

# A Correlational Study on Students' Learning Styles and their Academic Achievement at Secondary Level in Khyber Pakhtunkhwa

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## **Abstract**

Individual differences are of different kind which affects the overall performance of students at secondary school level. Learning styles of students are among those individual differences which are important in many perspectives including students' academic achievement, as these styles affects student's classroom learning. Therefore, this study investigated the secondary schools' students' learning styles in relation to their academic achievement in Khyber Pakhtunkhwa. The objectives of this were to investigate the students' learning styles, to measure their academic achievement and to investigate the relationship between students' learning styles and their academic achievement. The study was quantitative correlational in nature and a descriptive methodology was followed in investigate the research problem. All secondary schools' students of grade 10<sup>th</sup> were included in population and through simple randoms sampling technique a representative 400 students were selected for the sample group. A self-developed questionnaire was used to measure students learning styles and their 9<sup>th</sup> grade marks were utilized for academic achievement of students. The results revealed that mostly students followed visual, auditory, and social learning styles and these learning styles have positive correlation with their academic achievement. It was recommended that teachers may adjust their instructional style to the diversified learning students so that all students could effectively benefit from classroom teaching at secondary school level.

**Keywords:** Learning styles, Academic Achievement; Secondary School Students; Social; Visual; Verbal; Logical

### **Background of the Study**

Students learn in different ways that is through receptive (seeing and hearing) and productive (reflecting and acting) approaches (Li & Hafner, 2022). Similarly, there are different approaches of teaching exist like lecturing, debating, demonstrating, following rules and regulations and many more. The focus of some teachers is memory while others are in favor of understanding the concept. For the learning of the student- both teachers and students play an important role as well as students' hierarchical capability, the suitability of their learning method and the teaching methodology.

Individual difference is an important aspect of students that make them unique among the students in classroom. It is the combination of their preferences which support their learning in classroom learning activities. Experts in the field of psychology always recommend teachers to understand the learning styles of students as it is utmost important for teachers' instructional plan success. The correlation between students learning styles and teachers' instructional styles guarantees the achievement of teachers' instructional goals. According to Lorenzo and Lorenzo (2013) a student learning style is the combination of his/her personal style of observe, process and retain the information from classroom discussion. Perry (1994) added that it is the learners' perspective on understanding the learning materials presented in the class.

Similarly academic achievement is an indicator used for the mastery of students learning contents in a subject. It is also the reflective of their achievement in educational programs from educational institutions. The tool used for measuring students' academic achievement is always different forms of exams, assessment, and evaluation. When there is a gap between the teaching style of teacher and the learning styles of students in a class, then as a result the learners may feel bore, less attentive in class and uninterested in curriculum so drop out ratio may increase; hence this may affect the students' academic achievement; and when there is less score in local examinations, students remain passive in the class and show poor attendance; the teachers realize that there is something wrong in their teaching methodology. They start criticizing their students and make the situation worse by questioning on their profession. To get rid of these worse situations, the teachers may teach according to the learning style of the student considering the individual differences. This will comfort the students and they will show their willingness in classroom activities. As a result, a better feedback and positive response might be shown by the students which might help them to solve their problems themselves (Li & Hafner, 2013).

It was revealed from research studies that all students learn differently, although similarities can be found within different learning styles. When it is known by the teaching staff that how does their teaching approaches and body languages affect the students' learning process, they may teach in a manner which may suit the students' learning process (Lorenzo, & Lorenzo, 2013).

It is therefore imperative that students learning style is important in the academic success of students Chuah Chong-Cheng (1988) explained that the retention power of students varies in different context such as the retention with reading is 10%, with hearing is 30%, with watching and visualizing is 70% and with hands-on practices it is up to 90%. By this result it can be concluded that strength and weakness are the parts of learning styles. Some learners

*A Correlational Study on Students' Learning Styles and their Academic Achievement...*

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through the combination of two or more learning styles effectively increase the learning retained and resultantly contribute into their academic achievement, as all the students sees, hear, watch, practices and discuss but among all these some aspect of students receiving is strong than other. therefore, it is the responsibility of teachers and parents to work on the different aspects of learning styles of students which will strengthen the academic achievement of students (Abdullah & Singh, 2011).

