

# A Correlational Study of Scientific Interest, Career Aspiration and Learning Styles in Relation to Academic Achievement among Secondary School Students

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**Abstract:** *The current research looks into how scientific interest, career aspiration, learning styles, and academic success are related with students in secondary school. Cognitive abilities are not the only variables that impact academic achievement but also affective and motivational variables like interest of the students in science, clarity of career goals and preferred learning styles. The study will employ the correlational research design to examine the interactions between these variables and their overall contribution to the academic performance of students. Stratified random sampling was used in achieving a sample of secondary school students. Scientific interest, career aspiration, and learning styles were measured using standardized tools, and the academic achievement was measured using the past examination scores of students. Data analysis was done using statistical methods which included the Pearson correlation coefficient and descriptive statistics. The results show that there is a significant positive correlation between scientific interest and academic achievement, career aspiration and academic achievement. It was also discovered that learning styles had a moderate relationship with achievement, implying that an instructional fit with the preferences of learners can promote student academic achievement. The authors of the research point to the significance of the promotion of scientific curiosity, career planning with the goal, and adaptive instruction at the secondary level. The findings make good implications to the educators, programmers of the curriculum, and policymakers that seek to enhance the academic performance of students by using holistic educational interventions..*

**Keywords:** Scientific Interest, Career Aspiration, Learning Styles, Academic Achievement, Secondary School Students, Correlational Study

## I. INTRODUCTION

In the secondary school education, academic success is a key factor in determining the future educational and employment pathway of the students. This is a phase of education characterized by heightened academic expectations, identity, and decision-making at work. Scholars have always pointed out the fact that intelligence alone is not the only factor that has an impact on academic performance but there is a complex relationship of cognitive, motivational and environmental factors when it comes to academic performance<sup>1</sup>. Among these, scientific interest, career aspiration and learning styles have come to be regarded as very important determinants in determining the level of engagement and achievement of students.

<sup>1</sup> Bloom, B. S. (1984). Human characteristics and school learning. McGraw-Hill.



Scientific interest is the interest, enthusiasm, and good attitude of the learner to the scientific concepts and activities. Highly scientifically interested students will be more motivated to immerse themselves in learning activities, portray persistence, and they will have higher academic success<sup>2</sup>. Under the influence of the dynamically developing science and technological processes, the cultivation of scientific interest on the secondary level is even more important.

Career aspiration denotes the dreams and expectations of the students in the future in terms of their careers. Specific and achievable career goals give purpose, inspiration and focus to study work<sup>3</sup>. Students with perceived close relationship between their academic tasks and future professions have high achievement levels. Career aspirations start to crystallize in the secondary stage and therefore, this variable is especially relevant.

Learning styles refer to how people like to process information i.e. in visual, auditory or kinesthetic mode. Although there is no correlation between learning styles and intelligence, the framework can define the extent to which students understand and memorize information<sup>4</sup>. Learning instruction that is in line with learning preferences of the students has been linked to enhanced academic engagement and performance.

Although these variables are important, several education systems still emphasize more on the delivery of content and performance in examinations. It is essential to conduct empirical research that would investigate the relationship between scientific interest, career aspiration, and learning styles that could be done jointly as they relate to academic achievement, especially within the context of secondary school<sup>5</sup>. This is the gap that has been filled in the current study, which examines the correlational relationships between these variables and in the process provide a more comprehensive picture of academic success.

### 1.1 Research Objectives

- To examine scientific interest among students of secondary school.
- To investigate the career aspiration of secondary school students.
- To determine the learning styles that prevail among the secondary school students.
- To establish the correlation between scientific interest and academic achievement.
- To determine how career aspiration is related to academic achievement.
- To test the interdependence of learning styles and academic performance..

### 1.2 Research Questions

- Does scientific interest have a major bearing with academic achievement?
- Is career aspiration very much connected to academic achievement?
- Does the academic achievement have any meaningful connection with the learning styles?

### 1.3 Research Hypotheses

- Hypothesis H1:** Scientific interest and academic achievement have a significant positive relationship.
- Hypothesis H2:** A major positive linkage between career aspiration and academic achievement exists.
- Hypothesis H3:** No significant relation exists between learning styles and academic achievement.

