APPENDIX NO. B

B_1 TABLE SHOWING THE PERCENTAGES OF MARKS OBTAINED BY STUDENTS UNDER STUDY IN THE TERMINAL TEST, 1964, AND THEIR CONVERSION INTO STANDARD SCORES

	No. of students	Raw Scores in % ages	Standard Scores @	Remarks *
The Dayadra High School, Dayadra. STD. VIII Mean : 36.48 SD : 13.50	1	16.50	35.20	D
	2	37.50	50.76	N
	3	17.50	35.93	D
	4	18.75	36.87	D
	5	43.00	54.83	N
	6	33.50	47.79	N
	7	22.00	39.27	D
	8	22.00	39.27	D
	9	35.50	49.27	N
	10	31.75	46.50	N
The Dayadra High School, Dayadra. STD. X Mean : 32.98 SD : 11.55	1	19.44	38.28	D
	2	17.56	36.64	D
	3	18.22	37.23	D
	4	28.44	46.07	N
	5	37.00	53.48	N
	6	15.78	35.11	D
	7	16.00	35.30	D

* D stands for Dull and N for Normal

@ The formulae applied in computing the Standard Scores were :

(1) Z Score = $\frac{X - M}{SD}$ Where X = Score obtained by a student

M = Mean Score of the Class

(2) Standard Score = 50 + 10 Z

	No.of Students	Raw Scores in % ages	Standard Scores	Remarks
	8	18.67	37.61	D
	9	32.00	49.15	N
	10	12.44	32.22	D
	11	33.56	50.50	N
	12	29.00	46.55	N
	13	20.56	39.25	D
	14	38.22	54.54	N
The Dayadra High School, Dayadra. STD.XI Mean : 42.97 SD : 9.45	1	27.78	33.99	D
	2	45.75	52.94	N
	3	43.50	50.56	N
	4	40.00	46.86	N
	5	31.63	38.92	D
	6	32.50	38.92	D
	7	41.50	48.44	N
	8	41.50	48.44	N
	9	33.00	39.45	D
	10	46.25	53.47	N
	11	27.25	33.37	D
Karmad Sarvajanik High School, Karmad. STD.IX Mean : 46.90 SD : 12.20	1	49.11	51.81	N
	2	24.44	31.59	D
	3	29.33	35.60	D
	4	34.44	39.79	D
	5	46.67	49.81	N
	6	27.78	34.33	D
	7	41.33	46.25	N
	8	43.33	47.07	N
	9	22.44	29.96	D

	No.of Students	Raw Scores in % ages	Standard Scores	Remarks
Karmad Sarvajanik High School, Karmad. STD.XI Mean : 51.36 SD : 10.90	1	50.00	48.75	N
	2	56.00	54.26	N
	3	25.50	26.28	D
	4	35.75	35.68	D
	5	34.25	34.30	D
	6	54.00	52.42	N
	7	28.50	29.03	D
	8	48.25	47.15	N
	9	37.75	37.52	D
	10	37.75	37.52	D
	11	52.25	50.81	N
The Tralsa Vibhag Vidyamandir, Tralsa. STD. VIII Mean : 40.00 SD : 12.30	1	40.57	50.46	N
	2	44.86	53.59	N
	3	25.71	38.39	D
	4	36.57	47.21	N
	5	45.71	54.64	N
	6	27.14	39.54	D
	7	34.00	45.12	N
	8	20.57	34.20	D
	9	25.14	37.91	D
	10	25.71	38.39	D
	11	37.43	47.91	N
	12	16.00	30.49	D
	13	20.57	37.91	D
	14	41.43	51.16	N
	15	43.14	52.54	N
	16	35.43	46.28	N

	No.of students	Raw Scores in % ages	Standard Scores	Remarks
Samni Satral High School, Samni. STD.IX Mean : 43.89 SD : 8.20	1	33.44	37.25	D
	2	31.00	34.28	D
	3	41.89	47.06	N
	4	35.11	39.29	D
	5	47.22	54.06	N
	6	43.56	49.60	N
	7	47.78	54.74	N
	8	46.33	52.98	N
	9	32.33	35.90	D
	10	27.00	29.40	D
	11	41.00	46.47	N
	12	32.33	35.90	D
	13	41.33	46.88	N
	14	40.22	45.52	N
	15	40.44	45.79	N
	16	32.00	35.49	D
	17	28.00	30.62	D
	18	42.56	48.37	N
	19	26.00	28.18	D
	20	32.33	35.90	D
	21	27.44	29.95	D
	22	28.33	31.04	D
Samni Satral High School, Samni, STD.X Mean : 39.10 SD : 10.35	1	24.89	36.27	D
	2	35.78	46.79	N
	3	21.78	33.27	D
	4	26.00	37.34	D
	5	39.00	49.90	N
	6	42.78	53.56	N
	7	41.00	51.84	N
	8	27.78	39.06	D
	9	36.11	47.11	N
	10	37.44	48.50	N
	11	23.44	34.87	D