Different learning style surveys show that all students differ in their learning styles and hence, there is no specific learning style which is most favorable to the students as a whole (Paul & H., 1994). For example, some students might have one or two of the learning styles like visual, social and verbal while others might have all of them. Felder (1995), used multiple learning styles among learners and followed a single mechanism for data collection and concluded that the learning capacity of every learning style is different. The same was found in the results of (Yahaya & Karim, 2003). Damavandi, et al., (2011) support the statement that academic achievement of the students is directly affected by their learning styles. Similarly, Chin (2001) also added that students' academic achievement is a reflective device that showed that academic performances which are based on the learning approach. These students are different because of the learning styles, retention power and other related features. Wang et al., (2008) concluded that students' academic performances are affected by multiple factors including teaching styles of teachers, students' learning styles and classroom atmosphere.

It is therefore imperative for enhancing students' academic achievement to target students learning styles during the implementation of teachers' instructional plan at classroom level (Yahaya & Karm, 2003). Thus, academic achievement of students gain momentum through their effective use of learning styles at secondary and higher educational level. A well-matched teaching and learning style will help the students to memorize the information for more time, in practical life they can utilize this information more suitably and correctly and can produce a positive effect on the subject as compared to the mismatched teaching and learning style output. These findings were supported by some of the studies like the study of Rasimah and Zurina (2008), Moore and Ashman (2006), and Graf and Kinshuk (2009).

In short, students' learning styles intend to support students learning for their academic achievement. Students at secondary level prefer that learning style which is best suited to their interest and can make the leaning easy for them. At this stage no uniform pattern can help them in different subject. For the achievement of better academic results, they prefer one leaning style over others according to the nature of the subjects. Since there is diverse opinion about the selection of style therefore the study is focusing on the investigation of students' suitable learning styles which are closely related to academic achievement.

### **Research Problem**

Keeping in view of the mentioned discussion, the purpose of the study was to examine the relationship between different learning styles (logical, visual, verbal, social and solitary) and academic achievement among learners at secondary level,

### **Study objectives**

The study objectives were:

*A Correlational Study on Students' Learning Styles and their Academic Achievement...*

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- i. To investigate students' learning styles at secondary school level
- ii. To find out secondary school students' academic achievement
- iii. To measure the relationship between secondary school students' learning styles (logical, visual, verbal, social and solitary) and their academic achievement

### **METHODOLOGY**

The nature of this study was quantitative, correlational in nature where descriptive research methodology was followed to investigate the study variables of students' learning styles and their academic achievement. A Likert scale questionnaire from the representative sample group was used to collect the data on the study constructs.

### **Study Population and sample group**

As this study is concentrating on the secondary school students and it was delimited to district Mardan, and boys government schools due to cultural constraint, therefore, all government secondary school 85 (eighty-five) constituted the population where 6394 boys students were enrolled in session (2022-2023) (District EMIS Mardan 2022).

To select a representative sample group Krejcie and Morgan table was used according to which a representative sample for this study was 400 participants. Therefore, the 400 respondents of the study were selected through simple random sampling technique. This group was utilized for data collection on the already developed questionnaire which measured their learning styles and academic achievement.

### **Data Collection Tool**

The researchers developed Learning Style questionnaire (LSQ) after thorough review of related literature. Five (5) learning styles logical, visual, verbal, social and solitary were explored through 39 items questionnaire on three-point scale ranged always, seldom and never. the questionnaire was translated into *Urdu* national language for better understanding of students.

The questionnaire was validated through expert opinions who checked the questionnaire in the light of research objectives. however, to measure the reliability co-efficient it was administered to 40 students of class 10<sup>th</sup> who were not included in the sample group of the study. The Cronbach alpha value was 0.819 which reflected that the obtained data would be reliable. According to Griffiee (2012) in social sciences when the reliability co-efficient is above .70 the scale is ready to collect data. After the finalization of the questionnaire, it was administered to the sample group participants for data collection.

The collected data was analyzed through frequencies, percentages, mean scores and Pearson correlation with the help of Statistical Package for Social Sciences (SPSS), version 16. The descriptive analysis of the data was carried out through frequencies, percentages, mean scores, and correlation between the study variables was measured Pearson correlation.

### **Results and Findings**

The collected data was analyzed through frequency, percentage, Pearson correlation. Frequency, percentage was applied to examine the academic achievement of students while Pearson correlation was used to find out relationship between learning style and academic

*A Correlational Study on Students' Learning Styles and their Academic Achievement...*

achievement.

**Table 1. Learning styles of secondary school students with their academic achievement**

S No	Learning Style	Mean	Academic score in percentage
1	Logical	18.72	45-59%
2	Visual	14.87	40-44%
3	Verbal	21.05	60-74%
4	Social	23.00	75% and above
5	Solitary	11.45	Less than 40%

The analysis revealed that students mostly followed social learning style in the classroom learning as shown by the mean score (23.00) who secured above 75% academic achievement which was followed by verbal learning style of students with 21.05 mean score 60 to 74% academic achievement. Furthermore, the academic achievement of logical learners (mean score 18.72) was ranged between 45 to 59%, and visual (mean score 14.87) with 40-44% and least performance were recorded for solitary learning style of students whose mean score was (mean score 11.45) with less than 40% marks in their academics.