## 2. Review of Related Literature

The concept of scientific interest has been largely accepted as one of the driving forces in terms of learning outcomes. It has been found that when students have more enthusiasm towards science, they have better conceptual knowledge and

<sup>2</sup> Hidi, S., & Renninger, K. A. (2006). The four-phase model of interest development. *Educational Psychologist*, 41(2), 111–127.

<sup>3</sup> Super, D. E. (1990). A life-span, life-space approach to career development. *Journal of Vocational Behavior*, 16(3), 282–298.

<sup>4</sup> Dunn, R., & Dunn, K. (1993). Teaching secondary students through their individual learning styles. Allyn & Bacon.

<sup>5</sup> Eccles, J. S. (2009). Who am I and what am I going to do with my life? *Educational Psychologist*, 44(2), 78–89.



academic performance<sup>6</sup>. Learning based on interest leads to intrinsic motivation, which is what maintains his long-term engagement and success.

Career aspiration has been studied to be a good predictor of academic behavior and achievements. Students who have higher level of educational and occupation ambitions are found to set more demanding academic objectives and be more persevering in nature<sup>7</sup>. The subject selection, investment of effort and long term academic plans is also determined by career aspirations.

Learning styles and their contribution to academic performance have been subject to much academic controversy. Whereas some researchers claim that learning styles are very important in influencing achievement, others claim that they are contextual<sup>8</sup>. However, research shows that the knowledge of learning preferences can be useful in improving self-regulated learning and academic confidence of students.

Some research has been done to investigate the association between scientific interest and career aspiration. It has been indicated that the stronger the scientific interest the higher the student might have a tendency to pursue a science-related career that in turn supports academic engagement<sup>9</sup>. This mutual dependence shows the elements of interdependence of interest and aspiration.

Evidence-based studies have also shown that learning styles have a positive relationship with academic success when the teaching strategies are consistent with the preferences of students<sup>10</sup>. Differentiated instruction has been identified to enhance the level of learning especially in secondary schools, where the instruction is tailored to meet the learning needs of different students.

Correlational studies that have explored various predictors of academic achievement indicate that it is necessary to have integrated models. The findings of the research indicate that motivational and cognitive variables work together to accomplish the achievement and do not act independently<sup>11</sup>. Research on students attending secondary schools has emphasized the role of the secondary level in determining academic attitudes and aspirations.

Although the research is present, there is still a lack of studies including scientific interest, career aspiration, and learning styles into one framework. The current research paper is based on the prior research done by researchers who explore the joint effects of these variables on academic performance of secondary school students thus providing a holistic view<sup>12</sup>.

### **3. Research Methodology**

The research design used in the current study was a quantitative correlational research design that aimed at examining the relationship that exists between scientific interest, career aspiration, learning styles, and academic achievement among the students in a secondary school. The correlational methodology was taken because it allows investigating the extent and nature of the connections between the variables without manipulation. Stratified random sampling method was employed to adopt a representative sample of students of both sexes and academic streams in selected secondary schools. The scientific interest, career aspiration and learning styles were measured using standardized and validated

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<sup>6</sup> Osborne, J., Simon, S., & Collins, S. (2003). Attitudes towards science. *International Journal of Science Education*, 25(9), 1049–1079.

<sup>7</sup> Lent, R. W., Brown, S. D., & Hackett, G. (2000). Contextual supports and barriers. *Journal of Counseling Psychology*, 47(1), 36–49.

<sup>8</sup> Coffield, F., Moseley, D., Hall, E., & Ecclestone, K. (2004). Learning styles and pedagogy. Learning and Skills Research Centre.

<sup>9</sup> Tai, R. H., Liu, C. Q., Maltese, A. V., & Fan, X. (2006). Planning early for careers in science. *Science*, 312(5777), 1143–1144.

<sup>10</sup> Felder, R. M., & Brent, R. (2005). Understanding student differences. *Journal of Engineering Education*, 94(1), 57–72.

