

## Exploring the Interplay: Efficiency, Gender, and School Type's Impact on Academic Performance in Higher Secondary Learners

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### ABSTRACT

This study investigates academic performance among 800 11th-grade students in Durg district, Chhattisgarh, India. Examining efficiency, gender, and school type, it employs mean, standard deviation, and Three-way ANOVA. Higher efficiency positively influences academic success, with boys outperforming girls. Government school students show significantly higher performance than private school students. Interactional effects are not significant, suggesting combined influences do not significantly impact academic performance in higher secondary learners. The study emphasizes the importance of curriculum design and resource availability, especially in government schools.

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### INTRODUCTION –

Education stands as the most potent means to influence society, providing individuals with the skills needed to realize their full potential. It serves as the catalyst for changes in knowledge, skills, attitudes, appreciation, and comprehension of the world. The ultimate goal of education is to cultivate civilized, refined, and culturally aware individuals. The academic trajectory of higher secondary level students is a complex interplay of diverse influences within the educational framework. Academic performance serves as a vital indicator of students' achievements and future prospects, shaped by a multitude of factors. Among these, efficiency, gender, and school type emerge as pivotal elements capable of significantly impacting the educational landscape. This study focuses on higher secondary learners,

navigating the crucial adolescent stage marked by prominent cognitive and structural changes. Beyond academic prowess, the study recognizes the importance of additional characteristics such as resilience, kindness, and overall well-being. These qualities are essential for students to make meaningful contributions to both society and the nation. Hence education serves as the linchpin for societal transformation, fostering the development of well-rounded individuals equipped with the necessary skills and attributes to positively impact their surroundings. The study of higher secondary students delves into the intricate dynamics of education, acknowledging the multifaceted influences that shape academic outcomes and contribute to the holistic development of individuals poised to contribute meaningfully to society.

## **EFFICIENCY**

Ability to perform a task with minimal waste, effort, or energy is called as efficiency. It involves utilizing resources effectively to achieve goals, working quickly and systematically. In the context of students, efficiency is closely associated with academic success. Efficient students effectively manage their schedules, study habits, and adhere to discipline in order to stay up-to-date with their academic responsibilities. As Longman Dictionary of Contemporary English (2018), efficiency is the measurable efficient utilization of resources, minimizing waste in materials, energy, efforts, money, and time, resulting in successful and well-executed tasks. In academia, efficiency plays a fundamental role in achieving academic excellence. It encompasses students' abilities to manage time, engage with learning materials, and apply critical thinking skills to overcome academic challenges. Efficiency, as a critical factor in academic achievement, involves the effective use of cognitive and time-management skills to maximize learning outcomes. The pursuit of academic success requires a balance of effective study strategies, optimal resource utilization, and efficient time management. Exploring the connection between efficiency and academic achievement sheds light on the factors influencing students' success or failure in higher secondary education. When individuals, including students, work with full efficiency, the likelihood of errors decreases, significantly increasing the probability of success. The concept of efficiency is particularly crucial and beneficial for higher secondary learners. Studying with full efficiency enhances the chances of academic success, emphasizing the importance of effective time management and resource utilization for optimal learning outcomes.

## **ACADEMIC PERFORMANCE**

Academic performance, assessed through grades and standardized tests, is influenced by an individual's personality, learning environment, and external factors. The complex nature of achievement stems from the interplay of abilities, learning strategies, and the educational context. Understanding how efficiency, gender, and school type impact upper secondary learners is vital for educators and policymakers. Efficiency is a key factor, regardless of gender or school type, reflecting the importance of applying skills effectively for academic success. This study thoroughly analyzes efficiency levels, school types, and gender in higher secondary education to understand their interconnected influences on academic achievement. The goal is to contribute insights for informed educational policies, promoting equitable and effective learning environments for all upper secondary learners.

### STUDIES RELATED TO EFFICIENCY

**Agasisti & Zoido (2015)** did a research to utilize PISA 2012 data and a bootstrapped version of data envelope analysis to derive efficiency indicators for over 8,600 schools across 30 countries. The analysis identified various school-level criteria, such as the percentage of students below low proficiency levels, positive student attitudes, and the quality of resources like teachers and educational facilities, as factors correlated with efficiency counts. The results suggested that, in many instances, focusing on these characteristics could lead to improvements in educational outcomes.

