

Analysing Factors Affecting IIT-JEE Preparation: A Comparative Study of Schooling Methods and Learning Modes

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Abstract: The Joint Entrance Examination (JEE) stands as a pinnacle in the journey of aspiring engineering students in India. Securing admission to the prestigious Indian Institutes of Technology (IITs) through the JEE is a highly sought-after accomplishment. However, achieving success in this highly competitive examination requires careful consideration of various factors that influence a student's preparation. This research paper aims to analyse the impact of schooling methods, the ideal starting class for JEE preparation, and the effectiveness of different learning modes (online, offline, or a combination of both) on a student's performance, ultimately enhancing their chances of selection in the IITs.

I. Introduction:

In the realm of competitive exams in India, the Indian Institutes of Technology Joint Entrance Examination (IIT-JEE) stands as a top of academic rigor and aspiration. Each year, hundreds of thousands of young minds embark on a journey that tests their knowledge, problem-solving skills, and perseverance, with the ultimate aim of securing a coveted seat in one of the prestigious Indian Institutes of Technology (IITs). This research paper seeks to delve deep into the complexities and dynamics surrounding the IIT-JEE examination, exploring the factors that contribute to its significance, its impact on the lives of aspirants, and its role in shaping the future of engineering education in India.

The IIT-JEE examination has garnered unparalleled attention and admiration as one of the most competitive and challenging entrance exams in the world. Its reputation crosses boundaries, attracting aspirants from all corners of the country who dream of joining the ranks of the brightest engineering minds in India. This examination has become a crucial turning point, as it not only assesses a candidate's knowledge in mathematics, physics, and chemistry but also demands exceptional problem-solving abilities, analytical thinking, and time management skills.

Furthermore, the success of the IIT-JEE examination extends beyond the realm of individual achievement. It has immense implications for the nation's engineering education landscape and the development of technical expertise. The IITs, renowned for their academic excellence, cutting-edge research, and industry collaborations, are seen as the breeding grounds for future innovators, entrepreneurs, and leaders in the field of engineering. Understanding the factors that contribute to success in the IIT-JEE examination can shed light on the qualities and attributes necessary to excel in this highly competitive academic ecosystem.

To explore the various dimensions of the IIT-JEE examination, the research paper will explore the broader societal and psychological implications of the IIT-JEE examination. It will examine the immense pressure and stress faced by aspirants, their families, and the education system as a whole. It will also delve into the effectiveness of coaching institutes, the role of technology in exam preparation, and the evolving dynamics of the aspirant-mentor relationship.

Through this research paper, we aspire to unravel the enigma that surrounds the IIT-JEE examination and contribute to the discourse on the intersection of education, meritocracy, and aspirations in India. By analysing the various facets of this examination, we hope to provide valuable insights into the strategies for success and open up discussions on the broader implications and reforms necessary to make the path to academic brilliance more equitable and inclusive.

As we embark on this intellectual journey, it is crucial to acknowledge that the IIT-JEE examination represents not only a test of knowledge but also a testament to the dreams, aspirations, and determination of thousands of bright young minds. By exploring the depths of this examination, we aim to celebrate the pursuit of excellence and contribute to the collective understanding of a phenomenon that has played a transformative role in the lives of countless individuals and the nation as a whole.

In the era of these competitive examination in India. The IIT-JEE stands as an quality of academics and aspiration. Each year lakhs of aspirants participate in this exam.

As per source⁷, there is certain number of student's participate in exam every year. Shown in table.

Year	Total number of applicants	Total number of student's appeared
2023	1162398	1113325
2022	1026799	905590
2021	1048012	939008
2020	1174000	1023000
2019	1237892	1147125

II. Objective of the Study:

How to get admission in IIT?

Now the question is what are factors that increase the probability of selection.

Since the acceptance rate is only 0.5% (only 5 out of 1000 students get selected) it becomes a question about how to increase the chance of selection.

- To examine, starting preparation early is an effective solution to get into IIT.
- To examine, how should one prepare online, offline, hybrid mode.
- To examine, is taking a dummy schooling is worth it.
- To examine, board of school is effect the selection.

III. Literature Review:

1. Maohua Sun (2020) in his research paper on the "online and offline" hybrid Teaching mode of College English discussed the mode of teaching online, offline and hybrid (consist of both traditional offline classes and online classes). He found that combination of both online and offline classes would be better than online, offline individually. We can have learning discussion in the offline class and classroom display under the guidance of teacher or group cooperation through the "online" self-study before the class. This would bring dynamism in the class.

2. Prof. SMRUTI R. SARANGI², a former IITian as well as professor at IIT Delhi, in his blog/article "Preparing for IIT JEE-MY WAY!" discussed the time from which we should start preparation and the (way we should) reasonable approach or use that time step by step. She also highlight that a future IITian possess a keen observation skills, keen interest in things and are curious. They comes in toppers list and are particularly good in Maths and science. She suggest to nature the student by exposing child to wide variety of environment. She emphasize on building skills for competitive exams like logical and mathematical skills, expanding their perspective and enhancing there thinking, understanding and grasping skills little by little or step by step rather putting pressure on them abruptly. Student will get comfortable to the stress of competitive environment and will learn how to overcome it over the time.