<sup>11</sup> Schunk, D. H., & Zimmerman, B. J. (2012). *Motivation and self-regulated learning*. Routledge.

<sup>12</sup> Singh, A. (2015). Academic achievement and motivation. *International Journal of Educational Research*, 3(2), 45–52.



tools and academic achievement was measured using previous yearly examination scores of the students accessed through school records. The natural school settings were used to gather data, and this allowed authenticity and reliability of responses. To analyze the data, proper descriptive and inferential statistical methods were employed such as mean, standard deviation and Pearson correlation coefficient. Informed consent, confidentiality and voluntary participation are ethical principles that were highly followed during the research process.

### 3.1 Research Design

The current research design has followed a correlational research design to investigate the nature and magnitude of relationships between scientific interest, career aspiration, learning styles, and academic achievement of high school students. This design was deemed to be suitable because it allows the researcher to establish the level and direction of association amidst variables without controlling them. The correlational approach was realistic and ethical as the study was conducted to comprehend the relations which included not to determine the cause and effect. Participants were able to give their authentic responses in their natural academic environment which was the source of the data. The design made it possible to test several variables at the same time and also to analyse statistically through correlation coefficients. Using this design, the study will provide useful information on the relationship between motivational and learning related factors and academic achievement in secondary school level.<sup>13</sup>.

### 3.2 Sample

The sample used in the current study was school students in the selected school through stratified random sampling method. This has been taken to make sure that there is sufficient representation of students in major strata like gender and academic streams. These characteristics were used to first divide the population into homogeneous subgroups, and the participants were then picked at random. This type of sampling method assisted in reducing sampling bias and increased sample representativeness. The study balanced and made the sample comprehensive by ensuring proportional inclusion of students with diverse backgrounds. This enhanced the external validity of the results and enabled useful analysis of correlations between scientific interest, career aspiration, learning styles and academic achievement.

### 3.3 Variables

**Independent Variables:**The scientific interest, career aspiration, and learning styles are the independent variables of the study. Scientific interest means the interest and involvement of students in the scientific learning. Career aspiration refers to the future learning and work ambitions of the students. The learning styles denote the way students like to acquire and process information in the process of learning.

**Dependent Variable:**The academic achievement is the dependent variable in the study which indicates the performance of students in terms of their level of scholastic performance. It was measured based on the past yearly examination of the students based on school records. Academic achievement represents the degree to which students have effectively achieved educational goals in learners through subjects in the secondary school level.

### 3.4 Tools Used

Data to be used in the current study were collected using standardized and reliable tools. The level of curiosity, engagement and inclination of the students in learning science was measured using a standardized Scientific Interest Scale. Career aspiration measured was based on a standardized Career Aspiration Scale which measured the educational and occupational objectives of students. The learning styles were measured using a standardized Learning Styles Inventory that was aimed at determining the kind of learning styles the students preferred. To make the measurement of academic achievement objective and accurate, the scores in their past annual examinations were used, and these scores were available in the school records. The standardization of the instruments provided the validity and reliability of the data as all the participants would have similar measurements<sup>14</sup>.

<sup>13</sup> Creswell, J. W. (2014). Research design: Qualitative, quantitative, and mixed methods approaches. Sage.

<sup>14</sup> Anastasi, A., & Urbina, S. (1997). Psychological testing. Prentice Hall.



### 3.5 Statistical Techniques

A systematic analysis of the data collected was done using appropriate statistical techniques. To summarize and describe the general distribution and variability of scores in terms of scientific interest, career aspiration, learning styles, and academic achievement, descriptive statistics, mean and standard deviation were used. The mean gave a representation of the average level of each variable whereas the standard deviation gave the level of distribution among the scores of students. The product-moment correlation coefficient with Pearson was used as a measure of the relationship between the independent variables and the academic achievement. This method aided in the establishment of the strength and direction of the associations amongst the variables so that the results can be interpreted meaningfully<sup>15</sup>.

### 3.6 Ethical Considerations

The study was carried out in high ethical standards. Data collection was done in advance with prior permission of school authorities. All participants voluntarily participated by giving informed consent. The purpose of the study was also made clear to the participants and the confidentiality of responses was ensured. The data obtained were utilized purely in the academic and research context and also respondent anonymity was given at any phase<sup>16</sup>.

