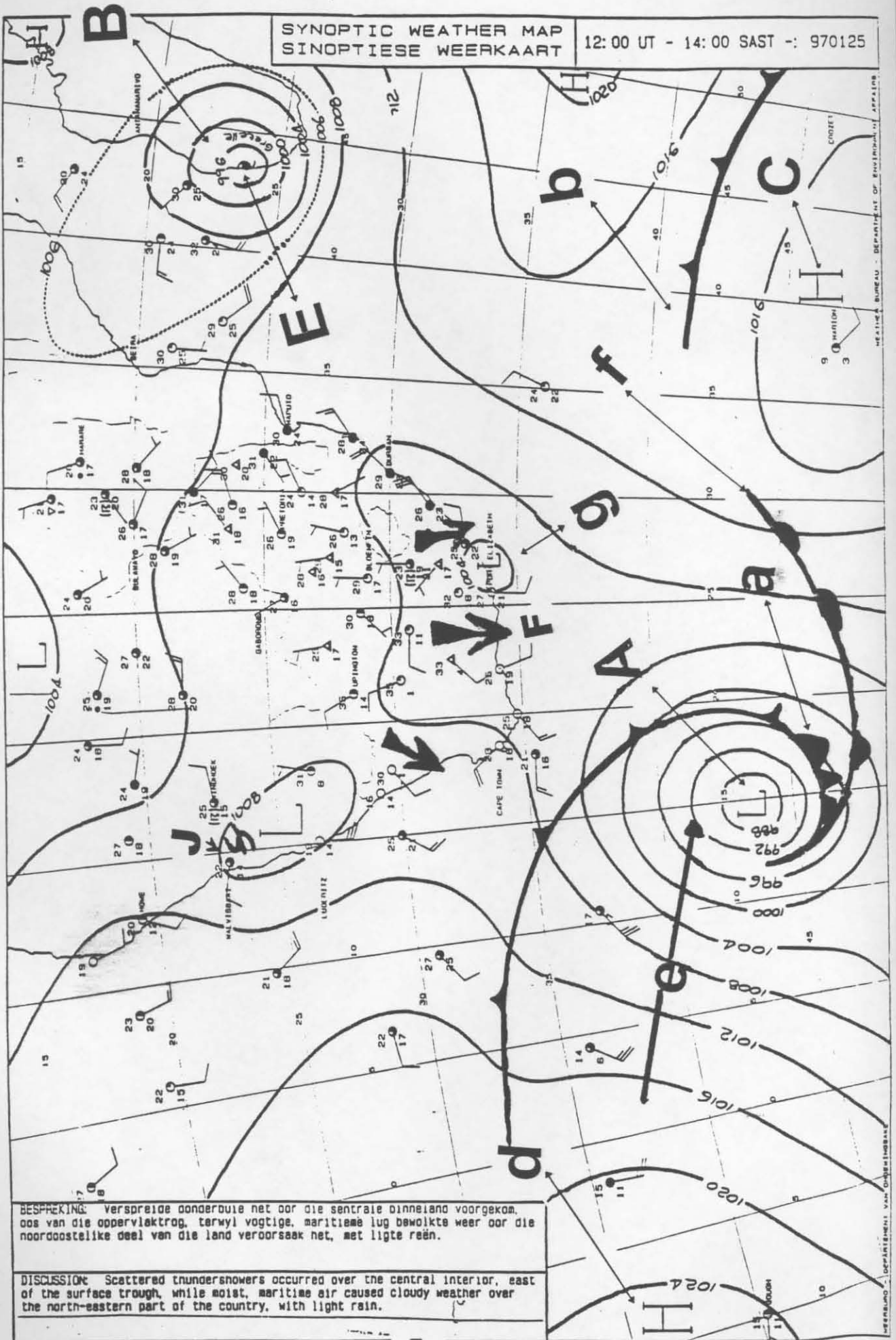
KEY		TT ww T _a T _d	SLEUTEL	
AIR TEMPERATURE		TT	LUGTEMPERATUUR	
DEW POINT		T _a T _d	DOUPUNT	
The arrow flies with the wind Each feather represents 10 knots			Die pyltjie beweeg met die wind Elke veer stel 10 knope voor	
CLOUD AMOUNT	1/8 1/4 1/2 3/4 ●		overcast	WOLKBEDEKKING
			betrokke	
ww -	PRESENT WEATHER / HUIDIGE WEER		wwj -	WEATHER AT THE STATION DURING THE PRECEDING HOUR BUT NOT AT THE TIME OF OBSERVATION / WEER BY DIE STASIE GEDURENDE DIE VOORAFGAANDE UUR MAAR NIE TYDENS DIE WAARNEMING NIE
	Lightning visible / Weerlig sigbaar			Drizzle / Motreën
	Precipitation within sight / Neerslag op 'n afstand			Rain / Reën
	Thunderstorm without precipitation at time of observation / Donderstorm sonder neerslag tydens waarneming			Snow / Sneeu
	Dust storm / Stofstorm			Rain and snow / Reën en sneeu
	Fog / Mis			Freezing drizzle or freezing rain Vriesmotreën of vriesreën
	Drizzle / Motreën			Showers of rain / Reënbuie
	Rain / Reën			Showers of snow / Sneebuille
	Snow / Sneeu			Showers of hail / Haelbuie
	Showers / Buie			Fog / Mis
	Thunderstorm / Donderstorm			Thunderstorm / Donderstorm
	AUTOMATIC WEATHER STATION			OUTOMATIESE WEERSTASIE
Isobars at MSL in 4 hPa intervals		—————	Isobare op seevlak in 4 hPa intervalle	
Isobars at MSL in 2 hPa intervals		-----	Isobare op seevlak in 2 hPa intervalle	

APPENDIX 13

SYNOPTIC WEATHER CHART

SYNOPTIC WEATHER MAP
SINOPTIESE WEEKART

12:00 UT - 14:00 SAST -: 970125



BESPREKING: Verspreide dondersbuie het oor die sentrale binne-land voorgekom, oos van die oppervlaktrog, terwyl vogtige, maritieme lug bewolkte weer oor die noordoostelike deel van die land veroorsaak het, met ligte reën.

DISCUSSION: Scattered thundershowers occurred over the central interior, east of the surface trough, while moist, maritime air caused cloudy weather over the north-eastern part of the country, with light rain.

WEERBUREAU - DEPARTMENT OF ENVIRONMENTAL AFFAIRS