सत्यं शिवं सुन्दरम्

Project Report on

ISSUES AND CHALLENGES AFFECTING ON STUDENTS ACADEMIC PERFORMANCE

(Case of Higher Secondary Education)

The Maharaja Sayajirao University of Baroda

Gujarat, India

Department of Statistics

Faculty of Science

Presented By,   **Guided By,**

Prachi Patel   Dr. Rupal Shah

Zainab Chhatariya

Mukund Sojitra

Dipak Bariya

<u>CERTIFICATION</u>

This is to certify that the project work is entitled on ISSUES AND CHALLENGES AFFECTING ON STUDENT ACADEMIC PERFORMANCE (Case of Higher secondary Students)

Is an original work carried out by Prachi Patel, Zainab Chhatariya, Mukund Sojitra, Dipak Bariya as a team in the academic year 2019-20 in respect of project work prescribed for the Master degree in statistics and has presented on the time and with enthusiasm.

I wish them good success in future.

....

Dr. Rupal Shah　　　　　**Dr. Vipul Kalamkar**

(Guide)　　　　　　　　**(Head of Statistics Depart.)**

....

Date

<u>ACKNOWLEDGMENT</u>

Presentation, Inspiration and Motivation always played a key role in the success of any venture.

In the accomplishment of this project successfully, many people have owned upon me their blessings and the heart pledged support, this time we are utilizing to thank all people who have been concerned with this project.

Primarily, We would like to thank god for being able to complete this project with success. Then I would like to thank our head of statistics department Dr. Vipul Kalamkar and our project guide Dr. Rupal Shah, whose valuable guidance has been the ones that helped us patch this project and make it full proof success. Their suggestions and instructions have served as the major contributor towards the completion of this project.

Then we would like to thank our parents and friends whose valuable guidance has been very helpful in various phases of the completion of this project.

Last but not least, we would like to thank our classmates who helped us a lot.

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<u>INTRODUCTION</u>

Education is a weapon to improve one's life. It is probably the most important tool to change one's life. Education for a child begins at home. Education certainly determines the quality of an individual's life. Education improves one's knowledge, skills and develops the personality and attitude. Most noteworthy, Education affects the chances of employment for people. A highly educated individual is probably very likely to get a good job.

So, education is an essential and indispensable need to live in the modern world. Education contributes to

- Ability to read and write
- Descent livelihood
- Better communication
- Use of technology
- Secure transactions
- Serve society
- Knowledge propagation
- Social harmony and more

Due to such significance, the governments around the world spend huge funds on it.

They encourage people to study by providing good universities, scholarships, accommodation and other allowances.

The valuable childhood is spent on education so that he could live a better life in the future.

The parents are also eager to educate their child. The demand for education is so high that there is a reasonable level of business involved around it.

Educations enables individuals to express their views efficiently. Educated individuals can explain their opinions in a clear manner. Hence, educated people are quite likely to convince people to their point of view.

Most importantly, higher secondary education is a key to students future, Because there are numerous factors that contribute an important part in enhancing the academic performance of students. The academic performance determines the future goals and objectives of students. What subject they will specialize in colleges and universities, which educational institutions they will get enrolled into, what career opportunities they would take up and so forth.

A students future depends on their academic performance. So how well they perform in their academic performance more brighter their future is, but due to some major issues in school and their life student can't perform better in their academic performance. So, here we will discuss the factors and issues which affect their academic performance.

➢ **The factors which affect their academic performance are**:

1). Academic aspects

2). Curriculum activity

3). Infrastructure

4). Communication

5). Peer pressure

6). Time management

7). Health problem

8). Home environment

ACADEMIC ASPECTS :

- The student performance should be improve if the administration of the Schools provides proper leaning facilities to the students and also improve the environment of the Schools.

- The student performance should be improve if the students have good and effective communication skills and have good competence in English. For this the administration should take steps to arrange the class for the English language.

- The student should perform well if they are properly guided by the parents and also by their teacher. If the student should know well about their abilities and their competences then he performs well.

CURRICULUM ACTIVITY:

It has been generally assumed that participation in extracurricular activities has a positive impact on the students. However, many also believe that these activities may actually affect student performance in a negative manner due to conflicting time requirements and competing schedules, even if they do in fact enhance student persistence.

These extracurricular activities may include sports, debates, essay writing, drama or theatre, Preparing for different exams, student councils. There are two school of thoughts, one in support of participating and other in support of not participating in extracurricular activities.

So, it is of great interest to determine that how participating in different kinds of activities effects the students, both in academics and as well as in their future professional life.

INFRASTRUCTURE:

The importance of school facilities in the development of effective educational system, particularly at the higher secondary school level cannot be over emphasized. The utilization of the goals and objectives of education require the provision, maximum utilization and appropriate management of the school facilities.

Higher Secondary school, needs school plant and facilities which consist of all types of buildings for academic and non-academic activities; equipment for academic and non-academic activities; areas for sports and games, landscape, farms and gardens, including trees, roads and paths. Other facilities needed by secondary schools include furniture and toilet facilities, lightings, acoustics, storage facilities and parking lots, security, transportations, cleaning materials, food services, and special facilities for special needs. In the context of school education, school facilities includes classrooms, libraries, farms, gardens, laboratories, workshops, offices, stores, school buildings, staff quarters, chairs, tables, text books, magazines, journals, pictures, filmstrips, charts, bulletin board, posters, school museums and chalk-board, etc.

COMMUNICATION:

Communication plays a major role in students life. Students should communicate properly with teachers, parents, friends regarding any doubts or problems. Proper involvement of student in class discussion and with that by clearing their doubts related to their studies can help students to perform better in academic performance. There are situations in which lecturer fails to deliver their class lectures effectively due to their inability to communicate efficiently. So

two- way communication in classroom is essential in assuring that effective teaching and learning can take place. Proper communication with teachers and parents about their carrier or which field they want to take should be done, so they can get clear idea about future goals.

Effective family involvement has a positive impact on students, families and the schools. The research shows that the most effective forms of family involvement are those in which parents actively work directly with their children in the home on learning activities, such as reading, homework or tutoring using materials and instructions provided by teachers. The earlier a parent becomes involved, the more powerful the effect on student achievement.

PEER PRESSURE:

Peer pressure can be both negative and positive. Because if a person is a peer pressuring you for a good cause then it is motivation. Motivation is essential for the growth of a person. While peer pressure for a bad cause will always lead you to a disastrous situation.

In today's generation most of the students are highly influenced by their peer groups and it has an impact with their performance in class.

Peer pressure is one of the powerful forces that influence teenagers, so it is really essential to identify the effects that it might bring to every students and how it affects them.

Having negative peer pressure may encourage a student to have some vices like drinking, smoking, taking drugs and other factors causes absenteeism or cutting classes that drag down their performance in school.

Moreover, "Negative peer pressure is when there are bad things going on and you are either being influenced, persuaded, or pushed into doing something because of peer pressure, and because of that there can be many down effects".

TIME MANAGEMENT:

Time management is very important and it may actually affect individual's overall performance and achievements. However, all of these are related by how individuals manage their time to suit their daily living or to make it flow steadily with their routines.

Each and every student should have time management ability which includes setting goals & priorities, using time management mechanism and being organized in using time.

Time management has a significant impact on the lives of the students commonly for those who are studying in the higher education institutions where there is no existence of parent and teacher supervision. By preparing their time table for studies and school work, by proper time management their academic performance can get better.

HEALTH PROBLEM:

Health is very important in sustaining the success a student may want in their academic career. Stress-management, physical health and mental health are more important than other priorities, especially to modern-day students. Maintaining good physical health is proven to help academic performances.

HOME ENVIRONMENT:

The home environment is considered a powerful influence on the child. The academic performance of any child cannot be separated from the home environment in which the child grows up. Numerous studies revealed that various factors are responsible for scholastic

failure of students, such as low socio-economic background, school related factors, environment of the home, or the support given by the parents and other family members. Parental socioeconomic characteristics to a greater extent determine student's performance in school and their adjustment to life. Family financial resources, which are associated with parents occupation and educational attainment, often imply increased learning opportunities both at home and in school. Indeed, family background is the foundation for children's development, as such family background in terms of family type, size, socio-economic status and educational background play important role in children's educational attainment and social integration.

ISSUES AND CHALLENGES

| Students | |
| Parents | |

Students box connects to:
- Academic aspects
- Peer Pressure
- Time Management
- Health Problems
- Casteism

and

- Curriculum Activity
- Infrastructure
- Communication & Punctuality
- Home & School Environment

Parents box connects to:
- Economical Problems
- Parents Support

and

- Parents Expectations
- Parents Qualification
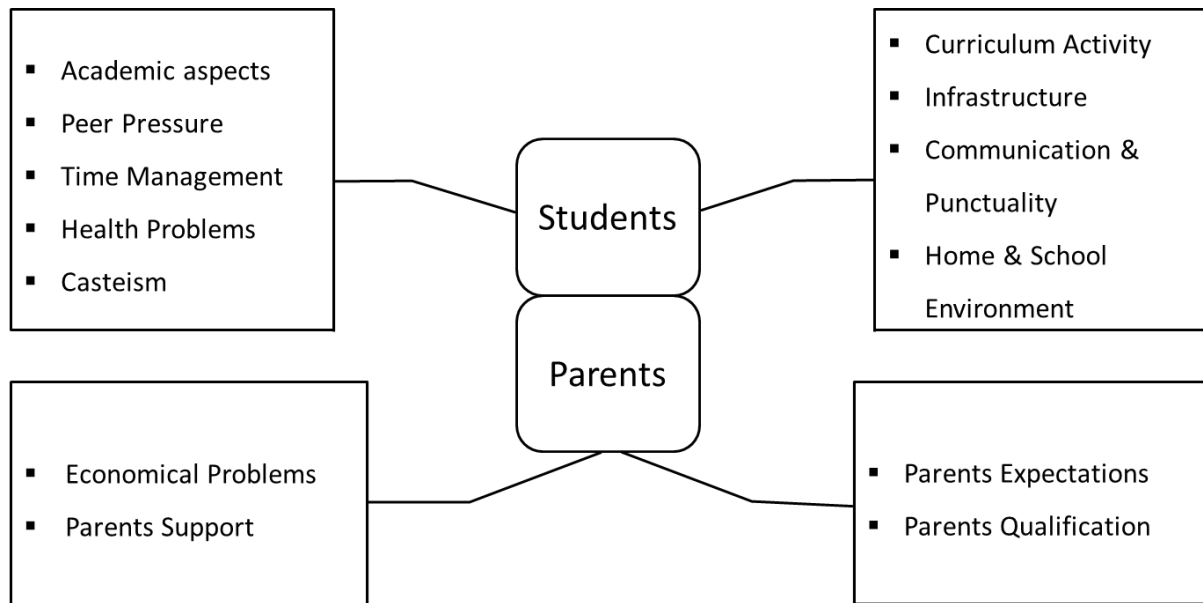
> ## Now, what is the difference between Issues and Challenges?

A challenge denotes an obstacle to overcome, whereas an issue, generally speaking, denotes a protocol for addressing the challenge in bite-size pieces, so to speak, and determining which issue(s) will be addressed first, second, third, etc., in order of importance (and how to rank the issues in order of importance).

ISSUES: An important topic or problem for debate or discussion

Ex, casteism, infrastructure, home and school environment, parents expectation, economical problem, parents support and parents qualification.

CHALLENGES: A task or situation that tests someone's ability

Ex, Academic aspects, peer pressure, time management, health problem, curriculum activity and communication.

OR

If a students can personally solve/overcome a problem, then it is a challenge for him/her. Like Time management, were students can manage their time for study.

And if a problem, which is impossible for a students to overcome, then it becomes an issues for him/her. Like Economical problem, were to solve the Economical problem is too hard for students, so it becomes an issue for students.

Here, we have divided factors into issues and challenges

Issues	Challenges
Infrastructure	Academic Aspects
Home & School Environment	Peer Pressure
Economical Problem	Time Management
Parents Expectation	Health Problem
Parents Qualification	Curriculum Activity
Parents Support	Communication
Casteism	

<u>RESEARCH METHODOLOGY</u>

- ## **Introduction**

  This chapter focused on the methodology that was used in the study. It dealt with research design, location of the study, target population, sampling techniques and sample size, data collection procedures and ethical considerations.

- ## **Research design**

  The research design refers to all the overall strategy that researcher chooses to integrate the different components of the study in a coherent and logical way, thereby, ensuring you will effectively address the research problem. It constitutes the blueprint for the collection, measurement, and analysis of data.

  There are about three research designs; qualitative research design the one that generates words as data for analysis, quantitative research design is the one that generates numbers as data for analysis, and mixed-method design comprises both qualitative and quantitative research designs.

  In our case, we have used mixed method design. But our most of the data are qualitative data.

  The data analysis was planned to include descriptive statistics. The results were statistically evaluated by the use of graphical representation, proportional allocation, Chi-square test, multiple response analysis and linear regression analysis.

- ## **Location of the study**

  The study was conducted in the faculties of Maharaja Sayajirao University (Baroda - Gujarat).

- ## Target Population

    Target population is group of population where such individuals, objects or items from sample are taken for measurement.

    This study was targeted on first year students of bachelor's degree. Because they recently completed their higher secondary education , and hence they are perfectly able to understand the things of higher secondary education.

- ## Study Sample and Sampling Procedure

    Sampling is the act, process or technique of selecting a suitable size of population of a representative part of population for a purpose of determining parameters or characteristics of the whole population.

    We have selected all the faculties of University, were we focused on first year students of bachelor's degree . Here faculties are,

    Arts, Commerce, FFCS, Fine Arts, IFT, Journalism, Law, Medicine, Performing Arts, Pharmacy, Science, Social work, Technology.

- ## Sample Size allocation

    The total population of the first year students studying in bachelors degree of MS University are 13981.

    By using sample proportion formula we get total 291 sample size for our study.

$$n = \frac{N\ Z_{\frac{\alpha}{2}}^2\ P\,(\,1\,-\,P\,)}{(N-1)\epsilon^2 + Z_{\frac{\alpha}{2}}^2\,P\,(\,1\,-\,P\,)}$$

Where,

N = Population Total = **13981**

α = Significance Level = **5%**

ϵ = Margin of Error = **5%**

P = 0.739

Q = 1 – P = 0.261

So, We get Sample Size n = **291**

And after that, using Stratified random sampling method we allotted sample size for all the faculties. Here we considered faculties as strata. So, by proportional allocation formula,

$$n_i = \frac{N_i}{N} * n$$

Hence, we get sample size for every faculties, which is as follows, Arts-25, Commerce-192, FFCS-9, Fine arts-3, IFT-2, Journalism-0, Law-3, Medicine-8, Performing arts-1, Pharmacy-1, Science-34, Social work-2, Technology-12.

- ## Data Collection

We have decided to use primary data collection method for our study. So, we have collected data by giving questionnaire to the students of our target population (Commerce, Arts and Science faculties), but because of covid-19 situation we were not able to collect data for all faculties. So, we decided to collect that data through the help of technology. So, we created a google form and ask students to fill the questionnaire.

<u>OBJECTIVES</u>

- To study the relationship between various factors affecting academic performance of school education.

- To study the significant difference in the academic achievement of higher secondary students based on gender.

- To study the significant difference between government and private schools academic performance.

QUESTIONNAIRE

THE MAHARAJA SAYAJIRAO UNIVERSITY – BARODA

Faculty of Science - Department of Statistics

Issues and Challenges on Academic Performance of Higher Secondary Students

Students Questionnaire

DURING 11th & 12th :

Student Name : _____   School Time : **Morning / Afternoon**

Stream : **Sci. / Com. / Humanity or Arts**   Medium : **Gujarati / Hindi / English / Other**   Gender : **Male / Female**

Board Type : **GSEB / CBSE / OTHER** Age : _____   School Type : **Government / Private**   Cast : **GEN. / OBC / ST / SC**

- How much percentage have you scored in your previous exam ?

10th : _____   **12th** : _____

❖   PARENTS INFORMATION :

- Father's Qualification : ☐   Mother's Qualification : ☐

    (a) Below 10th   (b) 10th PASS   (c) 12th PASS (d) U.G.   (e) P.G.   (f) Doctorate (Ph.D.)   (g) Other

- Father's Occupation : ☐   Mother's Occupation : ☐

    (a) Farmer   (b) Government Job   (c) Private Job   (d) Business   (e) Labour   (f) House Worker   (g) Other

- Father's Income : ☐   Mother's Income : ☐

    (a) 1 – 50K   (b) 50K – 1 Lac.   (c) 1 Lac. – 3 Lacs.   (d) More than 4 Lacs.   (e) None

DURING 11th & 12th :

❖   ACADEMIC ASPECTS :

- Do you get nervous / tensed, while -

    before exams   : (a) Always   (b) Often   (c) Sometimes   (d) Rarely   (e) Never

    giving exams   : (a) Always   (b) Often   (c) Sometimes   (d) Rarely   (e) Never

- How many holidays did you take in a **week** ? (Except public holiday) : _____

- How much time (in hours) did you spend for coaching classes **per week** ?

    (a) None   (b) 1 – 5 Hrs.   (c) 6 – 10 Hrs.   (d) 11 – 15 Hrs.   (e) More than 15 Hrs.

- Did you participate in extra activities at school ?   **YES / NO**

❖ CURRICULUM ACTIVITY :

- On which activities did you spend time other than studies ?

    (a) Sports   (b) Dancing   (c) Singing   (d) Reading   (e) Other   (f) None

- How much time did you give to other activities **per week** ?

    (a) None   (b) 1 – 5 Hrs.   (c) 6 – 10 Hrs.   (d) 11 – 15 Hrs. (e) More than 15 Hrs.

- How much time did you sleep / take rest **per day** ?

    (a) Less than 4 Hrs.   (b) 4 – 6 Hrs.   (c) 6 – 8 Hrs.   (d) More than 8 Hrs.

- Did you have your own mobile ?   **YES / NO**

- How much time did you spend on your phone **per day** ?

    (a) None   (b) 1 – 2 Hrs.   (c) 3 – 4 Hrs.   (d) 5 – 6 Hrs.

- If you were preparing for other competitive exams, then how much time did you give to it,

    per week ?

    (a) None   (b) 1 – 5 Hrs.   (c) 6 – 10 Hrs.   (d) 11 – 15 Hrs. (e) More than 15 Hrs.

❖ INFRASTRUCTURE :

- Did you have library in your school ?   **YES / NO**

    If **YES**, could you get necessary books in library ?   **YES / NO**

- Did you have computer lab in your school ?   **YES / NO**

    If **YES**, Did your school have enough computers ?   **YES/ NO**

- Did you have science laboratories (Physics, Chemistry, Biology) in your school ?   **YES / NO**

    If **YES**, Did your school provide enough lab instruments ?   **YES / NO**

- Did your school provide basic utilities such as water, electricity, canteen etc ?   **YES / NO**

- Did your school provide necessary facilities like table, chair, benches etc ?   **YES / NO**

- How many students were there in your class ? : _____

- Did you get disturbed during lectures due to noisy area ?

  (a) Always   (b) Often   (c) Sometimes   (d) Rarely   (e) Never

❖ COMMUNICATION :

- Which language did you use for communication - (**Multiple Options**)

  In school :   (a) English   (b) Gujarati   (c) Hindi   (d) Marathi   (e) Others

  At home :   (a) English   (b) Gujarati   (c) Hindi   (d) Marathi   (e) Others

- For following questions, give rating between **1 to 5**:

  Ratings : (1) Always   (2) Often   (3) Sometimes   (4) Rarely   (5) Never

	RATINGS
• How frequently you used to communicate for general discussion with your teachers ?	
• How often you used to communicate with your teachers for study purpose ?	
• Did your teachers give satisfactory answers to your questions ?	
• Were you satisfied with the method of teaching ?	
• Did your teachers motivate you to give your best efforts ?	
• How much you used to get involved in your class discussion ?	
• Did you used to discuss doubts with your friends ?	
• Did you used to discuss doubts with your parents ?	
• Did your parents used to guide you for deciding your future goals ?	