### 3.7 Descriptive Statistics of Study Variables

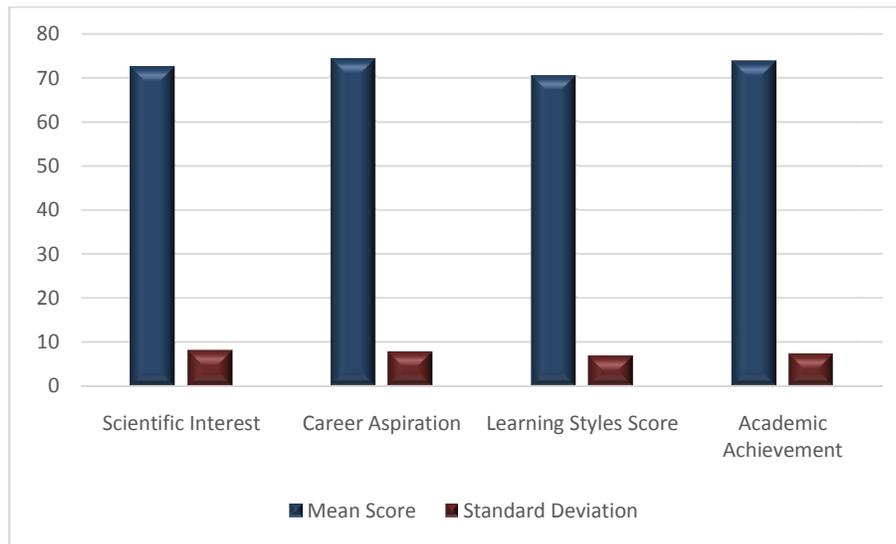
Variable	Mean Score	Standard Deviation
Scientific Interest	72.45	8.21
Career Aspiration	74.10	7.85
Learning Styles Score	70.30	6.90
Academic Achievement	73.60	7.40

The table shows the mean and standard deviations of the scientific interest, career aspiration, learning styles and academic achievement of the secondary school students. The highest mean score (74.10) is on career aspiration which means that students have good goals and ambitions in the near future. The mean values of academic achievement (73.60) and scientific interest (72.45) are also quite large and can be regarded as positive. The learning styles score has the lowest mean (70.30) which implies that there is more variability on the preferred learning styles among the students. The standard deviations are moderate, which means that the answers were rather consistent, although there were some discrepancies in all variables.

<sup>15</sup> Cohen, J., Cohen, P., West, S. G., & Aiken, L. S. (2003). Applied multiple regression/correlation analysis. Lawrence Erlbaum.

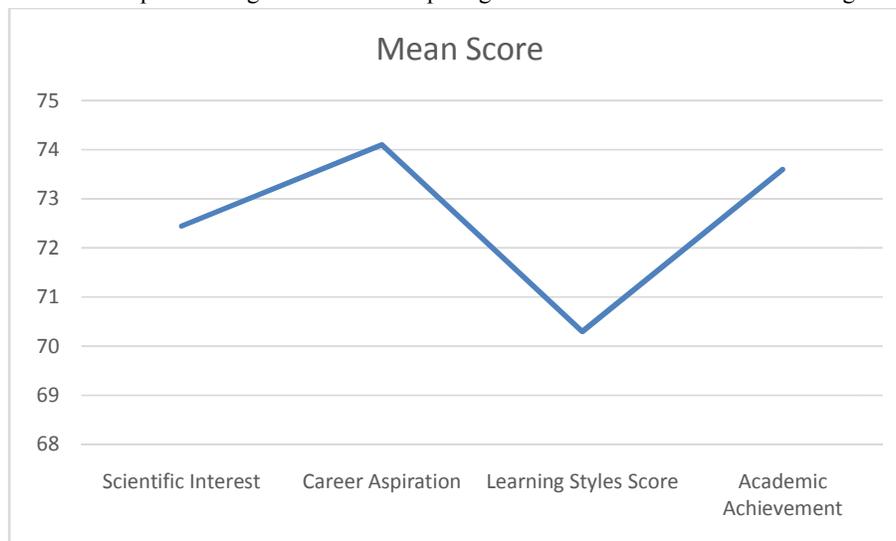
<sup>16</sup> Koul, L. (2011). Methodology of educational research. Vikas Publishing.