**Khotvaneh et al. (2017)** used a survey with 99 students from a secondary school in Jasin, Melaka, to perform a significant assessment. The results showed that students had a high degree of computer usage and skill, had access to PCs or PDAs, and had a web connection at home. These results highlight the necessity of addressing students' motivation and autonomous learning skills in addition to the significance of having a suitable infrastructure and a dependable internet connection for successful online learning. The findings have consequences for principals, educators, parents, and educational authorities in terms of helping them comprehend the need of regular internet connectivity and encouraging learning settings for the success of online education.

**Yu et al. (2020)** studied the effectiveness of the "Wrestling" module in high school physical education for 10th and 11th-grade students. The research revealed that high learners require extra time to achieve sustainable preparedness and adapt to readiness components. Significant impacts on technical and tactical readiness, along with general and specific capabilities, were attributed to the module's structure. The study emphasized distinctions between secondary school education and sports training in organizational setup, methodology, duties, and objectives.

## STUDIES RELATED TO ACADEMIC PERFORMANCE

**Masud et al. (2019)** investigated a study on academic performance in adolescent students: The role of parenting styles and socio-demographic factors- A cross-sectional study from Peshawar Pakistan. 456 students (from 4 private schools and from 4 public school) students taken as sample. With the help of regression analysis result of this study revealed that socio economic state, father's educational level, father's care count have the significant positive effect of academic performance of students of Peshawar Pakistan.

**Ranjeeth et al. (2020)** done a study on the role of gender in academic performance based on various parameters using a dataset of 1116 boys and girls. The parameters included mother and father education, the impact of advisors, time spent on study after school, time spent on sports, time spent with mobile per day, the impact of health problems, goals, and time spent on yoga or physical exercise. Findings indicated that boys exhibited better academic performance based on the assessed parameters.

## STATEMENT OF THE PROBLEM

'Effect of Efficiency, Gender and School type on Academic Performance of Higher Secondary learners'

## OBJECTIVE OF THE STUDY

- To study the Effect of Efficiency, Gender and School Type on Academic Performance of Higher Secondary learners.

## HYPOTHESIS OF THIS STUDY

**H<sub>0</sub>.** There will be no significant effect of Efficiency, Gender and School type on Academic Performance of Higher Secondary learners.

## SAMPLE-

The study focuses on stratified disproportionate random sample of 800 students (400 girls and 400 boys) of 11th-grade of Durg district in the Indian state of Chhattisgarh

## TOOLS-

- PWBS (Psychological well-being scale) developed by Sisodia and Choudhary (2012) used to collect the data for Efficiency the dimension of psychological well being.

- For academic performance counts, obtained marks by the students in class 10th board examination have been taken.

### DATA ANALYSIS-

With descriptive survey method data were collected, SPSS software version 28.0.0 was employed for statistical analysis, Mean and Standard Deviation (SD). Three-way ANOVA test applied for comprehensive analysis.

### RESULT AND DISCUSSION-

**H<sub>0</sub>.** There will be no significant effect of Efficiency, Gender and School type on Academic Performance of Higher Secondary learners.

To examine the independent variables efficiency (high and low), gender (boys and girls) and school type (Government school and private school) three way ANOVA with 2x2x2 factorial design used to test the main and interactional effects of efficiency, gender and school type respectively. Analysis is in below table:-

**Table 1**

**Summary of three-way ANOVA for 2x2x2 factorial experiment of academic performance of higher secondary learners**

Source of Variance	Type III Sum of Squares	df	Mean sum of squares	F-ratio
Efficiency	2595.601	1	2595.601	17.960*
Gender	1060.301	1	1060.301	7.337*
School type	743.051	1	743.051	5.142**
Efficiency*Gender	4.351	1	4.351	0.030 <sup>NS</sup>
Efficiency* School type	95.911	1	95.911	0.664 <sup>NS</sup>
Gender*School type	.151	1	.151	0.001 <sup>NS</sup>
Efficiency *Gender * School type	313.751	1	313.751	2.171 <sup>NS</sup>
Error	114457.730	792	144.517	
Total	3708997.000	800		