	No.of students	Raw Scores in % ages	Standard Scores	Remarks
The Pariej High School, Pariej. STD. IX Mean : 37.00 SD : 9.40	1	40.00	53.19	N
	2	36.89	49.88	N
	3	23.33	35.46	D
	4	14.89	26.47	D
	5	18.22	30.02	D
	6	38.00	51.06	N
	7	27.11	39.48	D
	8	39.78	52.96	N
	9	34.00	46.81	N
	10	22.22	34.28	D
	11	40.89	54.14	N
	12	25.78	38.07	D
Vinay Vidyamandir,Nikora. STD. VIII Mean : 43.53 SD : 7.60	1	26.25	27.26	D
	2	35.00	38.78	D
	3	44.25	50.97	N
	4	40.25	45.68	N
	5	32.50	35.49	D
	6	47.00	54,56	N
	7	35.25	39.11	D
	8	45.50	52.59	N
	9	42.75	48.97	N
	10	41.25	47.00	N
	11	31.25	33.85	D
	12	34.25	37.79	D
	13	43.75	50.29	N
	14	30.50	32.86	D
	15	41.00	46.67	N
	16	31.75	34.50	D
	17	42.00	47.99	N

	No.of students	Raw Scores in % ages	Standard Scores	Remarks
Vinay Vidyamandir, Nikora. STD.IX Mean : 42.83 SD : 11.15	1	39.33	46.86	N
	2	38.00	45.67	N
	3	38.00	45.67	N
	4	22.44	31.71	D
	5	31.11	39.48	D
	6	45.11	52.05	N
	7	28.00	36.70	D
	8	47.11	53.84	N
	9	19.56	29.13	D
	10	39.56	47.07	N
	11	41.78	49.06	N
	12	41.11	48.46	N
	13	31.56	39.90	D
	14	31.11	39.48	D
R.K.Vakil High School, Ilav, STD.IX Mean:40.95 SD : 9.05	1	42.22	51.40	N
	2	44.89	54.35	N
	3	30.22	38.14	D
	4	43.33	52.52	N
	5	39.33	48.21	N
	6	28.44	36.18	D
	7	25.56	33.00	D
	8	30.67	38.62	D
	9	36.89	45.51	N
	10	23.78	31.03	D
	11	44.00	53.37	N
	12	26.89	34.47	D
	13	38.00	46.74	N
	14	40.44	49.44	N

	No.of students	Raw Scores in % ages	Standard Scores	Remarks
R.K.Vakil High School,Ilav.	1	26.89	32.99	D
STD. : X	2	40.22	47.09	N
Mean : 42.97	3	31.11	38.29	D
SD : 9.45	4	38.89	45.68	N
	5	44.44	51.56	N
	6	42.00	48.95	N
	7	19.56	25.23	D
	8	40.22	47.09	N
	9	45.56	52.74	N
	10	32.00	38.39	D
	11	23.33	29.40	D
	12	30.00	36.27	D
	13	47.33	54.61	N
	14	20.44	26.14	D
	15	46.89	54.15	N
	16	40.00	46.86	N
	17	44.00	51.09	N
	18	42.67	49.68	N
S.P.M.High School,M.M.Mangrol.	1	34.89	35.50	D
STD. : IX	2	47.00	50.00	N
Mean : 47.00	3	33.67	34.03	D
SD : 8.35	4	44.22	46.67	N
	5	43.22	45.47	N
	6	38.00	39.23	D
	7	49.33	52.79	N
	8	36.22	37.09	D
	9	46.67	49.60	N
	10	44.67	47.21	N
	11	49.89	53.46	N
	12	36.89	37.89	D