### Mean and Standard Deviation of Study Variables

The bar diagram shows the average scores and the standard deviation of scientific interest, career aspiration, learning style, and academic success among the students in the secondary school. The average scores on variables are relatively high that gives evidence of a generally positive level of interest, aspiration, and achievement. Career aspiration and academic performance are slightly higher in the means, indicating that the motivation and performance are strong. The standard deviations are intermediate and quite similar, which points to the absence of dispersion and implies that the answers of the students are quite homogenous when comparing them to the variables under investigation.



### Comparison of Mean Scores Across Variables

The line graph will give a comparative perspective of means of scores of scientific interest, career aspiration, learning styles, and academic achievement of students in secondary schools. A mean score of career aspiration is the highest and this shows that students are highly motivated in future. Learning styles have the lowest average score and this indicates that there is a variation in the preferred learning styles by students. The mean scores of scientific interest and the academic achievement are relatively high and closely aligned, which indicates that the interest to science and academic performance have a tendency to change in a similar direction. On the whole, the graph indicates significant variation between the investigated variables.



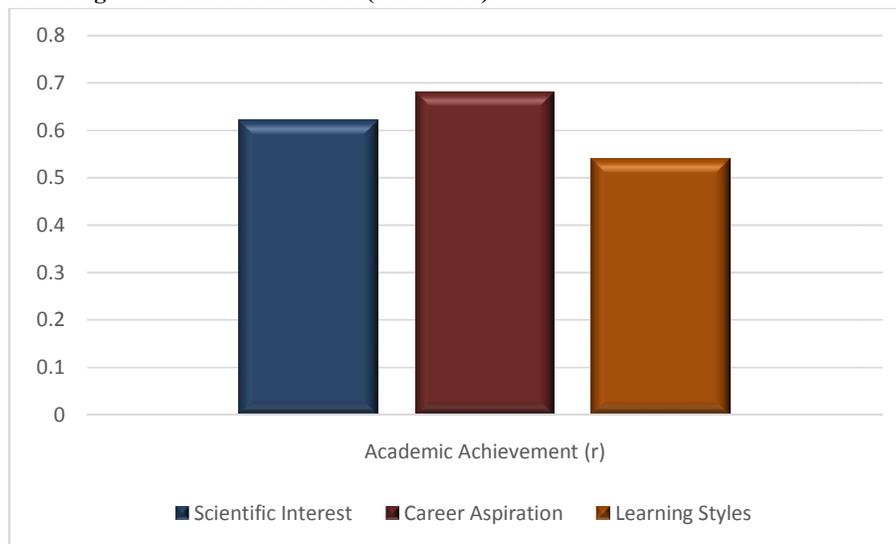
#### 4. Results and Analysis

This analysis has demonstrated that scientific interest and academic achievement have a strong positive relationship, which points to the fact that those students who are more interested in science are better achievers. Academic achievement was also positively related to career aspiration indicating that goal oriented students are more willing to perform better. A moderate relationship was observed between learning styles and achievement meaning that a good fit between instructional styles and achievement improves learning. The result confirms the three research hypotheses.

##### 4.1 Table: Correlation between Study Variables and Academic Achievement

Variables	Academic Achievement (r)
Scientific Interest	0.62
Career Aspiration	0.68
Learning Styles	0.54

Note: Correlation is significant at the 0.01 level (two-tailed).



##### Correlation of Study Variables with Achievement

The bar diagram illustrates the relationship between scientific interest, career aspiration, learning styles and academic achievement. Academic achievement is the most correlated with career aspiration, then scientific interest. There is a moderate positive relationship between learning styles. The findings show that motivational elements have a better predictive effect on academic success as compared to learning preferences.