❖ PEER PRESSURE :

- Who suggested the stream which you have chosen ? (**Multiple Options**)

  (a) Self   (b) Parents   (c) Siblings   (d) Teachers   (e) Friends   (f) Others

- Are you interested in the stream which you have chosen ?   **YES / NO**

- Did your parents frequently ask you to study ?

  (a) Always   (b) Often   (c) Sometimes   (d) Rarely   (e) Never

- Did you take your parents seriously, if they asked you to study ?   **YES / NO**

- Did your **parents** force you to get good grades ?   **YES / NO**

- Did your **teachers** force you to get good grades ?   **YES / NO**

❖   TIME MANAGEMENT :

- Did you prepare time table for your study –

  On regular basis : (a) Always   (b) Often   (c) Sometimes   (d) Rarely   (e) Never

  Prior to exam   : (a) Always   (b) Often   (c) Sometimes   (d) Rarely   (e) Never

- Did you follow your timetable ?

  (a) Always   (b) Often   (c) Sometimes   (d) Rarely   (e) Never

- How many hours you studied **per day**,

  At school : (a) None   (b) 1 – 3 Hrs.   (c) 4 – 6 Hrs.   (d) 7 – 9 Hrs.

  At home : (a) None   (b) 1 – 3 Hrs.   (c) 4 – 6 Hrs.   (d) 7 – 9 Hrs.

❖   HEALTH PROBLEM :

- Have you faced any major health problem ?   **YES / NO**

  If **YES**, (i)   Whether this health disease had affected your attendance ?   **YES / NO**

  (ii) For how many days were you absent ? : _____

❖   HOME ENVIRONMENT :

- While studying, did you get disturbed due to the noise ?

  (a) Always   (b) Often   (c) Sometimes   (d) Rarely   (e) Never

- Did you stay in a joint family ?   **YES / NO**

  Did it affect your studies ?

  (a) Always   (b) Often   (c) Sometimes   (d) Rarely   (e) Never

  How did it affect in improving your studies ? (a) Positively   (b) Negatively

- Did your parents stay together ?   **YES / NO**

- Whether there used to be any difference of opinions / disputes between your parents ?

  (a) Always   (b) Often   (c) Sometimes   (d) Rarely   (e) Never

GRAPHICAL VISUALIZATION

1. School type:
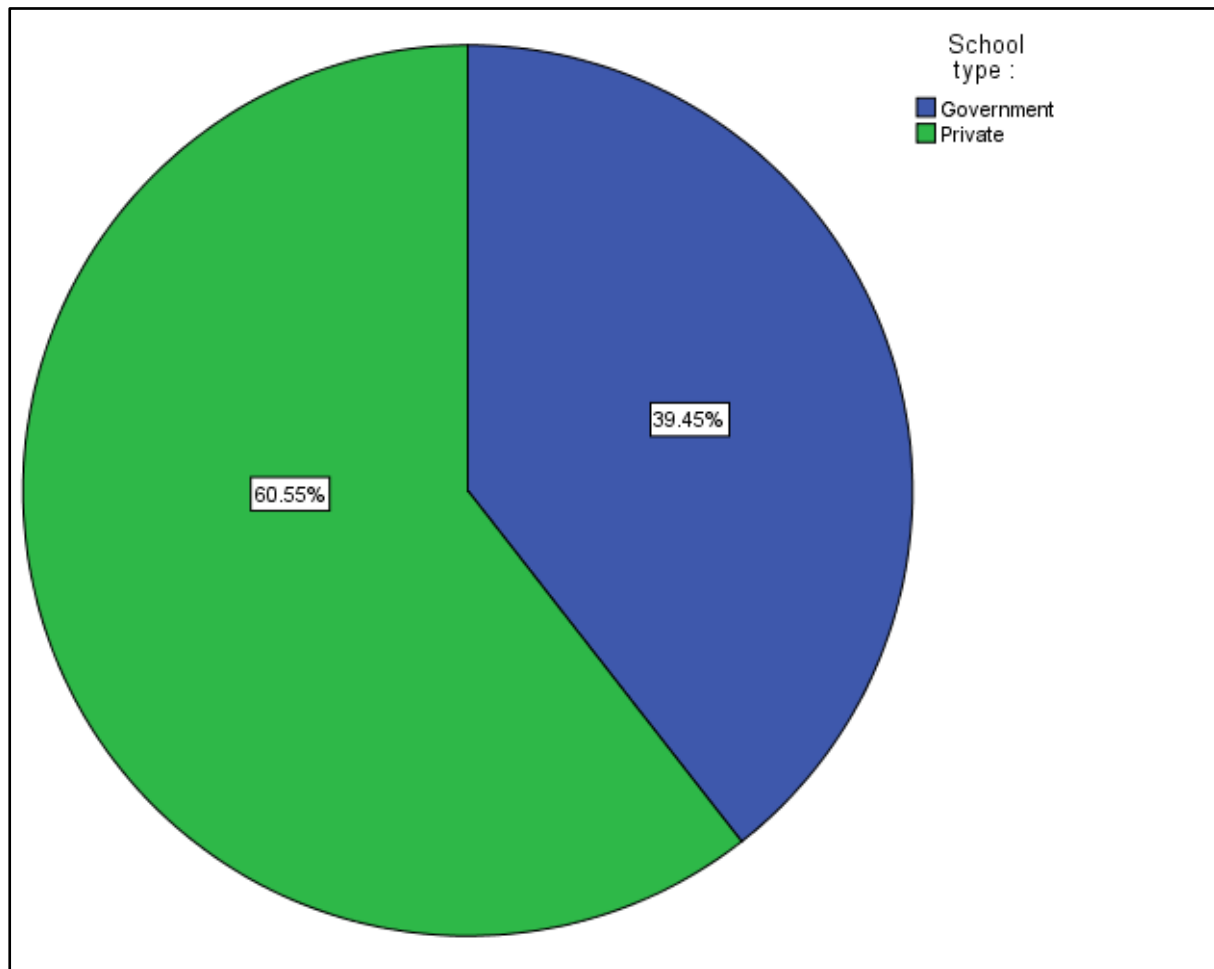
Interpretation: From the above pie chart, we can observe that students are preferring private schools more than government schools.

2. Medium:
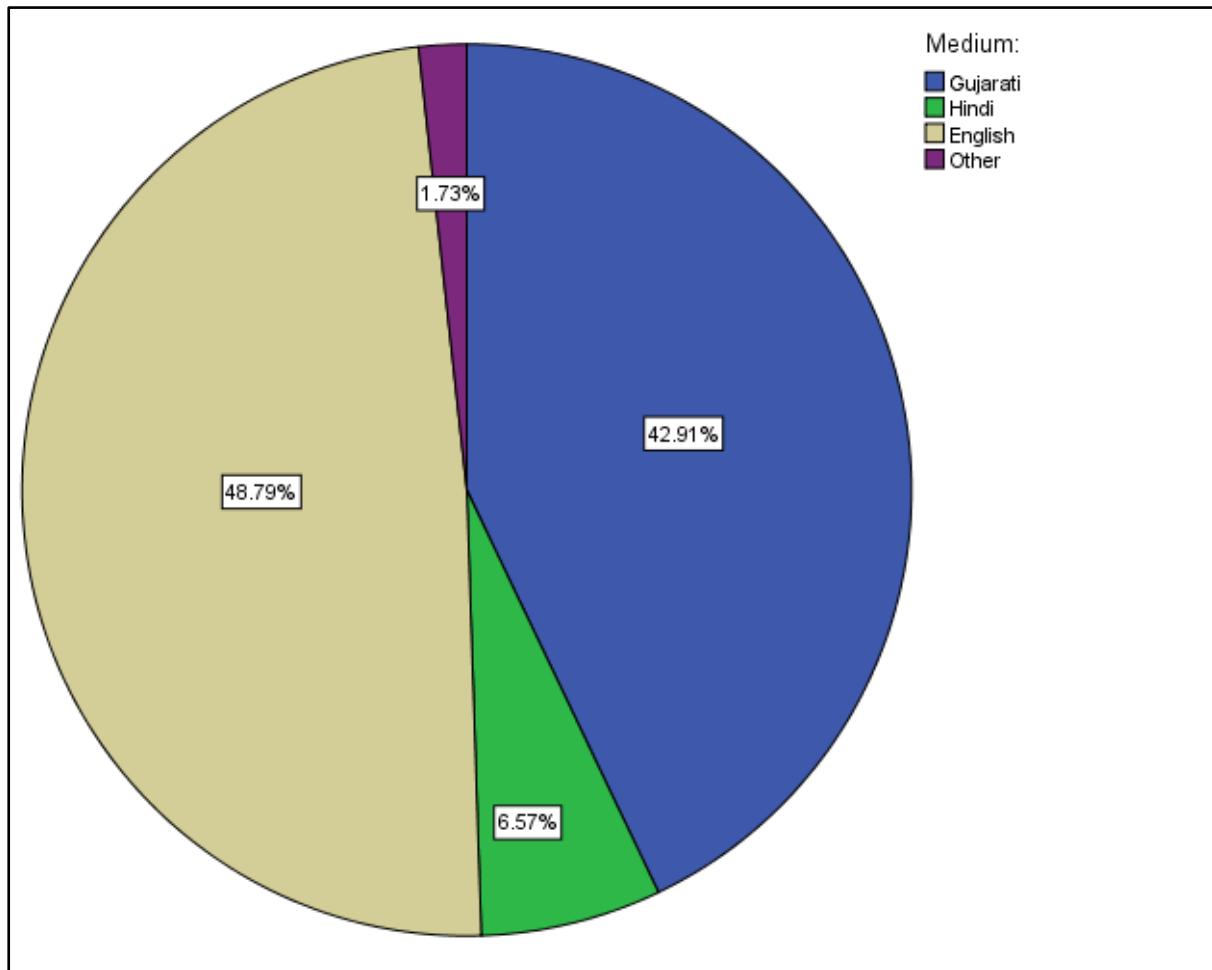
Interpretation: From the above pie chart, we can observe that maximum no. of students are from English medium, and same way many students are from Gujarati medium too.

3. Stream:
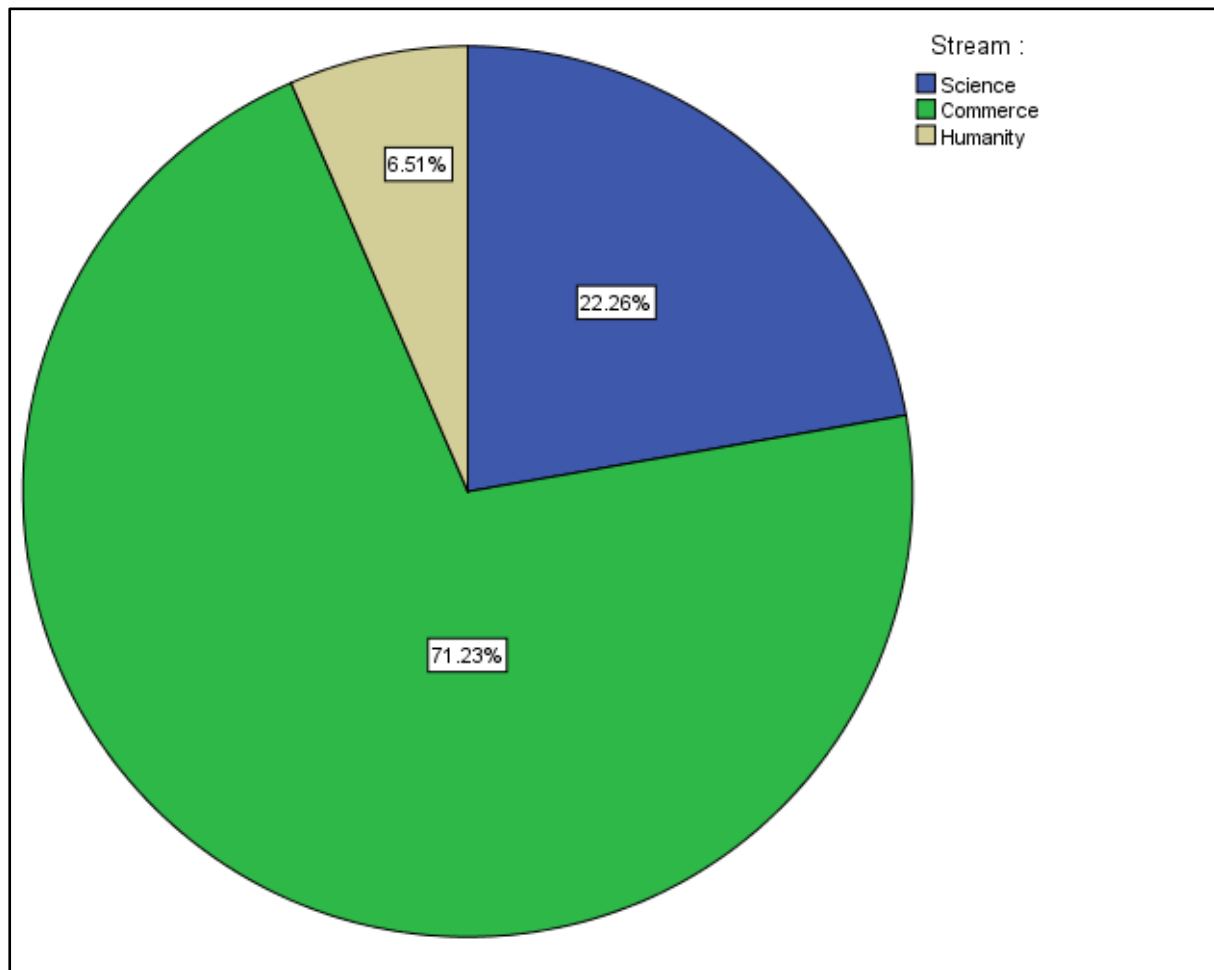
Interpretation: From the above pie chart, we can observe that most of the students are taking commerce as their stream.

4. Board type:

Board Type :
- GSEB
- CBSE
- OTHER

5.92%

17.07%

77.00%
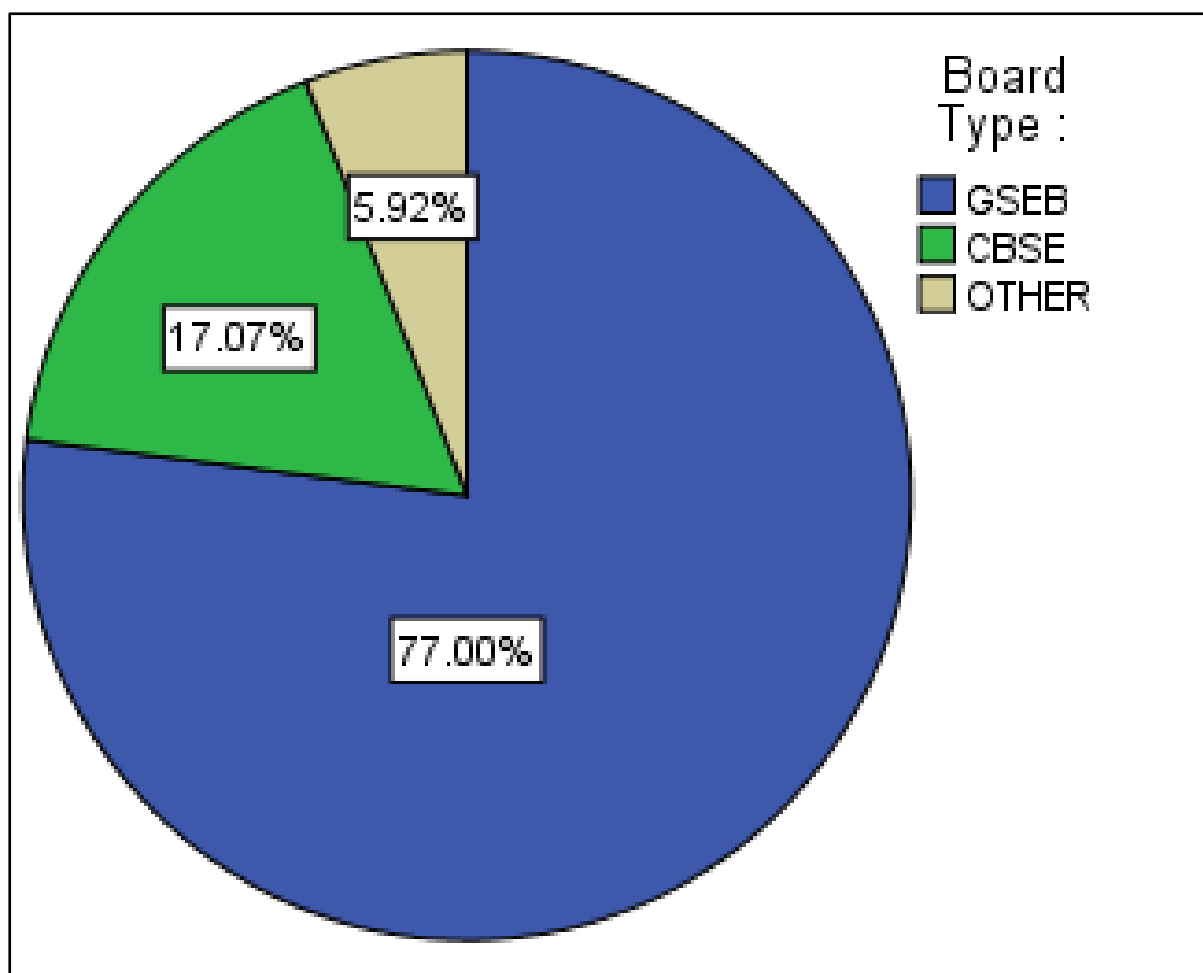
Interpretation: From the above pie chart, the data shows that most of the students are preferring GSEB board.