3. In one of Times of India article "The dummy education system-Has the nation accepted the Redundant institutes?" From 2019 the author Anannya Shandilya¹ discussed about the dummy schooling and the reason behind it. She emphasized has school curriculum are left behind and irrelevant to competitive exam for getting admission in colleges. but to getting into college you need to clear 12th standard or complete the school education. Therefore, after 10th go to schools where allows dummy schooling to so that they can focus more on and give more time to their preparation for competitive exam.

IV. Hypothesis:

Hypothesis 1:-

H₀ :- Student starting preparation for IIT from which class doesn't make any difference in their selection in IIT.

H_a :- Student starting preparation for IIT from which class make significant difference in their selection in IIT.

Hypothesis 2 :-

H₀ :- Student choosing dummy or regular schooling during preparation doesn't make any difference in their selection in IITs.

H_a :- Student choosing dummy or regular schooling during preparation make significant difference in their selection in IITs.

Hypothesis 3 :-

H₀ :- Student attending online or offline or hybrid mode of coaching classes doesn't make any difference in their selection in IITs.

H_a :- Student attending online or offline or hybrid mode of coaching classes make significant difference in their selection in IITs.

Hypothesis 4:-

H₀ :- Student school board (State board or CBSE) in class 11th or 12th doesn't make any difference in their selection in IITs.

H_a :- Student school board (State board or CBSE) in class 11th or 12th make significant difference in their selection in IITs.

V. Research methodology:

Data Collection Instruments – Questionnaire

Research is based on primary information collected through self administered questionnaire.

The questionnaire consists of five parts.

Part 1 contains questions asking students since which class they started preparation for entrance exam.

Part 2 contains questions asking students which type of schooling they did during the period of preparation, i.e. dummy or regular.

Part 3 contains questions asking students if they got selected in IITs or not through IIT JEE entrance exam.

Part 4 contains question asking student from which board he did his schooling in class 11th or 12th.

Part 5 contains questions asking students their opinion on right time to start preparation for entrance exam. (Part 5 contains questions asking IIT selected students about their and opinion of non-IIT selected student to what is the right time to get started doing preparation).

Questionnaire were administered by forwarding questionnaire form through google form and face-to-face interaction with respondents. Convenience sampling was used to approach citizen who were willing to participate and fill the questionnaire. 200 respondents were selected for collecting information.

Statistical Tools

Chi-square test were performed to test the above hypotheses. The Chi-Square test was used for checking significance level of alpha-numeric data variables, like coaching mode, schooling type, and the class level from students started preparation for IIT JEE entrance exam which are independent variable with respect to their selection in IITs. The level of significance was set at the conventional 0.05.

Data Analysis The demography of respondents has been presented in Table No 1 which shows that out of 100 respondents 50% were IITians and 50% were non-IITians. On the basis of class level from which students has started preparation for exam respondents were categorized in 7 groups, from class level 7th, 8th, 9th, 10th, 11th, 12th and after 12th with 0.5%, 4%, 3%, 9.5%, 50%, 19.5% and 13.5% respondents respectively. School type-wise respondents are divided into two group dummy with 38% of respondents and regular with 62% respondents.

Table No 1 : Demographic Background of Respondents

Demographic	N=200	Percentage
Student		
IITians	100	50%
Non-IITians	100	50%
Starting Preparation for exam(class)		
7	1	0.5%
8	8	4%
9	6	3%
10	19	9.5%
11	100	50%
12	39	19.5%
After 12	27	13.5%
School Type		
Dummy	76	38%
Regular	124	62%
Coaching Mode		
Online	38	19%
Offline	85	42.5%
Hybrid	77	38.5%
School board		
CBSE board	134	67%
State board	66	33%

Coaching mode based respondents were divided into three categories, 19% respondents had online coaching mode, 42.5% respondents had offline coaching mode, and 38.5% had hybrid mode of coaching. School board based respondents were divided into two categories, 67% respondents had CBSE board and 33% respondents had State board.

VI.Data analysis:

1. <Starting preparation from which class>

Table No.2: Chi-Square Tests

	Value	Df	Asymp. Sig. (2-sided)
Pearson Chi-Square	40.311a	6	.000
Likelihood Ratio	47.468	6	.000
Linear-by-Linear Association	35.514	1	.000
N of Valid Cases	200		

(a. 6 cells (42.9%) have expected count less than 5. The minimum expected count is .50.)

Table 2 shows that student starting preparation for IIT from which class level makes significant difference in their selection in IIT. The value of chi-square test in this case is 40.311 and the tabular value is 12.592 at 0.05 significance level, thus the tabular value is less than calculated value. Hence the null hypothesis is rejected. so we can say that student starting preparation for IIT from which class level makes impact to their selection in IIT.