	No.of students	Raw Scores in % ages	Standard Scores	Remarks
	13	51.11	54.92	N
	14	32.78	32.97	D
	15	34.56	35.11	D
	16	46.00	48.80	N
	17	30.56	30.31	D
	18	47.56	50.67	N
S.P.M.High School,M.M.Mangrol. STD. X Mean : 37.89 SD : 10.50	1	36.89	49.05	N
	2	25.22	37.93	D
	3	22.33	35.18	D
	4	38.89	50.95	N
	5	26.22	38.89	D
	6	36.11	48.30	N
	7	40.00	52.01	N
	8	41.67	53.60	N
	9	36.67	48.84	N
	10	16.78	29.90	D
	11	41.00	52.96	N
	12	22.00	34.86	D
	13	26.67	39.31	D
	14	21.22	34.12	D
	15	20.56	33.50	D
	16	18.89	31.91	D
	17	35.33	47.56	N
Lok Vidyalaya,Kim. STD. VIII Mean : 49.50 SD : 12.65	1	46.88	47.93	N
	2	53.00	52.77	N
	3	36.00	39.33	D
	4	53.88	53.46	N
	5	31.63	35.87	D
	6	46.00	47.23	N

	No.of students	Raw Scores in % ages	Standard Scores	Remarks
	7	49.00	49.60	N
	8	33.88	37.65	D
	9	29.88	34.49	D
	10	31.63	35.87	D
	11	45.00	46.44	N
	12	28.13	33.10	D
Lok Vidyalaya,Kim.	1	29.44	35.26	D
STD. : X	2	40.67	46.95	N
Mean : 43.60	3	44.44	50.88	N
SD : 9.60	4	30.89	36.77	D
	5	46.78	53.31	N
	6	42.44	48.79	N
	7	40.22	46.48	N
	8	46.00	52.50	N
	9	25.56	31.21	D
	10	47.44	54.00	N

APPENDIX B_2

CALCULATIONS REGARDING THE SIGNIFICANCE OF THE DIFFERENCE BETWEEN TWO PERCENTS

I. FATHERS' PROFESSION

(A) Farming :

[1] S.E. of the difference between two proportions =

$$= \sqrt{\frac{P_1Q_1}{N_1} + \frac{P_2Q_2}{N_2}}$$

$$= \sqrt{\frac{63.97 \times 36.03}{111} + \frac{67.20 \times 32.80}{125}}$$

$$= \sqrt{20.77 + 17.64}$$

$$= 6.2$$

$$CR = \frac{D}{S.E} = \frac{3.23}{6.20} = 0.52$$

Where P_1Q_1 are percentages of one sample which have and do not have the characteriatics.

P_2Q_2 are the corresponding percentages in the second sample.

N_1 and N_2 are the numbers of the observations in two samples

D is actual difference in the two percentages.

Footnote : A.Bradford Hill, Principles of Medical Statistics (London: The Lancet Limited,1950),p.247-248.

(B) Manual labour :

$$S.E. = \sqrt{\frac{27.03 \times 72.97}{111} + \frac{4.80 \times 95.20}{125}}$$

$$= \sqrt{17.77 + 3.656}$$

$$= 4.63$$

$$CR = \frac{D}{S.E} = \frac{22.23}{4.63}$$

$$= 4.80$$

(C) Service :

$$S.E. = \sqrt{\frac{6.31 \times 93.69}{111} + \frac{24.00 \times 76.00}{125}}$$

$$= \sqrt{5.326 + 14.59}$$

$$= 4.46$$

$$CR = \frac{D}{S.E} = \frac{16.69}{4.46}$$

$$= 3.97$$

(D) Business :

$$S.E. = \sqrt{\frac{2.76 \times 97.24}{111} + \frac{4.00 \times 96.00}{125}}$$

$$= \sqrt{2.367 + 3.072}$$

$$= 2.33$$

$$CR = \frac{D}{S.E} = \frac{1.30}{2.33}$$

$$= 0.56$$

II SOCIAL INFLUENCE

(A) Father :

(i) Social Activities:

$$S.E. = \sqrt{\frac{58.56 \times 41.44}{111} + \frac{41.60 \times 58.40}{111}}$$

$$= \sqrt{21.77 + 19.44}$$

$$= 6.42$$

$$CR = \frac{D}{S.E} = \frac{17.12}{6.42}$$

$$= 2.66$$

(ii) Public Activities :

$$S.E. = \sqrt{\frac{10.81 \times 89.19}{111} + \frac{21.60 \times 78.40}{125}}$$

$$= \sqrt{8.688 + 13.55}$$

$$= 4.71$$

$$CR = \frac{D}{S.E.} = \frac{10.79}{4.71}$$

$$= 2.29$$

(iii) Social and Public Activities :

$$S.E. = \sqrt{\frac{6.31 \times 93.69}{111} + \frac{9.60 \times 90.40}{125}}$$

$$= \sqrt{5.326 + 6.944}$$

$$= 3.50$$

$$CR = \frac{D}{S.E} = \frac{3.29}{3.50}$$

$$= 0.94$$

(iv) Nil Activity :

$$S.E. = \sqrt{\frac{24.32 \times 75.68}{111} + \frac{27.20 \times 72.80}{125}}$$

$$= \sqrt{16.59 + 15.84}$$

$$= 5.69$$

$$CR = \frac{D}{S.E.} = \frac{2.88}{5.69}$$

$$= 0.51$$

(B) Mother :