Corrected Total	119270.849	799		
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\*Significant at 0.01 level, \*\*Significant at 0.05 level, NS= Not Significant, N = 800

**\* Main Effect of Efficiency on academic performance of higher secondary learners**

In table 1 the main effect of Efficiency found to be significant  $[(1/792) = 17.960, p < .01]$  where the value in the statistical table at 0.01 level is 6.69, which is less from obtained value. So it indicated an individual effect of Efficiency on academic performance of higher secondary learners. Therefore the null hypothesis stated as “There will be no significant effect of Efficiency on academic performance of higher secondary learners” has been **rejected**. It clarified that Efficiency produced main effect on academic performance of higher secondary learners.

**Table 2**

**Showing the main effect of Efficiency on academic performance of higher secondary learners**

Efficiency	High	M = 68.78 SD = 12.64
	Low	M = 65.18 SD = 12.27

Table 2 indicates noteworthy difference in the academic performance of higher secondary learners with high efficiency in the dimension of psychological well-being (M=68.78) compared to those with low efficiency (M=65.18). Consequently, the academic performance of higher secondary learners with high efficiency surpasses that of their counterparts with low efficiency. This suggested that students with high efficiency tend to excel in their academics, possibly due to their greater capabilities. The findings align with Owens, Stevenson, Norgate, and Hadwin's (2008) similar results, emphasizing that students with high efficiency demonstrate notable performance in both academics and curricular activities.

**\* Main Effect of Gender on academic performance of higher secondary learners**

Main effect of gender was found to be significant  $[(1/792) = 7.337, p < .01]$ . The value in the statistical table at 0.01 level is 6.69, which is less than the obtained value. Hence there was an individual or main effect of gender on academic performance of higher secondary learners. Therefore the null hypothesis stated as “There will be no significant effects of gender on academic performance of higher secondary learners” **rejected**. It clarified that gender produced main effect on academic performance of higher secondary learners.

**Table 3**

**Showing the main effect of Gender on academic performance of higher secondary learners**

<b>Gender</b>	<b>Boys</b>	<b>M = 68.137</b> <b>SD =12.64</b>
	<b>Girls</b>	<b>M = 65.835</b> <b>SD = 11.68</b>

From table 3 that academic performance of boys (M=68.137) differs significantly from academic performance of girls (M=65.835). Therefore academic performance of **boys'** students of higher secondary school is significantly much **higher** than academic performance of **girls'** students of higher secondary school. Reason might be as compared to girls, boys are more committed to and focused on their studies. Boys do their studies willingly, while girls are more interested and participate in extracurricular activities in school. Dubuc et al. (2020) found similar result. But Castagnetti, Rosti (2009), Parajuli, Thapa (2017), and Filgona, Sababa (2017) found that girls are the better performer in academics. Kamala and Lakshmi (2022) not found any significant difference between academic performance and gender. Similar result regarding to gender that is significant impact of gender on academic performance was found by Ebeuwa (2010) Ranjeeth and Victor Paul (2019). Whereas Rouse and Austin (2002) found significant difference between girls and boys in terms of academic performance i.e. boys has good academic performance.

**\* Main Effect of School type on academic performance of higher secondary learners**

Main effect of School type was found to be significant [(1/792) =5.142, p < .05]. The value in the statistical table at 0.05 level is 3.86, which is less than the obtained value. There was an individual effect of School type on academic performance of higher secondary learners. Therefore null hypothesis stated as “There will be no significant effect of school type on academic performance of higher secondary learners” has been **rejected**. It clarified that school type produced main effect on academic performance of higher secondary learners.

**Table 4**

**Showing the main effect of School type on academic performance of higher secondary learners**

<b>School type</b>	<b>Government</b>	<b>M = 67.95</b> <b>SD =12.28</b>
	<b>Private</b>	<b>M = 66.02</b> <b>SD =12.09</b>

From table 4 academic performance of students of **Government** schools ( $M=67.95$ ) is significantly differ from academic performance of students of **Private** schools ( $M = 66.02$ ). Therefore academic performance of students of **Government** schools is significantly higher than academic performance of students of **Private** schools. Better curriculum design, better presentation of the course content, more learning resources including the more sophisticated and more effective use of learning technologies, less number of problems related to discipline and academics are the reasons that students performs well in government schools.