5. School type v/s. Academic performance
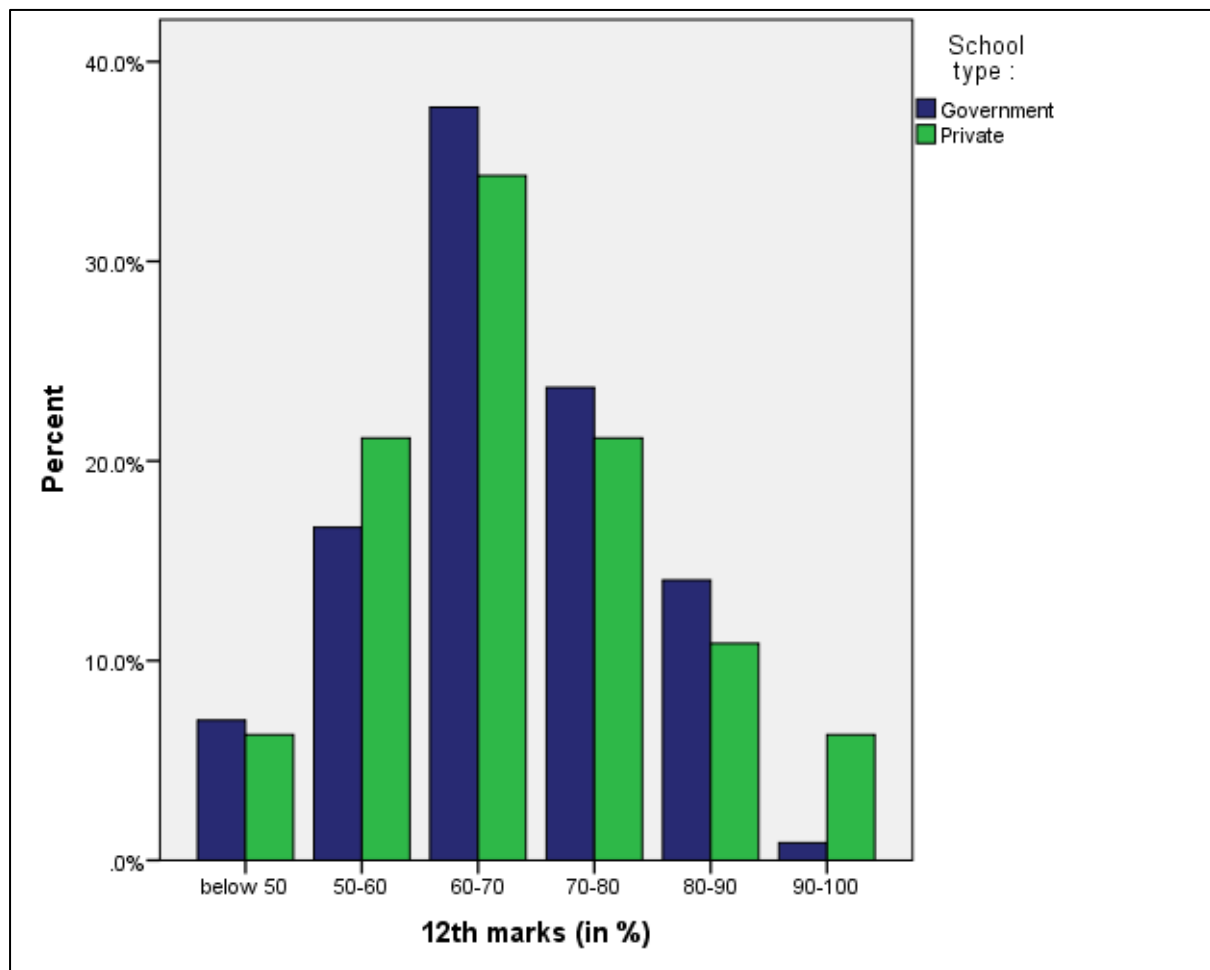
Interpretation: From the above multiple bar diagram, we can observe that mostly government school students are performing better than private school students, but private schools students are performing better between 90-100 %

6. Gender v/s. Academic performance
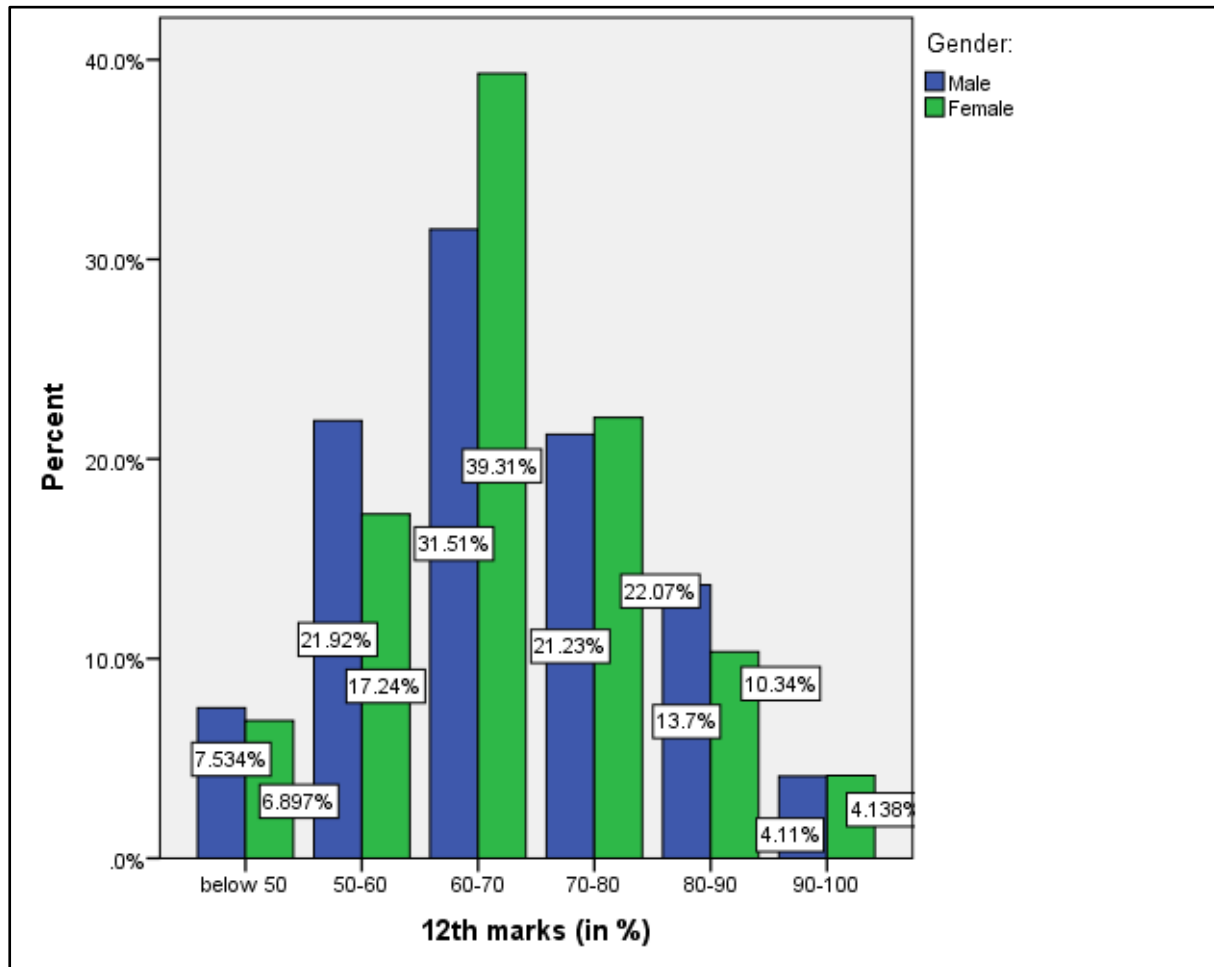
Interpretation: From the above graph, we can observe that mostly female students are performing better than male students.

7. Stream v/s. Academic performance
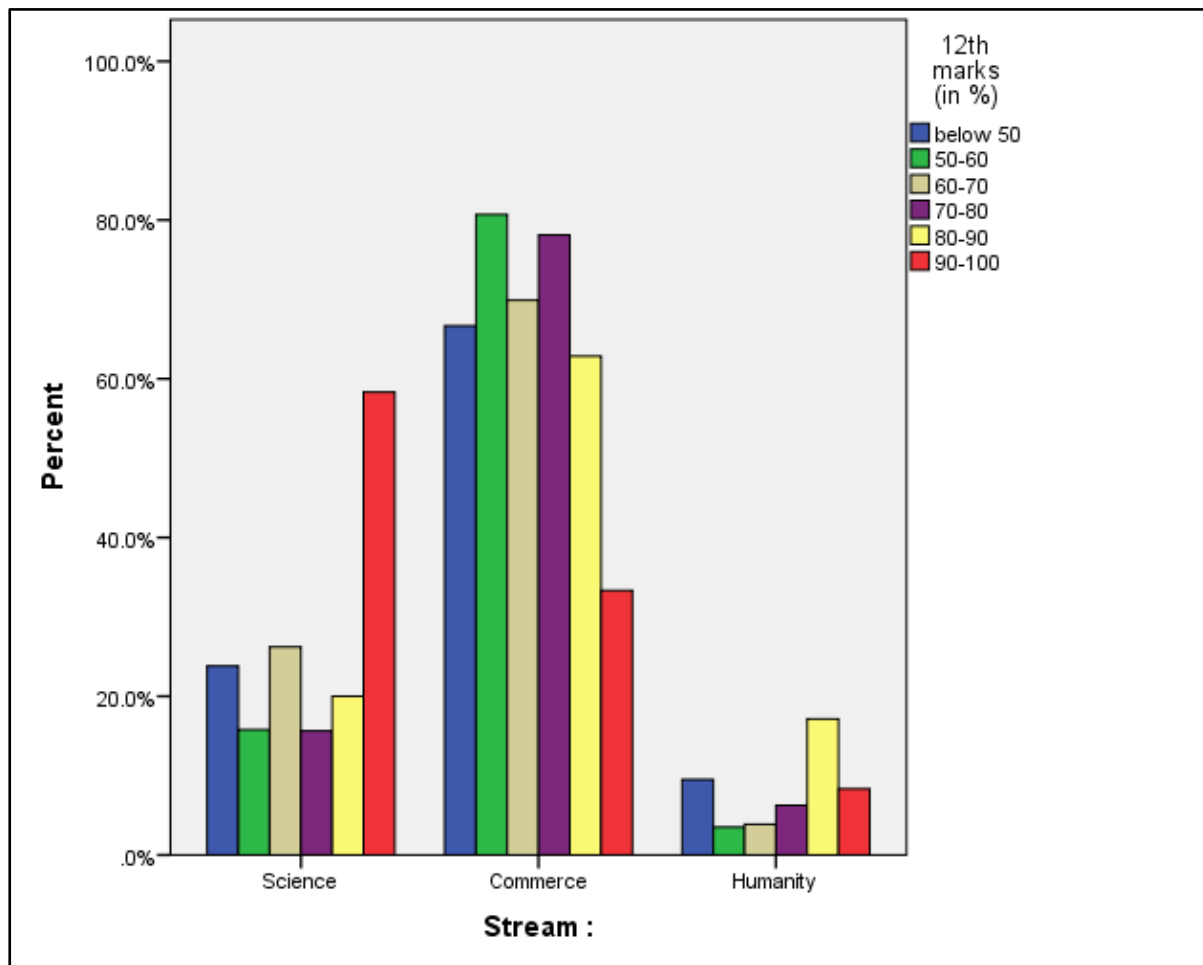
Interpretation: From the multiple bar-diagram, we can observe that most of the students have taken commerce stream, but performance level of science stream students is better than commerce and arts.

8. Father's qualification v/s. Academic performance
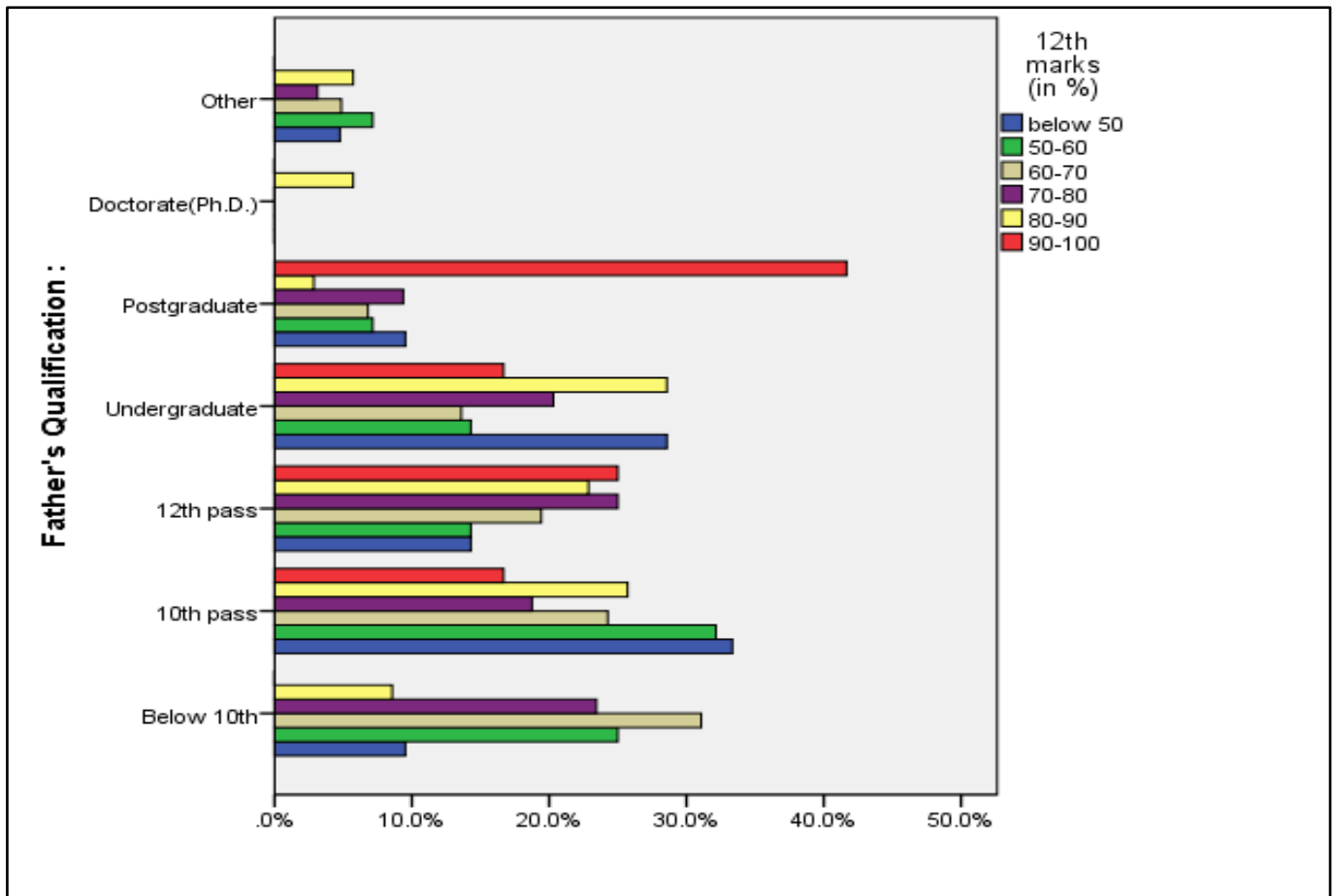
Interpretation: From the above graph, we can observe that mostly students are performing better whose father's qualification is post graduate.

9. Mother's qualification v/s. Academic performance
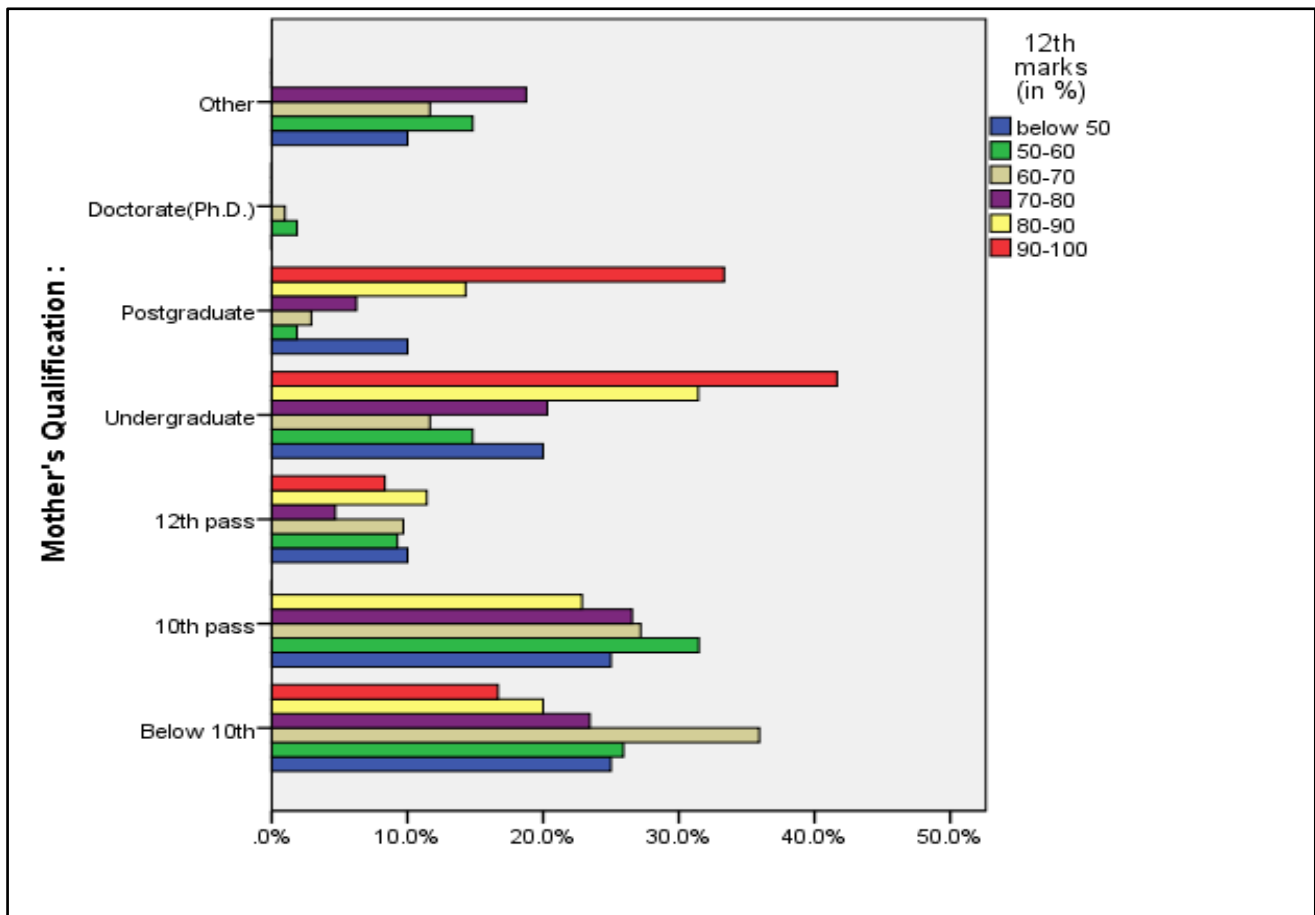
Interpretation: From the above graph, we can observe that mostly students are performing better whose mother's qualification is post graduate and undergraduate.

10. Teacher communication v/s. Academic performance
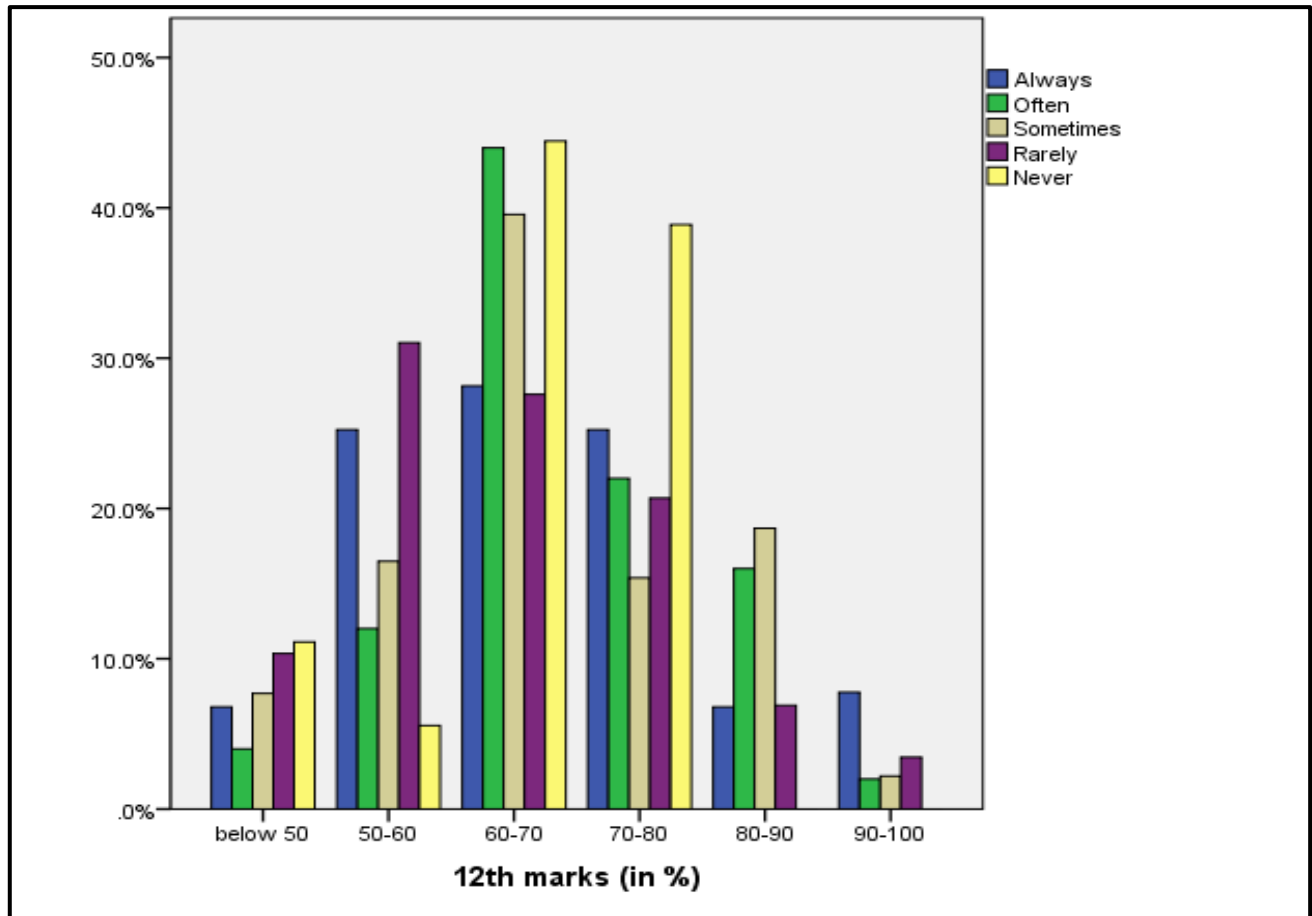
Interpretation:
From the above graph, we can observe that students who often communicate with teachers are performing better than students who never communicate with teachers.