(i) Social Activities and Nil Activity :

$$S.E. = \sqrt{\frac{76.58 \times 23.42}{111} + \frac{73.60 \times 26.40}{125}}$$

$$= \sqrt{16.16 + 15.54}$$

$$= 5.63$$

$$CR = \frac{D}{S.E.} = \frac{2.98}{5.63}$$

$$= 0.53$$

III) Illness in the Family :

(A) Chronic :

$$S.E. = \sqrt{\frac{52.25 \times 47.75}{111} + \frac{29.60 \times 70.40}{125}}$$

$$= \sqrt{22.48 + 16.69}$$

$$= 6.26$$

$$CR = \frac{D}{S.E.} = \frac{22.65}{6.26}$$

$$= 3.62$$

(B) Acute :

$$S.E. = \sqrt{\frac{10.81 \times 89.19}{111} + \frac{9.60 \times 90.40}{125}}$$

$$= \sqrt{13.55 + 6.944}$$

$$= 4.52$$

$$CR = \frac{D}{S.E.} = \frac{1.21}{4.52}$$

$$= 0.27$$

IV HEALTH

(A) Vision Defect :

$$S.E. = \sqrt{\frac{8.10 \times 91.90}{111} + \frac{11.20 \times 88.80}{125}}$$

$$= \sqrt{6.707 + 7.956}$$

$$= 3.83$$

$$CR = \frac{D}{S.E.} = \frac{3.10}{3.83}$$

$$= 0.809$$

$$S.E = \sqrt{\frac{44.40 \times 55.60}{111} + \frac{76.60 \times 23.40}{125}}$$

$$= \sqrt{22.24 + 14.34}$$

$$= 6.04$$

$$CR = \frac{D}{S.E.} = \frac{32.2}{6.04}$$

$$= 5.33$$

(B) Malnutrition :

$$S.E. = \sqrt{\frac{46.80 \times 53.20}{111} + \frac{22.40 \times 77.60}{125}}$$

$$= \sqrt{22.43 + 13.91}$$

$$= 6.02$$

$$CR = \frac{D}{S.E.} = \frac{24.40}{6.02}$$

$$= 4.05$$

V. VOCATIONAL CHOICE

(A) Higher Specialised Profession :

$$S.E. = \sqrt{\frac{22.52 \times 77.48}{111} + \frac{38.40 \times 61.60}{125}}$$

$$= \sqrt{15.71 + 18.92}$$

$$= 5.88$$

$$CR = \frac{D}{S.E.} = \frac{15.88}{5.88}$$

$$= 2.70$$

(B) Higher Type of Supervisiory and Administrative job :

$$S.E. = \sqrt{\frac{3.60 \times 96.40}{111} + \frac{12.00 + 88.00}{125}}$$

$$= \sqrt{3.127 + 8.448}$$

$$= 3.40$$

$$CR = \frac{D}{S.E.} = \frac{8.40}{3.40}$$

$$= 2.18$$

(C) Semi-skilled Trades :

$$S.E. = \sqrt{\frac{46.85 \times 53.15}{111} + \frac{33.60 \times 66.40}{125}}$$

$$= \sqrt{22.44 + 17.84}$$

$$= 6.35$$

$$CR = \frac{D}{S.E.} = \frac{13.25}{6.35}$$

$$= 2.09$$

(D) Agricultural occupation :

$$S.E. = \sqrt{\frac{27.03 \times 72.97}{111} + \frac{16.00 \times 84.00}{125}}$$

$$= \sqrt{17.77 + 10.75}$$

$$= 5.34$$

$$CR = \frac{D}{S.E.} = \frac{11.03}{5.34}$$

$$= 2.06$$

APPENDIX B_3:(I): CALCULATION OF THE PRODUCT-MOMENT CO-EFFICIENT OF CORRELATION BETWEEN THE HEIGHTS AND WEIGHTS OF 111 DULL BACKWARD STUDENTS

Weight in Kgms.(X-Variable)