**Cansız et al. (2019)** found similar result. But **Harry (2016)** not found any significant difference between School type and academic performance. **Newhouse and Beegle (2006)** found academic performances are better in private schools. **Kamala and Lakshmi (2022)** not found any significant difference between academic performance and school type. Similar result regarding to school type that is significant impact of school type on academic performance was found by **Alimi and Ehinola (2012)** and **Considine and Zippala (2002)**.

\* **Interactional effect of Efficiency with Gender on academic performance of higher secondary learners**

From table 1 it can be seen that F- value of **0.30 (df=1/792)** for interactional effect of efficiency and gender was not found to be significant. The value in the statistical table at 0.05 level is 3.86, which is greater than the obtained value. It indicated that the mean counts of academic performance of higher secondary learners in context of two order interactional effect of efficiency and gender did not differ significantly. Therefore the hypothesis “**There will be no significant effect of efficiency and gender on academic performance of higher secondary learners**” is accepted.

\* **Interactional effect of Efficiency with School type on academic performance of higher secondary learners**

From table 1 it can be seen that F- value of **0.664 (df=1/792)** for interactional effect of efficiency and school type was not found to be significant. The value in the statistical table at 0.05 level is 3.86, which is greater than the obtained value. It is indicated that the mean counts of academic performance of higher secondary learners in context of two order interactional effect of efficiency and school type did not differ significantly. Therefore the hypothesis is “**There will be no significant effect of efficiency with school type on academic performance of higher secondary learners**” is accepted.



\* **Interactional Effect of Gender with School type on academic performance of higher secondary learners**

From table 1 seen that F- value of **0.001 (df=1/792)** for interactional effect of gender and school type was not found to be significant. The value in the statistical table at 0.05 level is 3.86, which is greater than the obtained value. It is indicated that the mean counts of academic performance of higher secondary learners in context of two order interactional effect of gender and school type did not differ significantly. Therefore the hypothesis “**There will be no significant effect of gender and school type on academic performance of higher secondary learners**” is accepted.

\* **Interactional Effect of efficiency, Gender and School type on academic performance of higher secondary learners**

From table 1 it can be seen that F- value of **2.171 (df=1/792)** for interactional effect of efficiency, gender and school type was not found to be significant. The value in the statistical table at 0.05 level is 3.86, which is greater than the obtained value. It is indicated that the mean counts of academic performance of higher secondary learners in context of three order interactional effect of Efficiency, gender and school type did not differ significantly. Therefore the hypothesis “**There will be no significant effect of gender and school type on academic performance of higher secondary learners**” is accepted.

## CONCLUSION

The study utilized robust statistical analysis, including mean, standard deviation, and a Three-way ANOVA with a 2x2x2 factorial design. This approach assessed primary effects of efficiency, gender, and school type, along with potential interactions. In this research, efficiency, gender, and school type were independent factors, while academic performance was only dependent variable. The extensive examination of hypothesis concluded that these factors collectively influence upper secondary learners' academic achievement, highlighting the impact of time management, gender, and school type on success.

## SUGGESTIONS AND EDUCATIONAL IMPLICATIONS

Academic achievement serves as a crucial indicator of a student's potential, engagement, and success in both classroom and extracurricular endeavors. Strong performance in school not only fosters academic advancement but also contributes to social development. Successful academic performance enables students to navigate exams and overcome various challenges, both academic and personal. Educational

institutions should implement diverse measures to support and enhance students' achievements in their academics pursuit. Some of them are-

- The teachers should motivate the students in learning process.
- Identify the best ways for students to retain knowledge.
- Work out the areas where students struggle the most.
- To make develop essential learning skills.
- Incorporate physical activity and good nutrition.
- Teachers always try to apply new and interesting teaching methods to deal the content so that students may take more and more interest in their studies.

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