11. Student interest on chosen stream vs. Academic performance
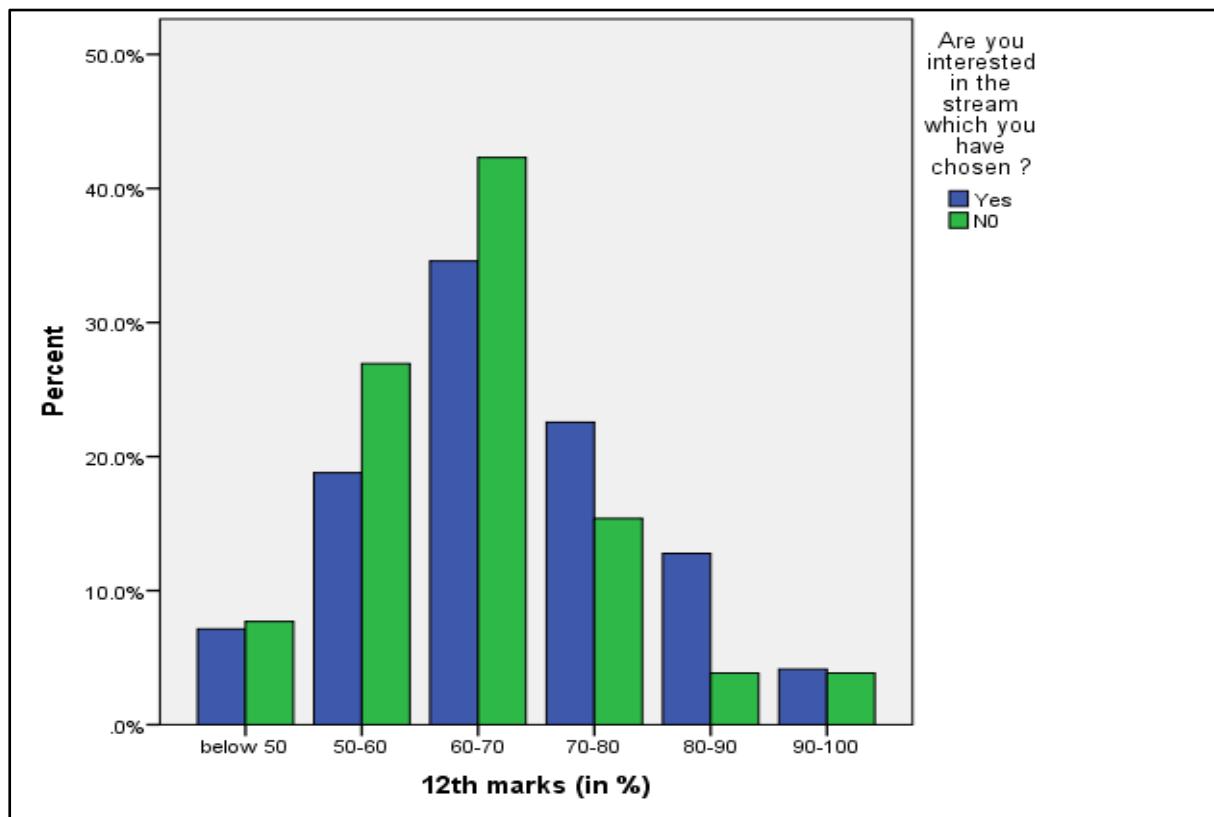
Interpretation: From the above graph, we can observe that the students who takes stream by their choice can perform better than the students who choses stream out of their choice.

12. Parents frequently ask to study vs. Academic performance
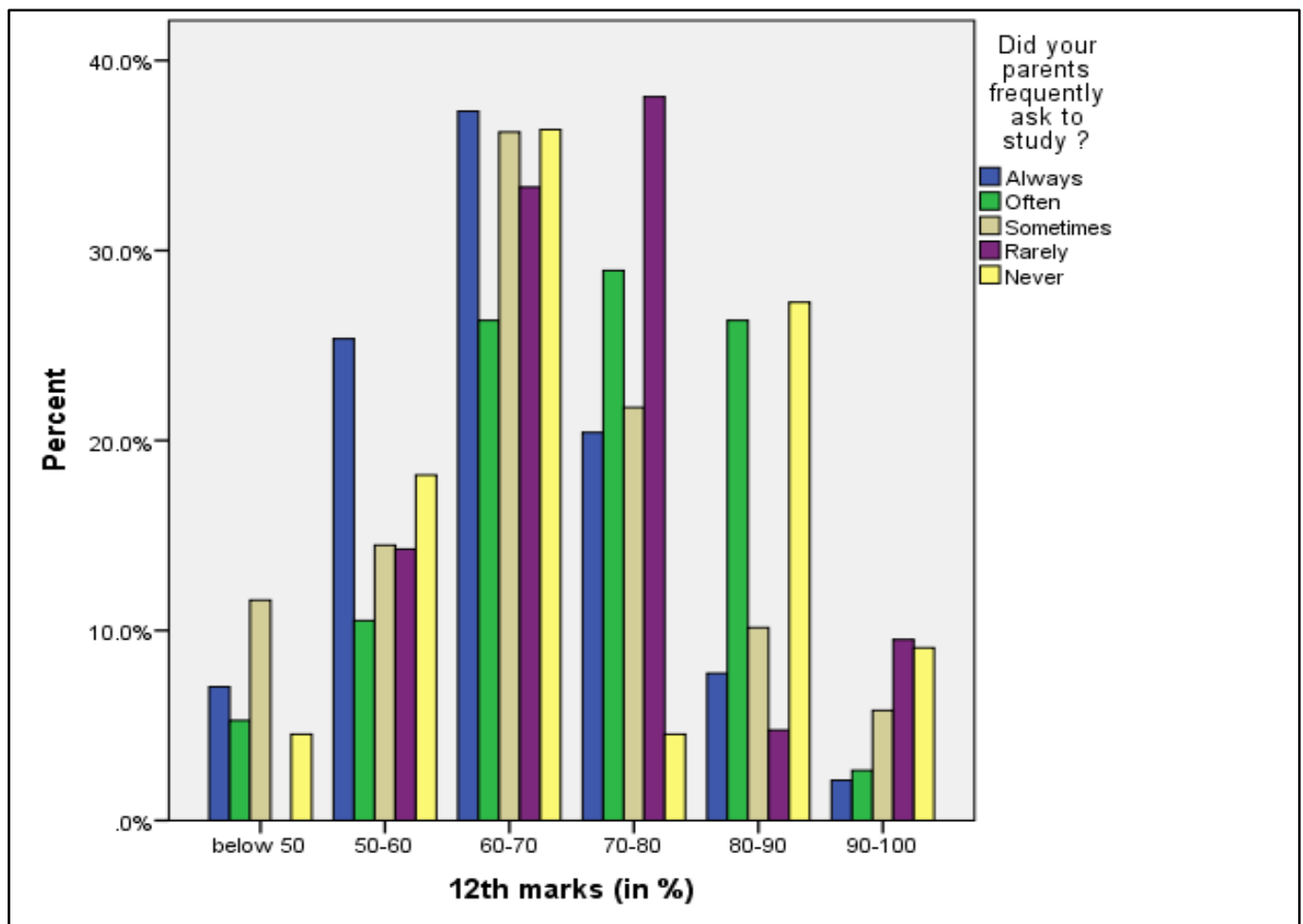
Interpretation: From the above graph, we can observe that parents who always ask students to study are scoring average, but parents who never ask student to study are scoring good grades. So students who have their own carrier goals and are Self motivated doesn't need to force but parents need to force students who scores average.

STATISTICAL ANALYSIS

Our first objective is to find the relationship between various factors affecting on student's academic performance.

So to find relationship, we use chi-square test.

- **CHI-SQUARE TEST**

Chi-square is a statistical test commonly used to compare observed data with expected data based on specific hypothesis.

The chi-square test is always use for testing the null hypothesis, which states that there is no significant difference between the expected and observed result.

The Chi-square test can also be used to test for independence between rows and columns of a contingency table.

- **HYPOTHESES**

Ho: Attributes are independent

v/s

H1: Attributes are not independent

TEST STATISTIC:

$$\chi^2_{cal} = \Sigma \frac{(O-E)^2}{E}$$

$$\chi^2_{tab} = \chi^2_{(\alpha,(r-1)(c-1))}$$

Where:
O = observed frequency
E = expected frequency
α = level of significance
r = no. of rows
c = no. of columns

The conventional rule of thumb is that if all of the expected numbers are greater than 5, it's acceptable to use the chi-square, if an expected number is less than 5, we should use an alternative, such as a Fisher's exact test of independence.

Fisher's exact test is a statistical test used to determine if there are non-random associations between two categorical variables. this method is more powerful, particularly in 2×2 tables.

When the dimensionality exceeds 2x2, Fisher's exact test quickly becomes computationally infeasible. Then, the p-value cannot be calculated exactly anymore but one has to resort to Monte Carlo simulation.

- **GOODMAN AND KRUSKAL'S GAMMA**

The gamma coefficient (also called the gamma statistic, or Goodman and Kruskal's gamma) tells us how closely two pairs of data points "match". Gamma tests for an association between points and also tells us the strength of association. The goal of the test is to be able to predict where new values will rank. For example, if score A scores "LOW" for question 1 and "HiGH" for question 2, will score B also result in a LOW/High response?

Gamma can be calculated for ordinal (ordered) variables that are continuous variables (like height or weight) or discrete variables (like "hot" "hotter" and "hottest"). While there are other coefficients that can calculate relationships for these types of variables, like Somer's D or Kendall's Tau, Goodman and Kruskal's gamma is generally preferred for when you have many tied ranks. It is also particularly useful when your data has outliers, as they don't affect the results much. For some fields of study it may be the preferred method for all ordinal data arranged in a bivariate table. If you have two dichotomous variables (e.g. responses that are yes/no), use Yule's Q instead.

Goodman and Kruskal's gamma uses the following formula,

$$\gamma = \frac{Nc - Nd}{Nc + Nd}$$

Where,

Nc is the number of pairs that rank the same (concordant pairs)

Nd is the number of pairs that don't rank the same(discordant pairs)

The gamma coefficient ranges between -1 and 1.

1 = perfect positive correlation: if one value goes up, so does the other.

-1 = perfect inverse correlation: as one value goes up, the other goes down.

0 = there is no association between the variables

The closer you get to a 1 (or -1), the stronger the relationship. You can deduce the significance of your result by running a significance test for gamma (see below). But how strong these relationships need to be depend upon which field of study you're working in. For example, a .75 might be "strong enough" in one field while another might require over .8.

You can interpret gamma as the proportion of ranked pairs in agreement. For example, if gamma = +1, it means that every single pair in your experiment is in agreement, or that every later has agreed upon which order the items should be ranked.

Gamma treats the variables symmetrically; you don't have to hypothesize which might be dependent and which might be independent variables.

- **TSCHUPROW'S T**

In statistics, Tschuprow's T is a measure association between two nominal variables, given as 0 and 1 (inclusive). It is closely related to Cramer's V, coinciding with it for square contingency tables. It was published by Alexander Tschuprow's (alternative spelling: Chuprov) in 1939. If we have a multinomial sample of size n, the usual way to estimate T from the data is via the formula

$$\hat{T} = \sqrt{\frac{\sum_{i=1}^{r} \sum_{j=1}^{c} \frac{(p_{ij} - p_{i+} p_{+j})^2}{p_{i+} p_{+j}}}{\sqrt{(r-1)(c-1)}}}$$

Where , $p_{ij} = n_{ij}/n$

Where T is the proportion of the sample in cell. This is the empirical value of T. With the Pearson chi-square statistic, this formula can also be written as Tschuprow's T:

$$\hat{T} = \sqrt{\frac{\chi^2/n}{\sqrt{(r-1)(c-1)}}}.$$

- **CROSS TABULATION**

The Crosstabs procedure forms two-way and multiway tables and provides a variety of tests and measures the association for two ways tables. The structure of the table and categories determine what test or measure to use.

Cross tabs statistics and measures of association are computed for two way tables only. If you specify a row, a column and layer factor (control variable), the cross tabs procedure forms one panel of associated statistics and measures for each value of the layer factor (or a of values combination for two or more control variables).

So, here we have applied chi-squared test for some of the factors which generally affects the students academic performance, and checked if that factors are really correlated with performance of the students.

❖ **School Time**

Objective: To check whether School time depends on academic performance or not**.**

To Test :

H0 : there is no association between academic performance and school timing.   **v/s.**

H1 : there is association between academic performance and school timing.

		12th Percentage						Total
		Below 50	50 - 60	60 - 70	70 - 80	80 - 90	90 - 100	
School time :	Morning	15	45	76	49	30	11	226
	Afternoon	6	12	26	13	5	1	63
Total		21	57	102	62	35	12	289

Chi-Square Tests				
	Value	df	Asymp. Sig. (2-sided)	Monte Carlo Sig. (2-sided) Sig.
Pearson Chi-Square	3.859[a]	5	.570	.587[b]
Fisher's Exact Test	3.570			.622[b]
N of Valid Cases	289			
a. 2 cells (16.7%) have expected count less than 5. The minimum expected count is 2.62.				
b. Based on 10000 sampled tables with starting seed 1507486128.				
c. The standardized statistic is -1.513.				

Here, alpha = .05, p-value = .587

Conclusion: p-value > alpha, therefore the data do not provide enough evidence to reject Ho at 5%level of significance. Hence, we conclude that there is no association between academic performance and school timing.

❖ Stream

Objective: To check stream depends on academic performance or not.

Count								
		12th Percentage						Total
		Below 50	50 - 60	60 - 70	70 - 80	80 - 90	90 - 100	
Stream :	Science	5	9	27	10	7	7	65
	Commerce	14	46	72	50	22	4	208
	Humanity	2	2	4	4	6	1	19
Total		21	57	103	64	35	12	292

To Test :

H0 : there is no association between academic performance and stream.   **Ag.**

H1 : there is association between academic performance and stream.

Chi-Square Tests				
				Monte Carlo Sig. (2-sided)
	Value	df	Asymp. Sig. (2-sided)	Sig.
Pearson Chi-Square	22.498a	10	.013	.014b
Fisher's Exact Test	20.165			.015b
N of Valid Cases	292			
a. 7 cells (38.9%) have expected count less than 5. The minimum expected count is .78.				
b. Based on 10000 sampled tables with starting seed 92208573.				
c. The standardized statistic is -.169.				

Here, alpha=0.05 and p-value=0.015

Conclusion: p-value < alpha, therefore the data provides enough evidence to reject Ho at 5%level of significance. Hence, we conclude that there is association between academic performance and school stream.

As there is association between two attributes, i.e. academic performance and school stream. Then how much?

For that we use Tschuprow's T association:

There is 15.60% association between student academic performance and stream.

❖ Medium

Objective: To check school medium depends on academic performance or not.

Count		Below 50	50 - 60	60 - 70	70 - 80	80 - 90	90 - 100	Total
		12th Percentage						Total
Medium	**Gujarati**	7	28	45	25	15	4	124
	Hindi	2	6	5	5	1	0	19
	English	11	21	51	31	19	8	141
	Other	1	2	1	1	0	0	5
Total		21	57	102	62	35	12	289

To Test :

H0 : there is no association between academic performance and Medium.   **Ag.**

H1 : there is association between academic performance and Medium.

Chi-Square Tests				Monte Carlo Sig. (2-sided)
	Value	df	Asymp. Sig. (2-sided)	Sig.
Pearson Chi-Square	11.232a	15	.736	.745b
Fisher's Exact Test	11.011			.710b
N of Valid Cases	289			
a. 11 cells (45.8%) have expected count less than 5. The minimum expected count is .21.				
b. Based on 10000 sampled tables with starting seed 1122541128.				
c. The standardized statistic is .608.				

Here, alpha=0.05 and p-value=.710

Conclusion : p-value > alpha, therefore the data do not provide enough evidence to reject Ho at 5%level of significance . Hence, we conclude that there is no association between academic performance and school medium.

❖ Gender

Objective: To check whether gender is dependent on academic performance or not.

To Test :

H0 : there is no association between academic performance and gender.   **Ag.**

H1 : there is association between academic performance and gender.

Count								
		12th Percentage						Total
		Below 50	50 - 60	60 - 70	70 - 80	80 - 90	90 - 100	
Gender	Male	11	32	46	31	20	6	146
	Female	10	25	57	32	15	6	145
Total		21	57	103	64	35	12	291

Chi-Square Tests				
	Value	df	Asymp. Sig. (2-sided)	Monte Carlo Sig. (2-sided) Sig.
Pearson Chi-Square	2.809a	5	.729	.735b
Fisher's Exact Test	2.866			.729b
N of Valid Cases	291			
a. 0 cells (0.0%) have expected count less than 5. The minimum expected count is 5.98.				
b. Based on 10000 sampled tables with starting seed 2110151063.				
c. The standardized statistic is .012.				

Here, alpha=0.05 and p-value=.729

Conclusion: p-value > alpha, therefore the data do not provide enough evidence to reject Ho at 5% level of significance. Hence, we conclude that there is no association between academic performance and gender.

❖ Board Type

Objective: To check whether board type depends on academic performance or not.

To Test :

H0 : there is no association between academic performance and board type.   **Ag.**

H1 : there is association between academic performance and board type.

Count								
		12th Percentage						Total
		Below 50	50 - 60	60 - 70	70 - 80	80 – 90	90 - 100	
Board Type :	**GSEB**	18	47	81	49	21	5	221
	CBSE	1	4	17	11	9	7	49
	OTHER	1	5	2	4	5	0	17
Total		21	57	103	64	35	12	292

Chi-Square Tests				
				Monte Carlo Sig. (2-sided)
	Value	df	Asymp. Sig. (2-sided)	Sig.
Pearson Chi-Square	31.031[a]	10	.001	.002[b]
Fisher's Exact Test	26.717			.001[b]
N of Valid Cases	287			
a. 7 cells (38.9%) have expected count less than 5. The minimum expected count is .71.				
b. Based on 10000 sampled tables with starting seed 605580418.				
c. The standardized statistic is 3.099.				

Here ,alpha=0.05 and p-value=0.001

Conclusion: p-value < alpha, therefore the data provides enough evidence to reject Ho at 5%level of significance. Hence, we conclude that there is association between academic performance and board type.

As there is association between two attributes, i.e., academic performance and board type. Then how much?

For that we use Tschuprow's T association:

There is 18.33% association between student academic performance and board type.

❖ School Type

Objective: To check whether school type depends on academic performance or not.

To Test :

   H0 : there is no association between academic performance and school type.   **Ag.**

   H1 : there is association between academic performance and school type.

Count								
		12th Percentage						Total
		Below 50	50 – 60	60 - 70	70 - 80	80 - 90	90 - 100	
School type	Government	8	19	43	27	16	1	114
	Private	11	37	60	37	19	11	175
Total		19	56	103	64	35	12	289

Chi-Square Tests				
	Value	Df	Asymp. Sig. (2-sided)	Monte Carlo Sig. (2-sided) Sig.
Pearson Chi-Square	6.639[a]	5	.249	.251[b]
Fisher's Exact Test	6.910			.229[b]
N of Valid Cases	289			
a. 1 cells (8.3%) have expected count less than 5. The minimum expected count is 4.73.				
b. Based on 10000 sampled tables with starting seed 126474071.				
c. The standardized statistic is .296.				