##### 4.2 Table: Multiple Regression Analysis Predicting Academic Achievement

Predictor Variables	B	Std. Error	Beta ( $\beta$ )	t-value	Significance (p)
Scientific Interest	0.38	0.07	0.41	5.43	0.000
Career Aspiration	0.45	0.06	0.48	6.92	0.000
Learning Styles	0.29	0.08	0.32	3.62	0.001

##### Model Summary:

R = 0.74

R<sup>2</sup> = 0.55

Adjusted R<sup>2</sup> = 0.53

F = 28.64 (p < 0.01)

The correlation findings show that there is a strong positive association among scientific interest, aspiration to the career, learning styles, and academic performance. The multiple regression analysis indicates that the three variables are



significant predictors of academic achievement with career aspiration being the best predictor. The model shows that 55 percent of the academic performance is explained.

### 5. Discussion

The results of the current research have presented empirical evidence to support the importance of scientific interest, career aspiration and learning styles that affect academic performance among secondary school students. The high and positive relationship between scientific interest and academic performance is a pointer to the fact that learners that show curiosity and interest on learning related to science are likely to have better performances than their peers in academics. This supports the opinion that learning that is interest based increases persistence, increased comprehension, and academic achievement.

The importance of career aspiration became the best predictor of academic performance as indicated by correlation as well as multiple regression. This implies that students who have clear educational and occupational objectives are better motivated to put efforts in their studies; hence, achieve better. The outcomes show the significance of the focus on goals and long-term planning in the second level of education.

There was also moderate but significant relationship between learning styles and academic achievement, which means that the students feel benefited when the teaching methodology is in line with their style of learning. Even though learning styles did not contribute the most, they still have a significant contribution towards the better understanding and memory.

The regression model accounted a significant percentage of variation in academic achievement, which explains that motivational and learning-related variables are of significant importance. On the whole, the results highlight the importance of learner-centered educational approaches that would help to create interest, facilitate growth in careers, and address the different learning needs.

### 6. Suggestions

The primary issue lies in decreasing scientific interest, which may be achieved through the previously mentioned data mining techniques.

• Improving Scientific Interest:  
Teaching and learning methods used in schools should be based on inquiry and experiential learning to arouse curiosity and long term interest in science to enhance academic engagement and performance.

**Career Guidance Programs:** An example of this is the structured career counseling at the secondary level so that the students can establish realistic and meaningful career goals that would enhance their academic success.

**Learning Style Awareness:** Teachers are supposed to undergo training on how to recognize the various learning styles and use multimodal teaching methods in order to accommodate the differences that exist between learners.

**Parental Involvement:** It is advisable that the parents be motivated to support the academic interests and career goals of the students by engaging in positive reinforcement and sound advice.

**Curriculum Flexibility:** Curricula must be flexible to incorporate the interest based projects and career oriented activities to ensure that learning becomes more meaningful and achievement oriented.

### 7. Conclusion

The current research investigated connections between the scientific interest, career aspiration, learning styles and academic achievement of the secondary school students. The results show that academic performance does not rely entirely on intellect but rather is greatly affected by motivation and learning related factors. Scientific interest turned out to be a powerful predictor of academic achievement, as it focuses on the value of curiosity and interest in productive learning. The relationship between career aspiration and achievement was also positive which makes goal orientation and future planning a significant developmental process in adolescence.

There was a moderate yet significant relationship between learning styles and academic success and this implies that students learn better when learning instruction is based on their preferred learning styles. The collective effect of these factors is the necessity to implement a comprehensive educational strategy, which would involve cognitive, affective, and motivational aspects of learning.



The research is significant to teachers, curriculum design teams and policy makers. Schools can improve academic performance on the secondary level by promoting interest in the sciences, engaging in career development, and implementing learner-based instructions to improve academic performance. The correlational design of the study restricts the ability to interpret the results causally; nevertheless, the results form a very good basis of future experimental and longitudinal studies.

Finally, scientific curiosity, clarification of career goals, and accommodation of learning styles may go a long way in enhancing academic performance. To produce the well-rounded and successful learners, a student-centered approach to education is necessary to be in place.

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