2. <schooling type – Dummy or Regular>

Table No. 3: Chi-Square Test

	Value	df	Asymp. Sig.(2-sided)	Exact Sig.(2-sided)	Exact Sig.(1-sided)
Pearson Chi-Square	5.433 _a	1	.020		
Continuity Correction ^b	4.775	1	.029		
Likelihood Ratio	5.464	1	.019		
Fisher’s Exact Test				.029	.014
Linear-by-Linear Association	5.406	1	.020		
N of Valid Cases	200				

a. 0 cells (.0%) have expected count less than 5. The minimum expected count is 38.00.

b. Computed only for a 2*2 table.

Table 3 shows that Student choosing dummy or regular schooling during preparation make significant difference in their selection in IITs. The Chi-Square test value for this case is 5.433 with significance level of 0.05 and the tabular value is 3.841. Thus the tabular value is less than calculated value. Hence the null hypothesis is rejected. So we can say that student choosing dummy or regular schooling during preparation for IIT make impact to their selection in IIT.

3. <Coaching mode – online, offline, or hybrid>

Table No. 4: Chi-square Test

	value	Df	Asymp. Sig. (2-sided)
Pearson Chi-Square	11.462a	2	.003
Likelihood Ratio	11.659	2	.003
Linear-by-Linear Association	11.349	1	.001
N of Valid Cases	200		

a. 0 cells (.0%) have expected count less than 5. The minimum expected count is 19.00.

Table 4 shows that student attending online, offline or hybrid mode of coaching classes make significant difference in their selection in IITs. The Chi-Square test value for this case is 11.462 with significance level 0.05 and the tabular value is 5.991. Thus the tabular value is less than calculated value. Hence the null hypothesis is rejected. So we can say that student attending online, offline or hybrid mode of coaching make impact in their selection in IIT.

4. <School board – CBSE, State board >

Table No. 5: Chi-square Test

	value	Df	Asymp. Sig. (2-sided)
Pearson Chi-Square	15.287a	1	.000
Likelihood Ratio	15.602	1	.000
Linear-by-Linear Association	15.211	1	.000
N of Valid Cases	200	1	.000

a. 0 cells (.0%) have expected count less than 5. The minimum expected count is 33.00.

b. Computed only for a 2*2 table.

Table 5 show that student's school board(state board or CBSE) in class 11th or 12th it's doesn't make any difference in their selection in IITs. the chi-square test value for this case is 15.287 with significance level 0.05 and the tabular value is 3.841. thus the tabular value is less than calculated value Hence the null hypothesis is rejected. So we can say that student choose his school from any board it's make effect their selection in IITs.

VII.FINDING, DISCUSSION AND LIMITATIONS:

The objective of this paper is to measure the impact of various factors on Student preparation for IIT JEE exam. And this level of satisfaction measure by the factors namely

- Starting preparation early is an effective Solution to get into IITs.
- How should One prepare online, offline or hybrid mode.
- Is taking a Dummy worth it
- Board of School is effect the selection or not.

The result of the study indicated that was show that student starting preparation for IIT JEE form which class level make significant difference in their selection in IITs. the findings indicate that those Students who started preparation for class 11th or before 11th have more chances to select in IITs as compare to whose started their preparation after 11th.

Starting preparation early proves to be beneficial due to which the pressure on student is less and there is a lot of time so that student can clear his basics first before starting the preparation after 11th student has to pay attention to his basics first if the student basics are weak then first of all clear the basic or start preparation in which it takes a lot of time and after 11th the time remains less, which becomes very difficult to handle.

If student does dummy schooling then student has more chances of selection in IITs. during preparation, most of the student's attention is on managing time, in which student has to handle both school on Coaching simultaneously, due to dummy schooling the student does not need to go to school every day, which saves a lot of time for the student and his this there is no pressure to handle both School or Coaching together and the result is also saying that there are more Chances of getting selected in IIT than who chooses dummy schooling.

Generally, student has been preparing for competitive exam with traditional classroom program but during pandemic we got a new way of online teaching, now student has two option traditional classroom program or online as well as mix of both of these hybrid classroom program in which traditional classroom program or online teaching is a unique combination, which tries to teach students better in an innovative way. In hybrid classroom program, classes are held offline only, but video recording of these classes is also available, which the student can access later anytime, anywhere. Can see with him notes, test, student report card and their analysis is done online so that student's time is saved and he can improve on his shortcomings in a better way, in study we also find that hybrid classroom program is more effective than the online teaching and traditional classroom program

Student is always confused as to which School to go to CBSE board or State board so that Student get help in preparing for IITs. the pattern and academics are different in CBSC or state board which can effect the preparation of exam so it can also impact the selection ratio. The choice of school board whether it is CBSE (Central Board of Secondary Education) or a State Board can have some impact on the preparation for the IIT entrance exam and potentially affect the result.

VIII.References:

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