Here, alpha=0.05 and p-value=0.229

Conclusion: p-value > alpha, therefore the data do not provide enough evidence to reject Ho at 5% level of significance. Hence, we conclude that there is no association between academic performance and school type.

❖ Cast

Objective: To check cast depends on academic performance or not.

To Test :

   H0 : there is no association between academic performance and cast.   **Ag.**

   H1 : there is association between academic performance and cast.

Count								
		12th Percentage						Total
		Below 50	50 - 60	60 - 70	70 – 80	80 - 90	90 - 100	
Cast :	General	11	38	68	45	24	10	196
	OBC	7	11	28	14	10	2	72
	ST	1	1	3	1	1	0	7
	SC	2	6	4	3	0	0	15
Total		21	56	103	63	35	12	290

Chi-Square Tests				Monte Carlo Sig. (2-sided)
	Value	Df	Asymp. Sig. (2-sided)	Sig.
Pearson Chi-Square	11.530a	15	.714	.718b
Fisher's Exact Test	11.028			.693b
N of Valid Cases	290			
a. 12 cells (50.0%) have expected count less than 5. The minimum expected count is .29.				
b. Based on 10000 sampled tables with starting seed 1487459085.				
c. The standardized statistic is -2.344.				

Here, alpha=0.05 and p-value=.693

Conclusion: p-value > alpha, therefore the data do not provide enough evidence to reject Ho at 5% level of significance. Hence, we conclude that there is no association between academic performance and cast.

❖ Father's Qualification

Objective: To check whether father's qualification depends on student's academic performance or not.

To Test :

    H0 : there is no association between academic performance and father's qualification. **Ag.**

    H1 : there is association between academic performance and father's qualification.

Chi-Square Tests				
	Value	Df	Asymp. Sig. (2-sided)	Monte Carlo Sig. (2-sided)
				Sig.
Pearson Chi-Square	54.831[a]	30	.004	.007[b]
Fisher's Exact Test	41.639			.035[b]
N of Valid Cases	291			
a. 23 cells (54.8%) have expected count less than 5. The minimum expected count is .08.				
b. Based on 10000 sampled tables with starting seed 2000000.				
c. The standardized statistic is 1.846.				

Here, alpha=0.05 and p-value=0.035

Conclusion : p-value < alpha, therefore the data provides enough evidence to reject Ho at 5%level of significance . Hence, we conclude that there is association between academic performance and father's qualification.

As there is association between two attributes, i.e. academic performance and father's qualification. Then how much?

For that we use Tschuprow's T association:

There is 17.72% association between student academic performance and father's qualification.

❖ Father's Occupation

Objective: To check whether father's occupation depends on student's academic performance or not.

To Test :

   H0 : there is no association between academic performance and fathers occupation.
Ag.

   H1 : there is association between academic performance and fathers occupation.

Chi-Square Tests				
	Value	df	Asymp. Sig. (2-sided)	Monte Carlo Sig. (2-sided)
				Sig.
Pearson Chi-Square	41.485[a]	30	.079	.084[b]
Fisher's Exact Test	38.474			.073[b]
N of Valid Cases	289			
a. 22 cells (52.4%) have expected count less than 5. The minimum expected count is .08.				
b. Based on 10000 sampled tables with starting seed 624387341.				
c. The standardized statistic is .264.				

Here, alpha = 0.05 and p-value = 0.073

Conclusion: p-value > alpha, therefore the data do not provide enough evidence to reject Ho at 5%level of significance. Hence, we conclude that there is no association between academic performance and father's occupation.

❖ Do you get nervous before exams?

Objective: To check whether students nervousness before exams depend on academic performance or not.

To Test:

H0 : there is no association between academic performance and students nervousness before exams.   **Ag.**

H1 : there is association between academic performance and students nervousness before exams.

Chi-Square Tests				
				Monte Carlo Sig. (2-sided)
	Value	df	Asymp. Sig. (2-sided)	Sig.
Pearson Chi-Square	23.396[a]	20	.270	.272[b]
Fisher's Exact Test	20.065			.415[b]
N of Valid Cases	291			
a. 12 cells (40.0%) have expected count less than 5. The minimum expected count is 1.03.				
b. Based on 10000 sampled tables with starting seed 1993510611.				
c. The standardized statistic is .272.				

Here, alpha=0.05 and p-value=0.415

Conclusion: p-value > alpha, therefore the data do not provide enough evidence to reject Ho at 5% level of significance. Hence, we conclude that there is no association between academic performance and students nervousness before exams.

❖ How much time did you spend on coaching classes per week?

Objective: To check, student spending time in coaching class depends on student's academic performance on not.

To Test :

H0 : there is no association between academic performance and spending time in coaching classes   **Ag.**

H1 : there is association between academic performance and spending time in coaching classes.

Chi-Square Tests				
	Value	df	Asymp. Sig. (2-sided)	Monte Carlo Sig. (2-sided) Sig.
Pearson Chi-Square	37.226[a]	20	.011	.011[b]
Fisher's Exact Test	34.216			.013[b]
N of Valid Cases	287			
a. 12 cells (40.0%) have expected count less than 5. The minimum expected count is .92.				
b. Based on 10000 sampled tables with starting seed 475497203.				
c. The standardized statistic is 1.851.				

Here, alpha = 0.05 and p-value = 0.013

Conclusion: p-value < alpha, therefore the data provides enough evidence to reject Ho at 5%level of significance. Hence, we conclude that there is association between academic performance and students spending time on coaching classes.

As there is association between two attributes , i.e. academic performance and students spending time in coaching class, then how much?

For that we use Tschuprow's T association:

There is 17.03% association between student academic performance and student spending time in coaching class.

❖ Did you participate in extra activity?

Objective: To check whether students participation in extra activity depends on academic performance or not.

To Test:

   H0 : there is no association between academic performance and students participation in extra activity.   **Ag.**

   H1 : there is association between academic performance and students participation in extra activity.

Chi-Square Tests				
	Value	df	Asymp. Sig. (2-sided)	Monte Carlo Sig. (2-sided) Sig.
Pearson Chi-Square	5.204[a]	5	.392	.404[b]
Fisher's Exact Test	5.207			.399[b]
N of Valid Cases	289			
a. 1 cells (8.3%) have expected count less than 5. The minimum expected count is 3.03.				
b. Based on 10000 sampled tables with starting seed 726961337.				
c. The standardized statistic is -.324.				

Here, alpha=0.05 and p-value=0.399

Conclusion: p-value > alpha, therefore the data do not provide enough evidence to reject Ho at 5% level of significance. Hence, we conclude that there is no association between academic performance and students participation in extra activity.

❖ How much time did you give to other activities per week ?

Objective To check whether time giving to other activities affects student's performance or not.

How much time did you give to Others activities per week ? * 12_PR Crosstabulation								
Count								
		12_PR						Total
		Below 50	50 - 60	60 - 70	70 - 80	80 - 90	90 - 100	
How much time did you give to Others activities per week ?	None	5	8	18	6	5	1	43
	1 - 5 Hrs	11	34	50	38	20	8	161
	6 - 10 Hrs	4	5	16	9	5	3	42
	11 - 15 Hrs	1	4	10	6	3	0	24
	more than 15 Hrs	0	6	9	5	2	0	22
Total		21	57	103	64	35	12	292

Observation : Here, we can observe that most of the students are giving 1- 5 hours of time to other activities per week.

To Test :

H0 : there is no association between academic performance and student's giving time to other activities.   **Ag.**

H1 : there is association between academic performance and student's giving time to other activities.

Chi-Square Tests				
	Value	**df**	**Asymptotic Significance (2-sided)**	**Monte Carlo Sig. (2-sided)** **Significance**
Pearson Chi-Square	12.788ª	20	.886	.896ᵇ
Fisher's Exact Test	11.372			.940ᵇ
N of Valid Cases	292			
a. 13 cells (43.3%) have expected count less than 5. The minimum expected count is .90.				
b. Based on 10000 sampled tables with starting seed 1314643744.				
c. The standardized statistic is .336.				

Here, alpha=0.05 and p-value=.940

Conclusion: p-value > alpha, therefore the data do not provide enough evidence to reject Ho at 5% level of significance. Hence, we conclude that there is no association between academic performance and student's giving time to other activities.

❖ How much time did you sleep / take rest per day ?

Objective : To check whether taking rest per day is dependent on academic performance or not.

How much time did you sleep / take rest per day ? * 12_PR Crosstabulation								
Count								
		12_PR						Total
		Below 50	50 - 60	60 - 70	70 - 80	80 - 90	90 - 100	
How much time did you sleep / take rest per day ?	less than 4 Hrs.	1	2	10	4	1	0	18
	4 - 6 Hrs.	6	13	23	17	3	3	65
	6 - 8 Hrs.	12	28	51	37	26	9	163
	More than 8 Hrs.	2	14	18	6	5	0	45
	999	0	0	1	0	0	0	1
Total		21	57	103	64	35	12	292

Observation : Here, we can observe that students are generally taking 6 – 8 hour sleep per day.

To Test :

H0 : there is no association between academic performance and taking rest/sleep per day.   **Ag.**

H1 : there is association between academic performance and taking rest/sleep per day.

Chi-Square Tests				
	Value	df	Asymptotic Significance (2-sided)	Monte Carlo Sig. (2-sided) Significance
Pearson Chi-Square	21.335a	20	.378	.362b
Fisher's Exact Test	22.773			.298b
N of Valid Cases	292			
a. 15 cells (50.0%) have expected count less than 5. The minimum expected count is .04.				
b. Based on 10000 sampled tables with starting seed 743671174.				
c. The standardized statistic is -.198.				

Here, alpha=0.05 and p-value=.298

Conclusion : p-value > alpha, therefore the data do not provide enough evidence to reject Ho at 5%level of significance . Hence, we conclude that there is no association between academic performance and taking rest/sleep per day.

❖ Did you have your own mobile ?

Objective: To check whether having own mobile is dependent on academic performance or not.

Did you have your own mobile ? * 12_PR Crosstabulation							
Count							
		12_PR					Total
		Below 50	50 - 60	60 - 70	70 - 80	80 - 90	90 - 100	
Did you have your own mobile ?	Yes	17	45	73	43	21	3	202
	N0	4	12	30	21	14	9	90
Total		21	57	103	64	35	12	292

Observation : Here we can observe that most of the students have their own mobile during 11th and 12th .

To Test :

H0 : there is no association between academic performance and having own mobile.

Ag.

H1 : there is association between academic performance and having own mobile.

Chi-Square Tests				
	Value	**df**	**Asymptotic Significance (2-sided)**	**Monte Carlo Sig. (2-sided)** **Significance**
Pearson Chi-Square	16.542a	5	.005	.006b
Fisher's Exact Test	15.276			.009b
N of Valid Cases	292			
a. 1 cells (8.3%) have expected count less than 5. The minimum expected count is 3.70.				
b. Based on 10000 sampled tables with starting seed 303130861.				
c. The standardized statistic is 3.533.				

Here, alpha=0.05 and p-value=.0.009

Conclusion: p-value < alpha, therefore the data provides enough evidence to reject Ho at 5% level of significance. Hence, we conclude that there is association between academic performance and having own mobile.

As there is association between two attributes , i.e. academic performance and student having own mobile, then how much?

For that we use Tschuprow's T association:

There is 15.91% association between student academic performance and student having own mobile.

❖ How much time did you spend on your phone per day ?

Objective: To check whether spending time on phone is dependent on academic performance or not.

How much time did you spend on your phone per day ? * 12_PR Crosstabulation								
Count								
		12_PR						**Total**
		Below 50	**50 - 60**	**60 - 70**	**70 - 80**	**80 - 90**	**90 - 100**	
How much time did you spend on your phone per day ?	**None**	4	9	16	16	10	7	62
	1 - 2 Hrs.	8	20	46	18	10	3	105
	3 - 4 Hrs.	7	16	26	22	11	2	84
	5 - 6 Hrs.	2	12	15	8	4	0	41
Total		21	57	103	64	35	12	292

Observation : Here we can observe that students prefer to use mobile phones 1 – 2 hrs per day.

To Test :

H0 : there is no association between academic performance and for how much time student used mobile phone.   **Ag.**

H1 : there is association between academic performance and for how much time student used mobile phone.

Chi-Square Tests				
	Value	df	Asymptotic Significance (2-sided)	Monte Carlo Sig. (2-sided) Significance
Pearson Chi-Square	22.032ᵃ	15	.107	.101ᵇ
Fisher's Exact Test	18.958			.193ᵇ
N of Valid Cases	292			
a. 7 cells (29.2%) have expected count less than 5. The minimum expected count is 1.68.				
b. Based on 10000 sampled tables with starting seed 1556559737.				
c. The standardized statistic is -2.240.				

Here alpha=0.05 and p-value=0.193

Conclusion: p-value > alpha, therefore the data do not provide enough evidence to reject Ho at 5%level of significance. Hence, we conclude that there is no association between academic performance and for how much time student used mobile phone.

❖ **If you were preparing for other competitive exams, then how much time did you give to it?**

Objective: To check whether preparing for other exams depends on academic performance or not.

		If you were preparing for Others competitive exams, then how much time did you give to it, per week ?						**Total**
		None	**1 - 5 Hrs**	**6 - 10 Hrs**	**11 - 15 Hrs**	**more than 15 Hrs**	**999**	
12_PR	**Below 50**	8	11	1	1	0	0	21
	50 - 60	19	25	7	4	2	0	57
	60 - 70	43	37	15	2	6	0	103
	70 - 80	34	18	4	5	3	0	64
	80 - 90	17	9	3	2	3	1	35
	90 - 100	1	2	3	1	5	0	12
Total		122	102	33	15	19	1	292

12_PR * If you were preparing for Others competitive exams, then how much time did you give to it, per week ? Crosstabulation — Count

Observation : Here we can observe that most of the students are not preparing for other exams, and those students who are preparing for other exams are taking 1 – 5 Hrs time per week.

To Test :

   H0 : there is no association between academic performance and students preparation for other exams.   **Ag.**

   H1 : there is association between academic performance and students preparation for other exams.

Chi-Square Tests			
	Value	**df**	**Asymptotic Significance (2-sided)**
Pearson Chi-Square	54.622[a]	25	.001
N of Valid Cases	292		

Here, alpha=0.05 and p-value=0.001

Conclusion: p-value < alpha, therefore the data provides enough evidence to reject Ho at 5% level of significance. Hence, we conclude that there is association between academic performance and students preparing for other exams.

As there is association between two attributes , i.e. academic performance and student preparing for other exams, then how much?

For that we use Tschuprow's T association:

There is 19.34% association between student academic performance and student preparing for other exams.

❖ How frequently you used to communicate for general discussion with your teachers ?

Objective: To check whether there is association between academic performance and student communication with teacher for general discussion.

To Test :

H0 : there is no association between academic performance and student communication with teacher for general discussion. **Ag.**

H1 : there is association between academic performance and student communication with teacher for general discussion.

Observed frequency:

communication with teachers (general discussion)	12th std marks (in %)					
	below 50	50-60	60-70	70-80	80-90	90-100
	Count	Count	Count	Count	Count	Count
Always	3	15	33	16	8	6
Often	4	1	14	13	12	2
Sometimes	9	26	40	24	9	3
Rarely	3	12	14	8	6	0
Never	2	3	2	3	0	1

Chi-Square Tests				
	Value	df	Asymp. Sig. (2-sided)	Monte Carlo Sig. (2-sided) Sig.
Pearson Chi-Square	32.671a	20	.037	.038
Fisher's Exact Test	34.103			.013
N of Valid Cases	292			
a. 12 cells (40.0%) have expected count less than 5. The minimum expected count is .45.				

Here , alpha = .05 , p-value = .013

Conclusion: p-value < alpha, therefore the data provides enough evidence to reject Ho at 5% level of significance. Hence, we conclude that there is association between academic performance and student's communication with teacher for general discussion.

As there is association between two attributes, i.e., academic performance and student communication with teacher (general discussion). Then how much?

For that we use Goodman and Kruskal's gamma association:

Symmetric Measures		Value	Asymp. Std. Error[a]	Approx. T[b]	Approx. Sig.
Ordinal by Ordinal	Gamma	-0.150	0.063	-2.357	0.018
N of Valid Cases		292			
a. Not assuming the null hypothesis.					
b. Using the asymptotic standard error assuming the null hypothesis.					

This show that there is only marginal negative association between student academic performance and student communication with teacher (general discussion).

❖ How often you used to communicate with your teachers for study purpose?

Objective: To check whether there is association between academic performance and student communication with teacher (study purpose).

To Test :

H0 : there is no association between academic performance and student communication with teacher (study purpose).   **Ag.**

H1 : there is association between academic performance and student communication with teacher (study purpose).

Observed frequency:

communicate with teachers(study purpose)	12th std. marks (in %)					
	below 50	50-60	60-70	70-80	80-90	90-100
	Count	Count	Count	Count	Count	Count
Always	7	26	29	26	7	8
Often	2	6	22	11	8	1
Sometimes	7	15	36	14	17	2
Rarely	3	9	8	6	2	1
Never	2	1	8	7	0	0

Chi-Square Tests				
	Value	df	Asymp. Sig. (2-sided)	Monte Carlo Sig. (2-sided)
				Sig.
Pearson Chi-Square	32.328[a]	20	.040	.041
Fisher's Exact Test	30.166			.042
N of Valid Cases	291			
a. 12 cells (40.0%) have expected count less than 5. The minimum expected count is .74.				

Here , alpha = .05 , p-value = .042

Conclusion: p-value < alpha , therefore the data provides enough evidence to reject Ho at 5% level of significance. Hence, we conclude that there is association between academic performance and student communication with teacher (study purpose).

As there is association between two attributes , i.e. academic performance and student communication with teacher(study purpose). Then how much?

For that we use Goodman and Kruskal's gamma association :

Symmetric Measures		Value	Asymp. Std. Error[a]	Approx. T[b]	Approx. Sig.
Ordinal by Ordinal	Gamma	-.029	.065	-.446	.656
N of Valid Cases		291			
a. Not assuming the null hypothesis.					
b. Using the asymptotic standard error assuming the null hypothesis.					

This show that there is insignificant association between student academic performance and student communication with teacher (study purpose).

❖ Did your teachers give satisfactory answers to your questions ?

Objective: To check whether there is association between academic performance and satisfactory answers given by teachers.

To Test :

   H0 : There is no association between academic performance and satisfactory answers given by teachers.   **Ag.**

H1 : There is association between academic performance and satisfactory answers given by teachers.

Observed frequency :

satisfactory answers given by teachers	12th std. marks (in %)					
	below 50	50-60	60-70	70-80	80-90	90-100
	Count	Count	Count	Count	Count	Count
Always	10	29	64	40	19	7
Often	3	8	10	12	13	4
Sometimes	7	17	16	6	1	0
Rarely	1	2	8	1	1	1
Never	0	1	4	5	1	0

Chi-Square Tests				
	Value	df	Asymp. Sig. (2-sided)	Monte Carlo Sig. (2-sided)
				Sig.
Pearson Chi-Square	42.164[a]	20	.003	.004
Fisher's Exact Test	37.903			.002
N of Valid Cases	291			
a. 16 cells (53.3%) have expected count less than 5. The minimum expected count is .45.				

Here, alpha = .05 , p-value = .002

Conclusion: p-value < alpha, therefore the data provides enough evidence to reject Ho at 5% level of significance. Hence, we conclude that there is association between academic performance and satisfactory answers given by teachers.

As there is association between two attributes, i.e. academic performance and satisfactory answers given by teachers. Then how much?

For that we use Goodman and Kruskal's gamma association :

Symmetric Measures		Value	Asymp. Std. Error[a]	Approx. T[b]	Approx. Sig.
Ordinal by Ordinal	Gamma	-.110	.067	-1.619	.106
N of Valid Cases		291			
a. Not assuming the null hypothesis.					
b. Using the asymptotic standard error assuming the null hypothesis.					