Height in Cms. (Y-variable)	31-35	36-40	41-45	46-50	51-55	f_y	y'	$f_{y'}$	$f_{y'}^2$	$\sum x'$	$\sum x'y'$
166-170			0 3 0	(2) 10 20	(4) 2 8	15	2	30	60	14	28
161-165			0 10 0	(1) 15 15	(2) 4 8	29	1	29	29	23	23
156-160		0 4 0	0 30 0	(0) 6 0		40	0			2	
151-155	(2) 2 4	(1) 9 9	0 2 0			13	-1	-13	13	-13	13
146-150	(4) 5 20	(2) 7 14				12	-2	-24	48	-17	34
141-145	(6) 2 12					2	-3	-6	18	-4	12
f_x	9	20	45	31	6	111		16	168	5	110
x'	-2	-1	0	1	2						
$f_{x'}$	-18	-20		31	12	5					
$f_{x'}^2$	36	20		31	24	111					
$\sum y'$	-18	-23	14	35	8	16					
$\sum x'y'$	36	23		35	16	110					

$$C_x = \frac{\sum x'}{N} = \frac{5}{111} = 0.04 \qquad \therefore C_x^2 = 0.0016$$

$$C_y = \frac{\sum y'}{N} = \frac{16}{111} = 0.14 \qquad \therefore C_y^2 = 0.0196$$

$$\sigma_x = \sqrt{\frac{\sum f_{x'}^2}{N} - C_x^2} \times i$$

$$= \sqrt{\frac{111}{111} - 0.0016} \times 5$$

$$= 0.99 \times 5$$

$$= 4.95$$

$$\sigma_y = \sqrt{\frac{\sum f_{y'}^2}{N} - C_y^2} \times i$$

$$= \sqrt{\frac{168}{111} - 0.0196} \times 5$$

$$= 1.21 \times 5$$

$$= 6.05$$

$$r = \frac{\frac{\sum x'y'}{N} - C_x C_y}{\sigma'_x \, \sigma'_y}$$

$$= \frac{\frac{110}{111} - 0.04 \times 0.14}{0.99 \times 1.21}$$

$$= \frac{0.9845}{1.198}$$

$$= 0.8223$$

APPENDIX B_3:(II): CALCULATION OF THE PRODUCT MOMENT COEFFICIENT OF CORRELATION BETWEEN THE HEIGHTS AND WEIGHTS OF 125 NORMAL STUDENTS

Weight in Kgms(X-Variable)

Height in cms. (Y Variable)	31-35	36-40	41-45	46-50	f_y	y'	$f_{y'}$	$f_{y'}^2$	$\sum x'$	$\sum x'y'$
166-170				3 3 9	3	3	9	27	3	9
161-165			0 4 0	(2) 10 20	14	2	28	56	10	20
156-160		(-1) 3 -3	0 32 0	(1) 1 1	36	1	36	36	-2	-2
151-155	0 1 0	0 20 0	0 11 0		32	0			-22	
146-150	(2) 9 18	(1) 10 10	0 1 0		20	-1	-20	20	-28	28
141-145	(4) 14 56	(2) 4 8			18	-2	-36	72	-32	64
136-140	(6) 2 12				2	-3	-6	18	-4	12
f_x	26	37	48	14	125		11	229	-75	131
x'	-2	-1	0	1						
$f_{x'}$	-52	-37		14	-75					
$f_{x'}^2$	104	37		14	155					
$\sum y'$	-43	-15	39	30	11					
$\sum x'y'$	86	15		30	131					

$$c_x = \frac{\sum x'}{N} = \frac{-75}{125} = -0.6 \quad \therefore \quad c_x^2 = +0.36$$

$$c_y = \frac{\sum y'}{N} = \frac{11}{125} = 0.088 \quad \therefore \quad c_y^2 = +0.0077$$

$$\sigma_x = \sqrt{\frac{\sum f x_1^2}{N} - c_x^2} \times i$$

$$= \sqrt{\frac{155}{125} - 0.36} \times 5$$

$$= 0.908 \times 5$$

$$= 4.54$$

$$\sigma_y = \sqrt{\frac{\sum f_{y'}}{N} - c_y^2} \times i$$

$$= \sqrt{\frac{229}{125} - 0.0077} \times 5$$

$$= 1.35 \times 5$$

$$= 6.75$$

$$r = \frac{\frac{\sum x'y'}{N} - c_x c_y}{\sigma_{x'} \sigma_{y'}}$$

$$= \frac{\frac{131}{125} + 0.6 \times 0.088}{0.908 \times 1.35}$$

$$= \frac{1.1008}{1.2285}$$

$$= 0.8960$$