COMPARISON OF F.Y.B.SC.MATHEMATICS & PHYSICS STUDENT STRENGTH OF M. V. P. S. ARTS, COMMERCE & SCIENCE COLLEGE, NANDGAON

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Abstract

This paper Compares F.Y.B.Sc. Mathematics &Physics student strength of M.V.P.S. Arts, Commerce & Science College, Nandgaon. Dataof F.Y.B.Sc. Mathematics &Physics student strength were collected from department of Mathematics &Physics of last six years. The data wereanalyzedusingχ^2(Chi-square) test. Generally,students offering Physicsalso offer Mathematics butthe result is surprisingly different.

Keywords: -Observed frequency, Expected frequency, χ^2(Chi-square) test, Level of significance, Degrees of freedom.

Introduction: - Students offer various subjects so they have to deal with idle time. If optional subjects reduced the idle time will bereduced. So I have taken up this problem "Can Mathematicsis made compulsory for students offering Physics?" Thus we test the null hypothesis "Students who offer Physics also offer Mathematics."If Mathematics made compulsory then it will reduce idle time for students which will be used for extra activities.

Collection of data:- Data were collected, of last six years regarding students who chosen Mathematics &Physics, from department of Mathematics &Physics of M.V.P.S. Arts, Commerce & Science College, Nandgaon which was as follows:-

Academic Year	Number of students chosen		Row Total
	Mathematics	**Other subject**	
2011-12	28	6	34
2012-13	31	22	53
2013-14	42	30	72
2014-15	37	31	68
2015-16	33	34	67
2016-17	50	26	76
Column Total	221	149	**370** (Grand Total)

Hypothesis testing:-

Null hypothesis (H_0):Students who offer Physics also offer Mathematics.

Alternate hypothesis (H_1): Students who offer Physics may not offer Mathematics.

Expected frequency E_{ij} ,was calculated using following formula

$$E_{ij} = \frac{Rowtotal \times Columntotal}{Grandtotal}, \qquad 1 \le i \le 5, 1 \le j \le 2[1]$$

O_{ij} (Observed Frequency)	E_{ij} (Expected Frequency)	$\frac{(O_{ij} - E_{ij})^2}{E_{ij}}$
28	20	2.9583
31	32	0.0135
42	43	0.0235
37	41	0.319
33	40	1.2316
50	45	0.4713
6	14	4.2261
22	21	0.0205
30	29	0.0349
31	27	0.4843
34	27	1.8246
26	31	0.6842
Total 370	370	12.2918

where value of E_{ij} & $\frac{(O_{ij} - E_{ij})^2}{E_{ij}}$ is rounded off.

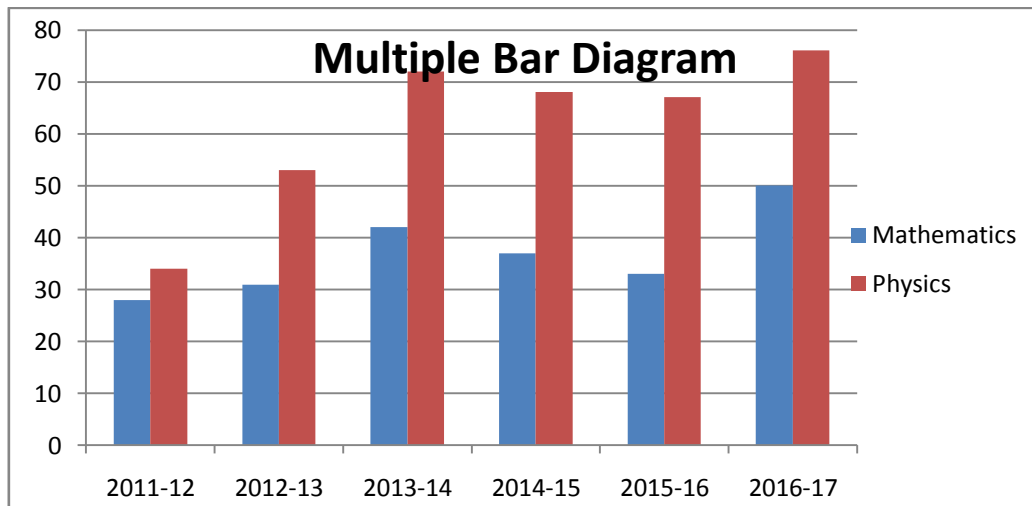Then χ^2 is calculated using following formula $\chi^2 = \sum \frac{(O_{ij} - E_{ij})^2}{E_{ij}}$[1]

$$\therefore \chi^2 = 12.2918$$

And **table value of χ^2** at 5% level of significance & 5 degrees of freedom = **11.070**

Conclusion:-

As 12.2918 > 11.070, reject the null hypothesis at 5% level of significance that is students offered Physics may not offer Mathematics, generally which is not the case.

Discussion:-

After observing above multiple bar diagram, there is a change in trend from the academic year 2015-16 to 2016-17. In 2015-16, 49.25% students offered Mathematics while in 2016-17, 65.79% students offered Mathematics. After 4 to 5 years if the same study is repeated then result might be different.

Reference:-

N. Gurumani: - An introduction to biostatistics, 2nd revised edition, MJP publishers, Chennai 600 005