This show that there is only marginal negative association between student academic performance and satisfactory answers given by teachers.

❖ Were you satisfied with the method of teaching ?

Objective: To check whether there is association between academic performance and teaching method.

To Test :

H0 : there is no association between academic performance and teaching method.   **Ag.**

H1 : there is association between academic performance and teaching method.

Observed frequency :

teaching method	12th std. marks (in %)					
	below 50	50-60	60-70	70-80	80-90	90-100
	Count	Count	Count	Count	Count	Count
Always	7	34	50	31	16	7
Often	6	5	16	10	10	2
Sometimes	8	5	26	15	6	0
Rarely	0	9	7	3	1	3
Never	0	4	4	5	2	0

Chi-Square Tests				
	Value	df	Asymp. Sig. (2-sided)	Monte Carlo Sig. (2-sided) Sig.
Pearson Chi-Square	36.663[a]	20	.013	.014
Fisher's Exact Test	33.444			.013
N of Valid Cases	292			
a. 13 cells (43.3%) have expected count less than 5. The minimum expected count is .62.				

Here ,

alpha = .05 , p-value = .012

Conclusion: p-value < alpha, therefore the data provides enough evidence to reject Ho at 5% level of significance. Hence we conclude that there is association between academic performance and teaching method.

As there is association between two attributes , i.e. academic performance and teaching method. Then how much?

For that we use Goodman and Kruskal's gamma association :

Symmetric Measures		Value	Asymp. Std. Error[a]	Approx. T[b]	Approx. Sig.
Ordinal by Ordinal	Gamma	-.009	.066	-.139	.889
N of Valid Cases		292			
a. Not assuming the null hypothesis.					
b. Using the asymptotic standard error assuming the null hypothesis.					

This show that there is insignificant association between student academic performance and teaching method.

❖ Did your teachers motivate you to give your best efforts ?

Objective: To check whether there is association between academic performance and teacher motivation.

To Test :

H0 : there is no association between academic performance and teacher's motivation.
Ag.

H1 : there is association between academic performance and teacher's motivation.

Observed frequency :

Teacher motivation	12th std. marks (in %)					
	below 50	50-60	60-70	70-80	80-90	90-100
	Count	Count	Count	Count	Count	Count
Always	15	38	62	37	24	10
Often	0	4	10	10	7	1
Sometimes	2	6	22	8	2	1
Rarely	1	5	8	3	1	0
Never	3	4	1	6	1	0

Chi-Square Tests	Value	df	Asymp. Sig. (2-sided)	Monte Carlo Sig. (2-sided) Sig.
Pearson Chi-Square	28.958[a]	20	.089	.090
Fisher's Exact Test	26.004			.101
N of Valid Cases	292			
a. 16 cells (53.3%) have expected count less than 5. The minimum expected count is .62.				

Here , alpha = .05 , p-value = .101

Conclusion: p-value > alpha, therefore the data do not provide enough evidence to reject Ho at 5%level of significance and 20 degrees of freedom. Hence, we conclude that there is no association between academic performance and teacher's motivation.

❖ How much you used to get involved in your class discussion ?

Objective: To check whether there is association between academic performance and involvement in class discussion.

To Test :

H0 : there is no association between academic performance and involvement in class discussion.

Ag.

H1 : there is association between academic performance and involvement in class discussion.

Observed frequency :

class discussion involvement	12th std. marks (in %)					
	below 50	50-60	60-70	70-80	80-90	90-100
	Count	Count	Count	Count	Count	Count
Always	6	18	33	22	11	4
Often	6	5	19	15	13	4
Sometimes	5	21	31	13	8	4
Rarely	3	9	11	6	1	0
Never	1	4	9	8	2	0

Chi-Square Tests				Monte Carlo Sig. (2-sided)
	Value	df	Asymp. Sig. (2-sided)	Sig.
Pearson Chi-Square	15.772[a]	20	.731	.737
Fisher's Exact Test	15.064			.743
N of Valid Cases	292			

a. 14 cells (46.7%) have expected count less than 5. The minimum expected count is .70.

Here, alpha = 0.05, p-value = .743

Conclusion: p-value > alpha, therefore the data do not provide enough evidence to reject Ho at 5% level of significance. Hence, we conclude that there is no association between academic performance and class discussion involvement.

❖ Did you used to discuss doubts with your friends ?

Objective: To check whether there is association between academic performance and doubts discussion with your friends .

To Test :

H0 : there is no association between academic performance and doubts discussion with friends . **Ag.**

H1 : there is association between academic performance and doubts discussion with friends .

Observed frequency :

doubts discussion with their friends	12th std. marks (in %)					
	below 50	50-60	60-70	70-80	80-90	90-100
	Count	Count	Count	Count	Count	Count
Always	10	32	49	32	16	5
Often	4	4	20	9	6	5
Sometimes	5	13	22	13	7	1
Rarely	1	6	8	4	3	0
Never	1	2	4	6	3	1

Chi-Square Tests				Monte Carlo Sig. (2-sided)
	Value	df	Asymp. Sig. (2-sided)	Sig.
Pearson Chi-Square	15.772a	20	.731	.737
Fisher's Exact Test	15.064			.743
N of Valid Cases	292			

a. 14 cells (46.7%) have expected count less than 5. The minimum expected count is .70.

Here , alpha = .05 , p-value = .743

Conclusion: p-value > alpha, therefore the data do not provide enough evidence to reject Ho at 5%level of significance . Hence we conclude that there is no association between academic performance and doubts discussion with friends.

❖ Did you used to discuss doubts with your parents ?

Objective: To check whether there is association between academic performance and doubts discussion with their parents.

To Test :

   H0 : There is no association between academic performance and doubts discussion with parents .   **Ag.**

   H1 : There is association between academic performance and doubts discussion with parents .

Observed frequency :

doubts discussion with their parents	12th std. marks (in %)					
	below 50	50-60	60-70	70-80	80-90	90-100
	Count	Count	Count	Count	Count	Count
Always	6	15	22	14	5	0
Often	2	6	9	7	6	3
Sometimes	6	13	19	11	7	2
Rarely	3	8	23	18	9	3
Never	4	15	30	14	8	4

Chi-Square Tests				
	Value	df	Asymp. Sig. (2-sided)	Monte Carlo Sig. (2-sided)
				Sig.
Pearson Chi-Square	14.952a	20	.779	.788
Fisher's Exact Test	15.470			.743
N of Valid Cases	292			
a. 10 cells (33.3%) have expected count less than 5. The minimum expected count is 1.36.				

Here, alpha = .05 , p-value = .743

Conclusion: p-value > alpha, therefore the data do not provide enough evidence to reject Ho at 5% level of significance. Hence, we conclude that there is no association between academic performance and doubts discussion with parents.

❖ Did your parents used to guide you for deciding your future goals ?

Objective: To check whether there is association between academic performance and parents guidance (future goal).

To Test :

H0 : there is no association between academic performance and parents guidance (future goal) . **Ag.**

H1 : there is association between academic performance and parents guidance (future goal).

Observed frequency :

parents guidance (future goal)	12th std. marks (in %)					
	below 50	50-60	60-70	70-80	80-90	90-100
	Count	Count	Count	Count	Count	Count
Always	11	44	65	43	25	6
Often	1	0	8	6	3	3
Sometimes	3	6	11	7	4	2
Rarely	5	5	10	4	1	1
Never	1	2	9	4	2	0

Chi-Square Tests				Monte Carlo Sig. (2-sided)
	Value	df	Asymp. Sig. (2-sided)	Sig.
Pearson Chi-Square	22.927[a]	20	.292	.291
Fisher's Exact Test	21.630			.269
N of Valid Cases	292			

a. 16 cells (53.3%) have expected count less than 5. The minimum expected count is .74.

Here, alpha = .05 , p-value = .269

Conclusion: p-value > alpha, therefore the data do not provide enough evidence to reject Ho at 5% level of significance. Hence, we conclude that there is no association between academic performance and parents guidance (future goal).

❖ Are you interested in the stream which you have chosen ?

Objective: To check whether there is association between academic performance and interest on chosen stream or not.

To Test :

H0 : there is no association between academic performance and student interest on chosen stream.   **Ag.**

H1 : there is association between academic performance and interest on chosen stream.

Observed frequency :

Are you interested in the stream which you have chosen ?	12th marks (in %)					
	below 50	50-60	60-70	70-80	80-90	90-100
	Count	Count	Count	Count	Count	Count
Yes	19	50	92	60	34	11
N0	2	7	11	4	1	1

Chi-Square Tests				
	Value	df	Asymp. Sig. (2-sided)	Monte Carlo Sig. (2-sided)
				Sig.
Pearson Chi-Square	3.350a	5	.646	.653
Fisher's Exact Test	3.362			.631
N of Valid Cases	292			
a. 3 cells (25.0%) have expected count less than 5. The minimum expected count is 1.07.				

Here, alpha = .05 , p-value = .631

Conclusion: p-value > alpha, therefore the data do not provide enough evidence to reject Ho at 5% level of significance . Hence, we conclude that there is no association between academic performance and interest on chosen stream.

❖ Did your parents frequently ask to study ?

Objective: To check whether there is association between academic performance and parents asking for study or not.

To Test :

H0 : there is no association between academic performance and parents asking to study.
Ag.

H1 : there is association between academic performance and parents asking to study.

Observed frequency :

Did your parents frequently ask to study ?	12th marks (in %)					
	below 50	50-60	60-70	70-80	80-90	90-100
	Count	Count	Count	Count	Count	Count
Always	10	36	53	29	11	3
Often	2	4	10	11	10	1
Sometimes	8	10	25	15	7	4
Rarely	0	3	7	8	1	2
Never	1	4	8	1	6	2

Chi-Square Tests				Monte Carlo Sig. (2-sided)
	Value	df	Asymp. Sig. (2-sided)	Sig.
Pearson Chi-Square	35.585[a]	20	.017	.019
Fisher's Exact Test	33.020			.017
N of Valid Cases	292			
a. 15 cells (50.0%) have expected count less than 5. The minimum expected count is .86.				

Here, alpha = .05 , p-value = .017

Conclusion: p-value < alpha , therefore the data provides enough evidence to reject Ho at 5%level of significance . Hence, we conclude that there is association between academic performance and parents asking to study.

Symmetric Measures		Value	Asymp. Std. Error	Approx. T	Approx. Sig.
Ordinal by Ordinal	Gamma	.171	.065	2.604	.009
N of Valid Cases		292			

As there is association between two attributes , i.e. academic performance and parents asking to study. Then how much?

This show that there is 17.1 % association between student academic performance and parents asking to study.

❖ Did you take your parents seriously, if they asked you to study ?

Objective: To check whether there is association between academic performance and student taking seriously or not when their parents ask them to study.

To Test :

   H0 : there is no association between academic performance and student taking seriously or not when their parents ask them to study.   **Ag.**

   H1 : there is association between academic performance and student taking seriously or not when their parents ask them to study.

Observed frequency :

Did you take your parents seriously, if they asked you to study ?	12th marks (in %)					
	below 50	50-60	60-70	70-80	80-90	90-100
	Count	Count	Count	Count	Count	Count
Yes	16	52	86	57	31	11
No	5	5	17	7	4	1

Chi-Square Tests				
	Value	df	Asymp. Sig. (2-sided)	Monte Carlo Sig. (2-sided) Sig.
Pearson Chi-Square	4.598a	5	.467	.465
Fisher's Exact Test	4.249			.498
N of Valid Cases	292			
a. 3 cells (25.0%) have expected count less than 5. The minimum expected count is 1.60.				

Here, alpha = .05 , p-value = .498

Conclusion: p-value > alpha , therefore the data provides enough evidence to reject Ho at 5%level of significance . Hence, we conclude that there is no association between academic performance and students taking seriously or not when their parents ask them to study.

❖ Did your parents force you to get good grades ?

Objective: To check whether there is association between academic performance and parents force to get good grades or not.

To Test :

 H0 : there is no association between academic performance and parents force to get good grades.   **Ag.**

 H1 : there is association between academic performance and parents force to get good grades.

Observed frequency :

Did your parents force you to get good grades ?	12th marks (in %)					
	below 50	50-60	60-70	70-80	80-90	90-100
	Count	Count	Count	Count	Count	Count
Yes	9	27	52	27	8	2
No	12	30	51	37	27	10

Pearson Chi-Square Tests	
Did your parents force you to get good grades ?	**12th marks (in %)**
Chi-square	12.014
df	5
Sig.	.035*
Results are based on nonempty rows and columns in each innermost sub table.	
*. The Chi-square statistic is significant at the .05 level.	

Here, alpha = .05 , p-value = .035

Conclusion: p-value < alpha, therefore the data provides enough evidence to reject Ho at 5% level of significance and 5 degrees of freedom. Hence we conclude that there is association between academic performance and parents force to get good grades.

As there is association between two attributes, i.e. academic performance and parents force to get good grades. Then how much?

For that we use Tschuprow's T association :

There is 13.56 % association between student academic performance and parents force to get good grades.

Q38. Did your teachers force you to get good grades ?

Objective: To check whether there is association between academic performance and teachers force to get good grades or not.

To Test :

    H0 : there is no association between academic performance and teachers force to get good grades.   **Ag.**

    H1 : there is association between academic performance and teachers force to get good grades.

Observed frequency :

Did your teachers force you to get good grades ?	12th marks (in %)					
	below 50	50-60	60-70	70-80	80-90	90-100
	Count	Count	Count	Count	Count	Count
Yes	7	33	59	37	15	3
N0	14	24	43	27	20	9

Pearson Chi-Square Tests	
Did your teachers force you to get good grades ?	**12th marks (in %)**
Chi-square	10.584
df	5
Sig.	.060

Here, alpha = .05 , p-value = .060

Conclusion: p-value > alpha, therefore the data provides enough evidence to reject Ho at 5% level of significance and 5 degrees of freedom. Hence we conclude that there is no association between academic performance and teachers force to get good grades.

❖ **Did you prepare time table on your regular basis study ?**

Objective: To check whether there is association between academic performance and student preparing timetable on regular basis.

To Test :

  H0 : there is no association between academic performance and student preparing timetable on regular basis   **Ag.**

  H1 : there is association between academic performance and student preparing timetable

on regular basis.

Observed frequency :

Did you prepare time table on your regular basis study ?	12th Percentage Groups					
	Below 50	50-60	60-70	70-80	80-90	90 and Above
	Count	Count	Count	Count	Count	Count
Always	4	21	30	17	5	6
Often	3	4	10	4	5	2
Sometimes	4	17	33	19	8	4
Rarely	3	6	13	3	6	0
Never	7	9	17	21	11	0

Chi-Square Tests				Monte Carlo Sig. (2-sided)
	Value	**df**	**Asymp. Sig. (2-sided)**	**Sig.**
Pearson Chi-Square	27.652[a]	20	.118	.111[b]
Fisher's Exact Test	27.959			.077[b]
N of Valid Cases	292			

Here, Alpha = 0.05, p- value = .077

Conclusion: Here alpha value < p-value, therefore the data do not provide enough evidence to reject Ho at 5% level of significance. Hence, we conclude that there is no association between academic performance and timetable prepared on regular basis study.

❖ Did you prepare time table on your prior to exam study ?

Objective: To check whether there is association between academic performance and student preparing timetable prior to exams.

To Test :

H0 : there is no association between academic performance and student preparing timetable prior to exams   **Ag.**

H1 : there is association between academic performance and student preparing timetable prior to exams.

Observed frequency :

Did you prepare time table on your prior to exam study ?	12th Percentage Groups					
	Below 50	**50-60**	**60-70**	**70-80**	**80-90**	**90 and Above**
	Count	**Count**	**Count**	**Count**	**Count**	**Count**
Always	6	28	52	28	13	9
Often	2	4	9	5	4	2
Sometimes	4	13	18	12	6	0
Rarely	3	5	12	4	2	1
Never	6	7	11	15	10	0

Chi-Square Tests				Monte Carlo Sig. (2-sided)
	Value	**df**	**Asymp. Sig. (2-sided)**	**Sig.**
Pearson Chi-Square	22.656a	20	.306	.308
Fisher's Exact Test	22.635			.254
N of Valid Cases	291			

a. 10 cells (33.3%) have expected count less than 5. The minimum expected count is 1.07.

Here, alpha = .05, p-value= .254

Conclusion: alpha value < p-value, therefore the data do not provide enough evidence to reject Ho at 5%level of significance. Hence, we conclude that there is no association between academic performance and timetable prepared prior to exam study.

❖ Do you follow your timetable?

Objective: To check whether there is association between academic performance and student following timetable.

To Test :

   H0 : there is no association between academic performance and student following timetable   **Ag.**

   H1 : there is association between academic performance and student following timetable.

Observed frequency :

Do you follow your timetable ?	12th Percentage Groups					
	Below 50	50-60	60-70	70-80	80-90	90 and Above
	Count	Count	Count	Count	Count	Count
Always	7	19	29	17	4	4
Often	3	2	10	12	10	6
Sometimes	3	21	37	10	7	2
Rarely	3	7	12	7	2	0
Never	5	8	15	18	12	0

Chi-Square Tests				
				Monte Carlo Sig. (2-sided)
	Value	df	Asymp. Sig. (2-sided)	Sig.
Pearson Chi-Square	50.268[a]	20	.000	.000[b]
Fisher's Exact Test	47.135			.000[b]
N of Valid Cases	292			
a. 9 cells (30.0%) have expected count less than 5. The minimum expected count is 1.27.				

Here , alpha = .05 ,p- value= .000

Conclusion: alpha > p-value, therefore the data provides enough evidence to reject Ho at 5% level of significance and 20 degrees of freedom. Hence, we conclude that there is association between academic performance and student following timetable.

As there is association between two attributes, i.e. academic performance and student following timetable. Then how much?

For that we use Goodman and Kruskal's gamma association:

Symmetric Measures		Value	Asymp. Std. Error[a]	Approx. T[b]	Approx. Sig.
Ordinal by Ordinal	Gamma	.036	.062	.578	.563
N of Valid Cases		292			
a. Not assuming the null hypothesis.					
b. Using the asymptotic standard error assuming the null hypothesis.					

This shows that there is 3.6% association between academic performance and student following timetable.

❖ How many hours you studied per day at school?

Objective: To check whether there is association between academic performance and hours studied per day at school.

To Test :

H0 : there is no association between academic performance and hours studied per day at school. **Ag.**

H1 : there is association between academic performance and hours studied per day at school.

Observed frequency :

How many hours you studied per day at school ?	12th Percentage Groups					
	Below 50	50-60	60-70	70-80	80-90	90 and Above
	Count	Count	Count	Count	Count	Count
1 - 3 Hrs.	6	22	38	17	5	2
4 - 6 Hrs.	10	26	52	35	24	8
7 - 9 Hrs.	2	4	8	7	6	2
None	3	4	5	5	0	0

Chi-Square Tests				
	Value	**df**	**Asymp. Sig. (2-sided)**	**Monte Carlo Sig. (2-sided)**
				Sig.
Pearson Chi-Square	18.970[a]	15	.215	.216
Fisher's Exact Test	18.573			.185
N of Valid Cases	291			
a. 9 cells (37.5%) have expected count less than 5. The minimum expected count is .70.				

Here , alpha = .05 , p-value= .185

Conclusion: alpha < p-value, therefore the data do not provide enough evidence to reject Ho at 5% level of significance. Hence, we conclude that there is no association between academic performance and hours studied per day at school.

Q.43 How many hours you studied per day at home ?

Objective: To check whether there is association between academic performance and hours studied per day at home.

To Test :

H0 : There is no association between academic performance and hours studied per day at home. **Ag.**

H1 : There is association between academic performance and hours studied per day at home.