**Table 2 Academic achievement of students**

S.No	F	Academic achievement in marks	Marks in %age
1	16	393 and above	75% and above
2	152	315-392	60-74%
3	160	237-314	45-59%
4	72	236 and below	40-44%

The analysis of students' academic achievement shows that 160 students have 45-59% marks, 152 students have 60-74% marks in their annual examination from Board of Intermediate and Secondary Education, Mardan, and only 16 students have 75% and above score. Seventy-two (f=72) have 40-44% marks in their 9<sup>th</sup> class examination.

*A Correlational Study on Students' Learning Styles and their Academic Achievement...*

**Table 3. Correlation of learning styles**

		Logical	Visual	Verbal	Social	Solitary
Academic Achievement of students	Pearson Correlation	.104	.031	.012	.034	<b>.017</b>
	Sig. (2-tailed)	.001	.313	.685	.268	<b>.579</b>
Logical	Pearson Correlation		.111	.210	.222	<b>.125</b>
	Sig. (2-tailed)		.000	.000	.000	<b>.000</b>
Visual	Pearson Correlation			.180	.151	<b>.041</b>
	Sig. (2-tailed)			.000	.000	.178
Verbal	Pearson Correlation				<b>.322</b>	.045
	Sig. (2-tailed)				.000	.141
Social	Pearson Correlation					.140
	Sig. (2-tailed)					.000
Total (LSQ)	Pearson Correlation	.629**	.475**	.630**	.669**	.405**
	Sig. (2-tailed)	.000	.000	.000	.000	.000

The analysis of Pearson correlation showed that logical learning style r value was high with students' academic achievement scores and the least academic performance was associated to the verbal style among all the learning styles of students at secondary school level. Furthermore, the interrelationship among learning styles of students revealed that social and verbal learning styles of students have  $r = .322$  which was significant at .045 which is positive and significant. On the other hand, solitary and visual learning styles have no significant correlation as the r value was .041 which were not significant as the sig value was .178.

**Conclusions and Discussions**

Based on the analysis of the collected data the following conclusions were drawn. Students followed different learning styles where majority of the students followed social learning style for their learning, which means that they easily learn in a socially constructed environment and teachers are supposed to work on the social aspects of the classroom learning environment as compared to other styles of learning. Similarly, the verbal learning style was also found dominant among secondary school students where discussion and collaborative instructional strategies can further enhance their academic performance. These results Zhang, Quan, Huang, and Kuo (2017) also showed that social learning style is common among students, and it is positively correlated with their academic performances. Furthermore, the study of Jahanbakhsh, R. (2012) supported that along with social learning styles students follow verbal learning style and therefore, they like debates, discussion, and active participation in classroom learning activities which has positive impact on their academic achievement.



*A Correlational Study on Students' Learning Styles and their Academic Achievement...*

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The results also revealed that students following solitary learning style have poor academic performance for which teachers and parents are supposed to provide them ample opportunities of interactions, exposure to outer environment, field trips which could positively contribute into switching their learning style and can contribute to the academic performance positively.

The overall academic achievement of students were satisfactory as majority of students got 45 to 70% marks in their annual examination in 9<sup>th</sup> grade.

The correlations showed that logical learning style is significantly associated with students' academic performance and social and verbal learning styles are supportive to each other where teachers must adjust their instructional mechanisms with the aim to support all students.

Singh (2011) while discussing the students learning styles added that learning environment is an important component for the nourishment of students learning styles. He explained different type of learning styles that students followed during the learning at school level and concluded that the most effective among all are visual, Kinesthetic, and auditory for all type of students. Daud and Shabani (2011) also added that it is important for teachers to understand the learning style of their students as it ensures that academic performances. These results were further supported by the study of Shirazi, and Heidari (2019) who added that students' academic performance is closely related to their learning style and among all those learning styles the accommodative (Social, Verbal and Visual) learning style students perform better than other learning style of learning.

### **Recommendations**

The study found a relationship between learning styles and academic achievement of students therefore teachers may be encouraged to teach their students according to the learning style suited to them. furthermore, the teacher may adopt a way of teaching which takes into account the diversity of learning styles. This must be done to enrich their learning and at the same time beneficial to all the students.

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