Observed frequency :

How many hours you studied per day at home ?	12th Percentage Groups					
	Below 50	50-60	60-70	70-80	80-90	90 and Above
	Count	Count	Count	Count	Count	Count
1 - 3 Hrs.	14	36	67	44	22	7
4 - 6 Hrs.	4	10	20	14	4	5
7 - 9 Hrs.	1	1	7	0	5	0
None	2	8	9	5	4	0

Chi-Square Tests				
	Value	df	Asymp. Sig. (2-sided)	Monte Carlo Sig. (2-sided) Sig.
Pearson Chi-Square	19.574a	15	.189	.186b
Fisher's Exact Test	16.953			.250b
N of Valid Cases	289			

a. 11 cells (45.8%) have expected count less than 5. The minimum expected count is .58.

Here , alpha = 0.05 , p-value= 0.250

Conclusion: alpha< p-value, therefore the data do not provide enough evidence to reject Ho at 5% level of significance. Hence, we conclude that there is no association between academic performance and hours studied per day at home.

❖ While studying, did you get disturbed due to the noise ?

Objective: To check whether there is association between academic performance and student getting disturbance due to noise.

To Test :

H0 : there is no association between academic performance and students getting disturbance due to noise. **Ag.**

H1 : there is association between academic performance and students getting disturb due to noise.

Observed frequency :

While studying, did you get disturbed due to the noise ?	12th Percentage Groups					
	Below 50	50-60	60-70	70-80	80-90	90 and Above
	Count	Count	Count	Count	Count	Count
Always	5	14	15	9	6	0
Often	0	3	9	10	3	3
Sometimes	8	20	42	17	10	2
Rarely	3	7	14	16	5	3
Never	4	12	23	12	11	4

Chi-Square Tests				Monte Carlo Sig. (2-sided)
	Value	df	Asymp. Sig. (2-sided)	Sig.
Pearson Chi-Square	24.912a	20	.205	.210b
Fisher's Exact Test	23.617			.222b
N of Valid Cases	290			

a. 10 cells (33.3%) have expected count less than 5. The minimum expected count is 1.16.

Here, alpha = 0.05 , P-Value= 0.222

Conclusion: alpha < p-value, therefore the data do not provide enough evidence to reject Ho at 5% level of significance. Hence, we conclude that there is no association between academic performance and student getting disturb due to noise.

❖ Did you stay in a joint family ?

Objective: To check whether there is association between academic performance and student staying in joint family.

To Test :

H0 : there is no association between academic performance and student staying in joint family **Ag.**

H1 : there is association between academic performance and student staying in joint family.

Observed frequency :

Did you stay in a joint family ?	12th Percentage Groups					
	Below 50	50-60	60-70	70-80	80-90	90 and Above
	Count	Count	Count	Count	Count	Count
Yes	12	29	49	30	15	3
N0	7	28	53	33	20	9

Chi-Square Tests				Monte Carlo Sig. (2-sided)
	Value	df	Asymp. Sig. (2-sided)	Sig.
Pearson Chi-Square	4.856a	5	.434	.441b
Fisher's Exact Test	4.755			.450b
N of Valid Cases	288			

a. 0 cells (0.0%) have expected count less than 5. The minimum expected count is 5.75.

Here , alpha = .05 , P-Value= .450

Conclusion: alpha< p-value, therefore the data do not provide enough evidence to reject Ho at 5%level of significance. Hence, we conclude that there is no association between academic performance and student staying in joint family.

❖ If YES, Did it affect your studies ?

Objective: To check whether there is association between academic performance and studies affected due to staying in joint family.

To Test :

   H0 : there is no association between academic performance and studies affected due to staying in joint family. **Ag.**

   H1 : there is association between academic performance and studies affected due to staying in joint family.

Observed frequency :

If YES, Did it affect your studies ?	12th Percentage Groups					
	Below 50	**50-60**	**60-70**	**70-80**	**80-90**	**90 and Above**
	Count	**Count**	**Count**	**Count**	**Count**	**Count**
Always	3	9	6	4	3	1
Often	0	2	2	4	1	2
Sometimes	3	6	14	6	2	0
Rarely	0	4	7	3	5	0
Never	11	18	29	18	9	3

Chi-Square Tests				Monte Carlo Sig. (2-sided)
	Value	**df**	**Asymp. Sig. (2-sided)**	**Sig.**
Pearson Chi-Square	23.961[a]	20	.244	.239[b]
Fisher's Exact Test	18.854			.448[b]
N of Valid Cases	175			
a. 18 cells (60.0%) have expected count less than 5. The minimum expected count is .38.				

Here , alpha = .05 , p-value= 0.448

Conclusion: alpha < p-value therefore the data do not provide enough evidence to reject Ho at 5%level of significance. Hence, we conclude that there is no association between academic performance and studies affected due to staying in joint family.

❖ How did it affect in improving your studies ?

Objective: To check whether there is association between academic performance and improvement in studies due to staying in joint family.

To Test :

H0 : there is no association between academic performance and improvement in studies due to staying in joint family. **Ag.**

H1 : there is association between academic performance and improvement in studies due to staying in joint family.

Observed frequency :

How did it affect in improving your studies ?	12th Percentage Groups					
	Below 50	50-60	60-70	70-80	80-90	90 and Above
	Count	Count	Count	Count	Count	Count
Positively	13	28	53	26	14	3
Negatively	3	7	9	8	4	2

Chi-Square Tests				
	Value	df	Asymp. Sig. (2-sided)	Monte Carlo Sig. (2-sided) Sig.
Pearson Chi-Square	2.776a	5	.734	.750b
Fisher's Exact Test	3.293			.645b
N of Valid Cases	170			
a. 4 cells (33.3%) have expected count less than 5. The minimum expected count is .97.				

Here, alpha = .05 , p-value= 0.645

Conclusion: alpha< p-value, therefore the data do not provide enough evidence to reject Ho at 5%level of significance. Hence, we conclude that there is no association between academic performance and improvement in studies due to staying in joint family.

❖ Did your parents stay together ?

Objective: To check whether there is association between academic performance and parents staying together or not.

To Test :

H0 : there is no association between academic performance and parents staying together or not **Ag.**

H1 : there is association between academic performance and parents staying together or not.

Observed frequency :

Did your parents stay together ?	12th Percentage Groups					
	Below 50	**50-60**	**60-70**	**70-80**	**80-90**	**90 and Above**
	Count	Count	Count	Count	Count	Count
Yes	20	49	92	62	32	11
N0	0	7	8	1	2	0

Chi-Square Tests				
	Value	**df**	**Asymp. Sig. (2-sided)**	**Monte Carlo Sig. (2-sided)**
				Sig.
Pearson Chi-Square	8.552[a]	5	.128	.130[b]
Fisher's Exact Test	6.990			.167[b]
N of Valid Cases	284			
a. 5 cells (41.7%) have expected count less than 5. The minimum expected count is .70.				

Here, alpha = .05 , p-value= .167

Conclusion: alpha < p-value, therefore the data do not provide enough evidence to reject Ho at 5%level of significance. Hence, we conclude that there is no association between academic performance and parents staying together or not.

❖ Whether there used to be any difference of opinions / disputes between your parents ?

Objective: To check whether there is association between academic performance and difference of opinion or disputes between parents.

To Test :

H0 : there is no association between academic performance and difference of opinion or disputes between parents. **Ag.**

H1 : there is association between academic performance and difference of opinion or disputes between parents.

Observed frequency :

Whether there used to be any difference of opinions / disputes between your parents ?	12th Percentage Groups					
	Below 50	50-60	60-70	70-80	80-90	90 and Above
	Count	Count	Count	Count	Count	Count
Always	0	10	14	6	4	0
Often	1	4	11	6	1	0
Sometimes	6	20	29	24	12	3
Rarely	4	11	10	9	7	3
Never	9	11	33	13	8	3

Chi-Square Tests				Monte Carlo Sig. (2-sided)
	Value	df	Asymp. Sig. (2-sided)	Sig.
Pearson Chi-Square	20.909[a]	20	.402	.399[b]
Fisher's Exact Test	19.807			.412[b]
N of Valid Cases	272			
a. 12 cells (40.0%) have expected count less than 5. The minimum expected count is .76.				

Here, alpha = .05 , p-value= 0.412

Conclusion: alpha < p-value, therefore the data do not provide enough evidence to reject Ho at 5%level of significance and 20 degrees of freedom. Hence, we conclude that there is no association between academic performance and difference of opinion or dispute between parents.

MULTIPLE RESPONSE ANALYSIS

1) **Curriculum Activities:**

Case Summary

	Cases					
	Valid		Missing		Total	
	N	Percent	N	Percent	N	Percent
$Q.6[a]	288	98.6%	4	1.4%	292	100.0%

a. Dichotomy group tabulated at value 1.

$Q.6 Frequencies

		Responses		Percent of Cases
		N	Percent	
student participation in extra activity[a]	**Sports**	130	34.0%	45.1%
	Dancing	41	10.7%	14.2%
	Singing	38	9.9%	13.2%
	Reading	77	20.2%	26.7%
	Other	61	16.0%	21.2%
	None	35	9.2%	12.2%
Total		382	100.0%	132.6%

a. Dichotomy group tabulated at value 1.

Observation: We observe that from our survey maximum 34% students participating in sports during their academic.

TEST:

Ho : There is no association between academic performance and student participation in extra activity. **ag.**

H1 : There is association between academic performance and student participation in extra activity.

Pearson Chi-Square Tests

		12th marks (in %)
extra activity	**Chi-square**	24.548
	df	30
	Sig.	.747

Here, Alpha value = .05 and p-value = .747

Conclusion: p-value > alpha , therefore the data do not provides the enough evidence to reject Ho at 5%level of significance and 30 degrees of freedom. Hence we conclude that there is no association between academic performance and student participation in extra activity.

2) **Stream suggestion:**

Case Summary

	Cases					
	Valid		Missing		Total	
	N	Percent	N	Percent	N	Percent
$Q.33ᵃ	291	99.7%	1	0.3%	292	100.0%

a. Dichotomy group tabulated at value 1.

$Q.33 Frequencies

		Responses		Percent of Cases
		N	Percent	
stream suggestedᵃ	self	208	50.5%	71.5%
	parents	107	26.0%	36.8%
	siblings	17	4.1%	5.8%
	teachers	34	8.3%	11.7%
	friends	37	9.0%	12.7%
	other	9	2.2%	3.1%
Total		412	100.0%	141.6%

a. Dichotomy group tabulated at value 1.

Observation: We observe that from our survey maximum 50.5% students stream chosen by their own during academic.

TEST:

   Ho : There is no association between academic performance and who suggested the stream which student has chosen.   **ag.**

   H1 : There is association between academic performance and who suggested the stream which student has chosen.

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Pearson Chi-Square Tests

		12th marks (in %)
$Q33	**Chi-square**	40.032
	df	30
	Sig.	.104

Here, Alpha value = .05 and p-value = .104

Conclusion: p-value > alpha , therefore the data do not provides the enough evidence to reject Ho at 5%level of significance and 30 degrees of freedom. Hence we conclude that there is no association between academic performance and who suggested the stream which student has chosen.

3) **Language used for communication at home:**

Case Summary

	Cases					
	Valid		**Missing**		**Total**	
	N	**Percent**	**N**	**Percent**	**N**	**Percent**
$Q.23ᵃ	292	100.0%	0	0.0%	292	100.0%

a. Dichotomy group tabulated at value 1.

$Q.23 Frequencies

		Responses		Percent of Cases
		N	**Percent**	
language used for communication at homeᵃ	**English**	25	7.0%	8.6%
	Gujarati	182	51.3%	62.3%
	Hindi	100	28.2%	34.2%
	Marathi	17	4.8%	5.8%
	Other	31	8.7%	10.6%
Total		355	100.0%	121.6%

a. Dichotomy group tabulated at value 1.

Observation: We observe that from our survey maximum 51.3% students used Gujarati language for communication at home.

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TEST:

Ho : There is no association between academic performance and communication language at Home.   **ag.**

H1 : There is association between academic performance and communication language at Home.

Pearson Chi-Square Tests

		12th marks (in %)
communication language(at home)	Chi-square	18.996
	df	25
	Sig.	.797

Here, alpha value = 0.05 ,p-value = .797

Conclusion: p-value > alpha , therefore the data do not provides the enough evidence to reject Ho at 5%level of significance . Hence we conclude that there is no association between academic performance and communication language at Home.

4) **Language used for communication at school:**

Case Summary

	Cases					
	Valid		Missing		Total	
	N	Percent	N	Percent	N	Percent
$Q.22ᵃ	291	99.7%	1	0.3%	292	100.0%

a. Dichotomy group tabulated at value 1.

$Q.22 Frequencies

		Responses		Percent of
		N	Percent	Cases
language used for communication at school [a]	English	114	26.4%	39.2%
	Gujarati	169	39.1%	58.1%
	Hindi	138	31.9%	47.4%
	Marathi	4	0.9%	1.4%
	Other	7	1.6%	2.4%
Total		432	100.0%	148.5%

a. Dichotomy group tabulated at value 1.

Observation: We observe that from our survey maximum 39.1% students used Gujarati language for communication at school.

TEST:

Ho : There is no association between academic performance and communication language at school. **ag.**

H1 : There is association between academic performance and communication language at school.

Pearson Chi-Square Tests

		12th marks (in %)
communication language(in school)	Chi-square	28.794
	df	25
	Sig.	.273

Here, Alpha value = .05 and p-value = .273

Conclusion: p-value > alpha , therefore the data do not provides the enough evidence to reject Ho at 5%level of significance . Hence we conclude that there is no association between academic performance and communication language at school.

FACTOR ANALYSIS
(PRINCIPAL COMPONENT ANALYSIS)

PCA is a widely used statistical tool for dimension reduction. The objective of PCA is to find common factors (called principal components), in form of linear combination of the variable under investigation, and to rank them according to their importance.

➢ **Correlation matrix** (Table not provided due to being too large)

- In correlation matrix, value is greater than or equal to 0.8 that means that two variables are highly correlated.

- According to data, none of the variable have greater than or equal to 0.8

- So, no variable is highly correlated with each other.

Here, we use two statistics Bartlett test of sphericity and the Kaiser-Meyer-Olkin measure of sampling adequacy (usually called the MSA).

The Bartlett test of sphericity compares the correlation matrix with identity matrix. From this test we are looking for a small p value indicating that it is highly unlikely for us to have obtained the observed correlation matrix from a population with zero correlation.

The MSA does not produce a p value but we are aiming for a value over 0.8 and below 0.5 is consider to be miserable!

KMO and Bartlett's Test		
Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.598
Bartlett's Test of Sphericity	Approx. Chi-Square	2796.866
	Df	1225
	Sig.	.000

- According to data, Kaiser-Meyer-Olkin measure of sample adequacy is 0.598 which is acceptable.

- Data is suitable for factor analysis.

- In above table Bartlett's test of significance is 0.00, which is less than 0.05 therefor, we reject H0. We conclude that variance of the variable differ significantly.

> ➤ **Communalities Table:**

Communalities indicate the amount of variance in each variable that is accounted for. Initial communalities are estimates of the variance in each variable accounted for by all components or factors. For principal components extraction, this is always equal to 1 for correlation analyses.

Communalities		
	Initial	Extraction
School time:	1.000	.574
Stream:	1.000	.602
Medium:	1.000	.657
Gender:	1.000	.604
Board Type:	1.000	.670
School type:	1.000	.692
Cast:	1.000	.635
Father's Qualification:	1.000	.655
Father's Occupation:	1.000	.545
Father's annual income:	1.000	.578
Mother's Qualification:	1.000	.674
Mother's Occupation:	1.000	.675
Mother's annual income:	1.000	.741
Did you get nervous / tensed, before exams?	1.000	.718
Did you get nervous / tensed, while giving exams?	1.000	.649
How much time (in hours) did you spend for coaching classes per week?	1.000	.622
Did you participate in extra activities at school?	1.000	.569
How much time did you give to Others activities per week?	1.000	.595
How much time did you sleep / take rest per day?	1.000	.494
Did you have your own mobile?	1.000	.718
How much time did you spend on your phone per day?	1.000	.704
If you were preparing for Others competitive exams, then how much time did you give to it, per week?	1.000	.481
Did you have library in your school?	1.000	.741
Did you have computer lab in your school?	1.000	.649
Did you have science laboratories (Physics, Chemistry, Biology) in your school?	1.000	.668
Did your school provide basic utilities such as water, electricity, canteen etc?	1.000	.639
Did your school provide necessary facilities like table, chair, benches etc?	1.000	.557
Did you get disturbed during lectures due to noisy area?	1.000	.627
How frequently you used to communicate for general discussion with your teachers?	1.000	.611
How often you used to communicate with your teachers for study purpose?	1.000	.556

|		
Did your teachers give satisfactory answers to your questions?	1.000	.624
Were you satisfied with the method of teaching?	1.000	.654
Did your teachers motivate you to give your best efforts?	1.000	.681
How much you used to get involved in your class discussion?	1.000	.619
Did you used to discuss doubts with your friends?	1.000	.498
Did you used to discuss doubts with your parents?	1.000	.571
Did your parents used to guide you for deciding your future goals?	1.000	.652
Are you interested in the stream which you have chosen?	1.000	.628
Did your parents frequently ask to study?	1.000	.623
Did you take your parents seriously, if they asked you to study?	1.000	.611
Did your parents force you to get good grades?	1.000	.752
Did your teachers force you to get good grades?	1.000	.671
Did you prepare time table on your regular basis study?	1.000	.730
Did you prepare time table on your prior to exam study?	1.000	.791
Do you follow your timetable?	1.000	.752
How many hours you studied per day at school?	1.000	.437
How many hours you studied per day at home?	1.000	.534
Have you faced any major health problem?	1.000	.622
Did your parents stay together?	1.000	.647
Whether there used to be any difference of opinions / disputes between your parents?	1.000	.585
Extraction Method: Principal Component Analysis.		

➤ **Eigenvalues and Scree plot:**

Next comes a table showing importance of each of 50 principal components. Only the first 17 have eigenvalues over 1.00, and together these explains over 63% of total variability in the data.

Total Variance Explained						
Component	Initial Eigenvalues			Extraction Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	4.225	8.451	8.451	4.225	8.451	8.451
2	3.004	6.007	14.458	3.004	6.007	14.458
3	2.621	5.241	19.699	2.621	5.241	19.699
4	2.490	4.980	24.679	2.490	4.980	24.679
5	2.139	4.278	28.957	2.139	4.278	28.957
6	1.883	3.766	32.723	1.883	3.766	32.723
7	1.791	3.582	36.304	1.791	3.582	36.304
8	1.663	3.325	39.630	1.663	3.325	39.630

9	1.621	3.242	42.872	1.621	3.242	42.872
10	1.478	2.956	45.828	1.478	2.956	45.828
11	1.384	2.767	48.595	1.384	2.767	48.595
12	1.357	2.713	51.308	1.357	2.713	51.308
13	1.279	2.558	53.866	1.279	2.558	53.866
14	1.219	2.438	56.304	1.219	2.438	56.304
15	1.190	2.380	58.684	1.190	2.380	58.684
16	1.165	2.329	61.013	1.165	2.329	61.013
17	1.073	2.146	63.159	1.073	2.146	63.159
18	.999	1.998	65.157			
19	.982	1.964	67.122			
20	.935	1.870	68.992			
21	.898	1.797	70.789			
22	.855	1.710	72.499			
23	.813	1.627	74.125			
24	.803	1.607	75.732			
25	.789	1.577	77.309			
26	.734	1.469	78.778			
27	.710	1.420	80.198			
28	.694	1.388	81.587			
29	.662	1.325	82.912			
30	.651	1.303	84.214			
31	.591	1.183	85.397			
32	.582	1.164	86.561			
33	.546	1.093	87.654			
34	.542	1.084	88.738			
35	.507	1.014	89.752			
36	.505	1.010	90.762			
37	.457	.914	91.675			
38	.441	.883	92.558			
39	.419	.839	93.397			
40	.397	.794	94.191			
41	.396	.792	94.982			
42	.372	.744	95.726			
43	.345	.690	96.416			
44	.326	.651	97.067			
45	.304	.609	97.676			
46	.284	.567	98.243			
47	.273	.547	98.790			
48	.232	.464	99.255			
49	.210	.420	99.675			
50	.163	.325	100.000			

Extraction Method: Principal Component Analysis.
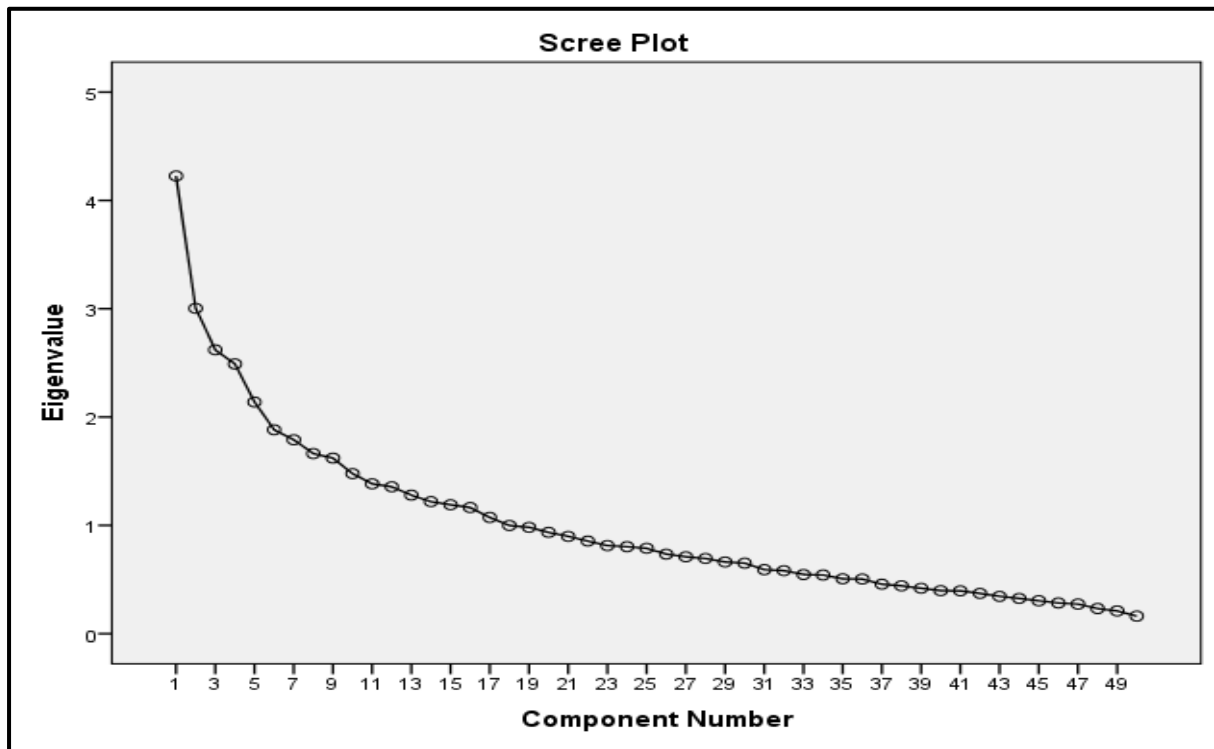
Scree Plot

❖ **Interpretation of Scree Plot:**

These results show the unrotated factor loadings for all the factors using the principal component method of extraction.

The Scree plot shows that the first six factors account for most of the total variability in data. The remaining factors account for a very small proportion of the variability.

➢ **Component matrix:**

Component matrix – this table component loadings, which are the correlation between the variable and estimated components.

Each variable has a loading corresponding to each of the 17 components. For example, 1st variable is correlated 0.149 with the first component, -0.139 with second component and .210 with third component and so on.

The square of each loading represents the proportion of variance explained by particular component. For 1st variable, $(.149)^2 = 0.0222$ OR 2.22% of its variance explained 1st component.

Component Matrix

	Component																
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
School time:	.149	-.139	.210	.234	-.314	.045	.309	.176	-.372	.061	.083	.128	-.106	.145	-.046	-.029	.083
Stream:	.072	.030	.228	.212	-.363	-.169	-.149	-.122	.130	.057	-.013	-.214	.223	.310	.290	.070	.018
Medium:	-.161	.620	-.339	.079	-.060	-.077	.021	-.170	.081	-.009	.040	.146	.160	-.114	-.126	-.052	.012
Gender:	-.282	.239	-.133	-.401	-.050	.017	.110	.064	-.020	.017	.203	-.100	.393	.209	.137	.013	.012
Board Type:	-.123	.284	-.259	.049	.022	-.285	.163	-.277	.107	.381	.022	.188	.010	-.151	.175	.264	.061
School type:	-.061	.092	.014	-.128	.192	-.061	-.229	-.144	.351	.311	-.064	.378	.227	-.139	-.152	.261	.145
Cast:	.194	-.223	.037	-.059	.061	.211	.081	.080	-.278	-.179	.057	-.049	-.079	-.274	-.232	-.195	-.440
Father's Qualification:	-.015	.656	-.274	.126	.179	.188	-.007	.088	-.081	.077	-.075	-.068	-.010	.038	.075	.147	-.081
Father's Occupation:	-.083	-.086	.220	-.249	.071	-.170	-.289	.050	.266	-.037	.030	-.163	.255	-.052	-.054	-.348	.094
Father's annual income :	-.120	.376	-.173	-.084	.279	.304	.020	-.048	-.258	-.180	.134	.111	.096	.046	.231	.065	.119
Mother's Qualification:	-.005	.226	-.408	.183	.059	.214	-.199	-.041	-.155	.287	.140	-.149	.111	.315	.026	.153	-.222
Mother's Occupation:	.079	-.442	-.116	.085	.104	-.036	.307	-.058	.219	.264	-.296	.237	-.097	-.018	.211	-.087	-.141
Mother's annual income:	.063	-.196	-.091	.023	.066	.194	.359	.038	.012	.509	-.018	.285	-.235	-.256	.232	-.038	.022
Did you get nervous / tensed, before exams?	-.081	-.288	.196	.606	.312	.043	.075	-.178	.043	-.049	.143	.125	-.085	-.016	-.144	.065	.115
Did you get nervous / tensed, while giving exams	-.065	-.080	.302	.525	.429	.072	-.099	-.131	.112	-.113	.050	.052	-.036	-.097	.039	.079	-.074
How much time (in hours) did you spend for coaching classes per week?	.008	-.042	.001	-.171	.252	.125	-.238	.484	-.088	-.228	-.259	.122	-.020	.163	-.089	-.046	.202
Did you participate in extra activities at school?	.275	.025	.092	-.334	.065	-.041	.075	.043	-.128	.093	.319	.136	.378	-.079	.134	-.172	-.132
How much time did you give to	-.020	.133	.111	.460	-.056	-.054	-.051	.227	-.195	.351	-.281	-.075	.051	.070	-.003	-.071	.183

Others activities per week?																	
How much time did you sleep / take rest per day?	.320	.147	.268	.205	.245	.125	-.115	.065	-.088	.116	.269	-.121	.115	-.171	.017	-.074	.075
Did you have your own mobile?	-.022	-.470	-.268	-.357	.224	.240	.163	-.022	-.055	-.015	.002	-.145	.091	.070	.150	-.017	.320
How much time did you spend on your phone per day?	.372	.451	.187	.339	-.173	-.223	-.207	.050	-.147	.100	-.033	.045	-.015	-.129	.043	-.106	-.150
If you were preparing for Others competitive exams, then how much time did you give to it, per week?	-.198	.001	-.249	.209	.150	.014	-.032	.393	-.056	.036	-.295	.067	-.032	-.123	-.148	.140	.064
Did you have library in your school?	.125	-.046	-.045	-.325	-.059	-.004	.121	.076	.204	.305	.304	-.092	-.103	-.039	-.368	.456	-.036
Did you have computer lab in your school?	.141	-.173	.039	-.039	-.327	.463	-.133	.019	-.021	-.246	.000	.154	-.028	-.304	.106	.249	-.071
Did you have science laboratories (Physics, Chemistry, Biology) in your school?	.131	-.265	.221	.028	-.433	.267	-.150	-.007	-.059	.111	.200	-.160	.168	-.114	-.009	.289	.209
Did your school provide basic utilities such as water, electricity, canteen etc?	.266	-.177	-.178	.259	-.302	.407	-.144	.078	.055	-.039	.139	.204	.051	.255	-.075	-.122	.037
Did your school provide necessary facilities like table, chair, benches etc?	.004	-.084	-.109	.093	-.375	.380	-.149	-.165	.087	.010	-.024	.249	.167	.263	.064	-.067	-.139

Question																	
Did you get disturbed during lectures due to noisy area?	-.250	-.125	.202	.211	.411	.101	.123	-.090	-.032	.066	.106	-.119	.258	.175	.291	.160	-.154
How frequently you used to communicate for general discussion with your teachers?	.505	.080	.006	-.073	.009	-.209	.259	.277	.295	-.137	.066	-.054	-.020	.059	.151	.031	-.129
How often you used to communicate with your teachers for study purpose?	.593	.025	.112	.104	.125	-.174	.127	.218	-.032	.044	.112	-.209	.010	-.007	.048	.086	.037
Did your teachers give satisfactory answers to your questions?	.483	-.044	-.352	.055	.228	-.046	.013	-.168	.098	.069	.078	-.236	-.296	.019	-.081	-.094	-.007
Were you satisfied with the method of teaching?	.475	.099	-.432	.115	.043	.175	-.137	-.059	.012	.024	.070	-.203	-.228	-.234	.082	-.064	-.012
Did your teachers motivate you to give your best efforts?	.508	-.121	-.397	.163	.032	-.002	-.222	-.269	.125	-.004	.025	-.066	.048	-.038	.089	-.110	.239
How much you used to get involved in your class discussion?	.582	-.205	-.052	.024	-.040	-.063	-.043	.241	.065	-.105	-.032	-.052	.202	.009	.146	.264	-.139
Did you used to discuss doubts with your friends?	.393	-.093	-.120	.149	-.060	-.158	-.165	.034	.231	-.263	-.168	-.074	-.026	.014	.045	.248	.142
Did you used to discuss doubts with your parents?	.352	.009	-.058	-.015	.140	.011	.386	.239	.097	-.087	-.092	-.019	.371	.173	-.017	.087	-.130
Did your parents used to guide you for deciding your future goals?	.431	-.118	-.104	.137	.095	.057	.225	-.404	-.035	-.015	.282	-.148	.238	.119	-.103	-.107	-.025

Are you interested in the stream which you have chosen?	.405	.077	-.255	.070	.161	.011	.027	.243	.101	-.119	.276	.362	-.087	.002	.147	-.108	.174
Did your parents frequently ask to study?	-.053	.183	.126	.002	.223	.460	.118	-.154	.331	-.034	.111	-.206	.045	.040	-.291	-.130	.017
Did you take your parents seriously, if they asked you to study?	.441	.138	-.023	.077	.152	-.029	.049	.101	-.052	.011	.090	.247	-.111	.290	-.416	-.004	.114
Did your parents force you to get good grades?	-.246	.381	.086	.135	-.172	.253	.315	.099	.389	-.024	.000	-.192	.050	-.165	.154	-.125	.247
Did your teachers force you to get good grades?	-.215	.363	.042	.256	-.236	.174	.350	.297	.138	.054	-.023	-.192	.175	-.163	-.038	-.025	.101
Did you prepare time table on your regular basis study?	.362	.235	.452	-.318	.128	.218	.074	-.114	-.141	.005	-.110	.097	-.089	.201	.113	-.052	.223
Did you prepare time table on your prior to exam study?	.436	.226	.455	-.266	.066	.228	-.096	-.198	-.077	.117	-.332	.008	-.115	.091	.057	.103	-.039
Do you follow your timetable?	.547	.336	.379	-.268	.126	.146	-.067	-.087	-.103	.007	-.210	.000	-.071	-.079	.007	.091	.020
How many hours you studied per day at school?	-.410	-.079	.116	-.002	.311	.120	-.018	.059	-.004	-.020	.090	-.125	.090	.183	.003	.232	-.119
How many hours you studied per day at home?	-.230	-.331	-.075	.128	.214	.188	-.261	.257	-.182	-.121	.000	-.191	-.099	.172	.098	-.014	.029
Have you faced any major health problem?	-.102	.071	.474	.141	.155	-.106	-.182	.111	.204	-.024	.385	.204	-.130	.074	.151	-.034	-.044
Did your parents stay together?	.045	-.111	.197	.187	-.115	-.115	.444	-.270	-.296	-.279	.104	-.038	-.013	-.005	-.167	.113	.209
Whether there used to be any difference of opinions /	-.003	.207	.118	.112	-.103	.278	.124	.025	.433	-.331	-.151	.115	-.148	.072	-.051	-.026	-.221

disputes between your parents?																	
Extraction Method: Principal Component Analysis.																	
a. 17 components extracted.																	

Component 1:

According to data communication and peer pressure variables which are correlated to each other are defined in first component.

Component 2:

Also, parent's income, occupation and education highly correlated to each other which are defined in second component.

Component 3:

Health problem, Time management correlated to each other which are defined in third component.

Component 4:

Academic aspects, curriculum activity correlated to each other which are defined in forth component.

Component 5:

Infrastructure correlated to each other which are defined in forth component.

PCA equations:

For component 1:

$Pca\_1=.035*Z_1 +.017*Z_2 -0.038*Z_3 -.067*Z_4 -.029*Z_5 -.014*Z_6 +.046*Z_7 -.004*Z_8 -.020*Z_9 -.028*Z_{10} -.001*Z_{11} + .019*Z_{12} +.015*Z_{13} -.019*Z_{14} -.015*Z_{15} + .002*Z_{16} + .065*Z_{17} -.005*Z_{18} + .076*Z_{19} -.005 *Z_{20} + .088*Z_{21} -.047*Z_{22} + .030*Z_{23} +.033*Z_{24} +.031*Z_{25} +.063 *Z_{26} +.001*Z_{27} -.059*Z_{28} + .119*Z_{29} +.140*Z_{30} + .114*Z_{31} +.112*Z_{32} +.120 *Z_{33} +.138*Z_{34} + .093*Z_{35} +.083*Z_{36} +.102*Z_{37} +.096*Z_{38} -.012*Z_{39} + .104*Z_{40} -.058*Z_{41} -.051*Z_{42} +.086*Z_{43} +.103*Z_{44} +.130*Z_{45} -.097*Z_{46} -.054*Z_{47} -.024*Z_{48} +.011*Z_{49} -.001*Z_{50}$

For component 2:

$Pca\_2=-0.046*Z_1+0.010*Z_2+0.206*Z_3+0.080*Z_4+0.094*Z_5+0.031*Z_6-0.074*Z_7+0.218*Z_8-0.029*Z_9+0.125*Z_{10}+0.075*Z_{11}-0.147*Z_{12}-0.065*Z_{13}-0.096*Z_{14}-0.026*Z_{15}-0.014*Z_{16}+0.008*Z_{17}+0.044*Z_{18}+0.049*Z_{19}-0.156*Z_{20}+0.150*Z_{21}+0.000*Z_{22}-0.015*Z_{23}-0.058*Z_{24}-0.088*Z_{25}-0.059*Z_{26}-0.028*Z_{27}-0.042*Z_{28}+0.027*Z_{29}+0.008*Z_{30}-0.015*Z_{31}+0.033*Z_{32}-0.040*Z_{33}-0.068*Z_{34}-0.031*Z_{35}+0.003*Z_{36}-0.039*Z_{37}+0.026*Z_{38}+0.061*Z_{39}+0.046*Z_{40}+0.127*Z_{41}+0.121*Z_{42}+0.078*Z_{43}+0.075*Z_{44}+0.112*Z_{45}-0.026*Z_{46}-0.110*Z_{47}+0.024*Z_{48}-0.037*Z_{49}+0.069*Z_{50}$

For component 3:

$Pca\_3 = .080*Z_1 + .087*Z_2 - .129*Z_3 - .051*Z_4 - .099*Z_5 + .005*Z_6 + .014*Z_7 - .105*Z_8 + .084*Z_9 - .066*Z_{10} - .156*Z_{11} - .044*Z_{12} - .035*Z_{13} + .075*Z_{14} + .115*Z_{15} + .000*Z_{16} + .035*Z_{17} + .042*Z_{18} + .102*Z_{19} - .102*Z_{20} + .071*Z_{21} - .095*Z_{22} - .017*Z_{23} + .015*Z_{24} + .084*Z_{25} - .068*Z_{26} - .042*Z_{27} + .077*Z_{28} + .002*Z_{29} + .043*Z_{30} - .134*Z_{31} - .165*Z_{32} - .151*Z_{33} - .020*Z_{34} - .046*Z_{35} - .022*Z_{36} - .040*Z_{37} - .097*Z_{38} + .048*Z_{39} - .009*Z_{40} + .033*Z_{41} + .016*Z_{42} + .173*Z_{43} + .174*Z_{44} + .144*Z_{45} + .044*Z_{46} - .028*Z_{47} + .181*Z_{48} + .075*Z_{49} + .045*Z_{50}$

For component 4:

$Pca\_4 = 0.094*Z_1 + 0.085*Z_2 + 0.032*Z_3 - 0.161*Z_4 + 0.020*Z_5 - 0.052*Z_6 - 0.024*Z_7 + 0.051*Z_8 - 0.100*Z_9 - 0.034*Z_{10} + 0.074*Z_{11} + 0.034*Z_{12} + 0.009*Z_{13} + 0.244*Z_{14} + 0.211*Z_{15} - 0.069*Z_{16} - 0.134*Z_{17} + 0.185*Z_{18} + 0.082*Z_{19} - 0.143*Z_{20} + 0.136*Z_{21} + 0.084*Z_{22} - 0.130*Z_{23} - 0.016*Z_{24} + 0.011*Z_{25} + 0.104*Z_{26} + 0.037*Z_{27} + 0.085*Z_{28} - 0.029*Z_{29} + 0.042*Z_{30} + 0.022*Z_{31} + 0.046*Z_{32} + 0.065*Z_{33} + 0.010*Z_{34} + 0.060*Z_{35} - 0.006*Z_{36} + 0.055*Z_{37} + 0.028*Z_{38} + 0.001*Z_{39} + 0.031*Z_{40} + 0.054*Z_{41} + 0.103*Z_{42} - 0.128*Z_{43} - 0.107*Z_{44} - 0.108*Z_{45} - 0.001*Z_{46} - 0.051*Z_{47} + 0.057*Z_{48} - 0.075*Z_{49} + 0.045*Z_{50}$

For component 5:

$Pca\_5 = -.147*Z_1 - .170*Z_2 - .028*Z_3 - .023*Z_4 + .010*Z_5 + .090*Z_6 + .029*Z_7 + .084*Z_8 + .033*Z_9 + .130*Z_{10} + .028*Z_{11} + .049*Z_{12} + .031*Z_{13} + .146*Z_{14} + .201*Z_{15} + .118*Z_{16} + .030*Z_{17} - .026*Z_{18} + .115*Z_{19} + .105*Z_{20} - .081*Z_{21} + .070*Z_{22} - .027*Z_{23} - .153*Z_{24} - .203*Z_{25} - .141*Z_{26} - .175*Z_{27} + .192*Z_{28} + .004*Z_{29} + .059*Z_{30} + .107*Z_{31} + .020*Z_{32} + .015*Z_{33} - .019*Z_{34} - .028*Z_{35} + .065*Z_{36} + .044*Z_{37} + .075*Z_{38} + .104*Z_{39} + .071*Z_{40} - .080*Z_{41} - .110*Z_{42} + .060*Z_{43} + .031*Z_{44} + .059*Z_{45} + .145*Z_{46} + .100*Z47 + .073*Z_{48} - .054*Z_{49} - .048*Z_{50}$

WHERE, Z_i = standardized value of X_i, i = 1,2,.....,50

CONCLUSION

    From our survey data we conclude that stream, board type, father's qualification, student doing coaching classes, teacher's communication, teacher's give satisfactory answer to students, teaching method, parents frequently asked to study, parents force for getting good grades and student follow their timetable are correlated to student's Academic performance.

    In the class of 60-70 % and 80-90 % female students performance is better than male students and for the class of 90-100% male and female students both performed almost equally.

    In class of below 50 % and 60-90 % government school students performance is better than private school.

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