

Gender Differences in VAK Learning Style Model and Academic Performance

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Abstract

This study was aimed to find impact of learning style on students' academic performance. It was also aimed to find gender differences in learning style and academic performance. Visual, Auditory and Kinesthetic (VAK) learning style model was chosen for this study. Main objectives of the study were to find impact of learning style on academic performance, second objective was to determine gender differences in dominant learning style and third objective was to find gender differences in academic achievement. Three hypotheses were formulated which were aligned with objectives. Secondary school students of class 10th both male and female were the population of the study. Total 391 students were selected for data collection. Among these, 205 were male students and 186 were female students. Sample size was selected through Krejcie and Morgan (1970) sample selection table. Data was collected through questionnaire. It was found that there was significant impact of learning style on academic performance. It was also found that there was gender difference in learning style and also in academic performance. Female students showed better academic performance than male students. All three hypotheses were accepted.

Keywords: *learning style, academic performance, gender differences*

Introduction

Learning style may be defined as getting and processing new acquired information in a meaningful way. Every individual has a particular learning style of acquiring new information and how this information is processed further? Individuals have huge differences in learning new information in a meaningful way. Different researchers and scholars defined learning style in different ways depending on the nature of the concept (Reid, 1998). Some define it as sensory learning that helps in personality development. It is the cognitive ability of an individual how he gains and retains new information, how he understands new skills? Through learning styles, different skills of a learner turn into permanent qualities. Learning style is a natural phenomenon of a learner, although an individual may have different learning styles but he will have one dominant learning style. He can learn in a better way using that learning style. Learning style is the ability of a person to develop new ideas after acquiring new information (Brown, 2003).

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Different research studies indicated that there are vast differences among individuals about acquiring and processing new information for developing new ideas. Individual differences are apparent among individuals in getting and processing new information. No typical way is formulated for students to learn in a particular way. It depends upon the interest of the student how he acquires and process new information. Matching learning style of student with teaching style of teacher goes side by side. It is of immense important for teacher to align his teaching style with students learning style. it is also important for teachers to use different teaching strategies in the classroom because students have vast differences in gaining and retaining new ideas and information (Hussain & Ayub, 2012). Matching teaching style with learning style has significant effect on students' academic performance. It is of immense for teachers to acquaint themselves with students' individual differences, needs and cognitive abilities (Brown, 2003).

Students in one class not learn in same way, they learn in different ways due to individual differences. Some students are auditory learner, some students learn more effectively through practical work and some students can learn effectively through observations. Learning style is the concept relating to how individual gains and retain new information to process it further. Learning style is the task how an individual respond to new situation or information and how he/she gets meaning form that situation. It is the concept of what type of new information are most effective and how this information could be processed further (Pashelr et al, 2009).

There are vast differences between teacher's point of view and student's point of view regarding learning style. In students' point of view, learning style is the ability and preference how to acquire and retain new information and encompassing it in effective intellectual dimension. Teacher's stance about learning style is that students have individual differences and they learn indifferent ways (Wing & Hoi, 2010). If a teacher is confined to one single teaching strategy for long time, it will not be helpful for all students due to differences in learning style. Teachers using different teaching strategies can effectively deliver lesson and it has sound effect on students' academic performance. Such teachers have ample chances in helping improving students' academic performance. Mismatching of teaching style and learning style largely determine the failure of teaching learning process (Sarasin, 2006).

Gender differences are also observed in different research studies regarding learning style of students. Male and female are unique in gaining and retaining new information. It is argued that male students are prone towards rational evaluation and female students are inclined towards elaborating materials to find individual connection. It

is found that males are achievement oriented while females are inclined towards performance oriented. There are also ample differences in male and female regarding what is most important to student learning. Female considers social interaction most important while males are higher in self-confidence. Current research study is designed to determine gender differences in learning styles and also its effect on students' academic achievement.

Problem Statement

Sabtova (2008) states that naturally, individuals possess different learning styles but is dominant in one single style. Student possesses different learning styles in acquiring information and processing this information. Student learns in different way but he can learn more effectively in one particular way or style. This style is the dominant learning style of the student. This study was undertaken to find out gender differences regarding dominant learning style of the students. It was also aimed to find which learning styles students have high academic performance

Literature Review

There exist disagreements among researchers whether learning style affects students' academic performance. Some researchers support the idea that learning style has significant relationship with students' academic performance while some researchers think against it. However, it is essential for teacher to know students' learning styles. If there is mismatch between teacher's teaching style and student learning style, then teaching and learning process fails in achieving goals. Knowing learning style of students is vital for classroom performance in most effective way.

In a research study by Drysdale et al (2001), it was concluded that learning style has significant relationship with students' academic achievement. The aim of the study was to determine relationship between learning style and academic achievement of students. In another research study, it was found that there was no relationship between students' learning style preferences and their academic performance (Abu Sharbain, 2010). Different research studies were conducted by different researchers to determine relationship between students' learning preferences and academic achievement. Farooq et al (2011) conducted a research study to find out significant relationship between learning style and students' learning outcomes. It was indicated that there existed significant and positive relationship between the variables (Learning style and academic achievement). The study of Reid (1998) also confirmed positive and significant relationship between students' way of gaining new information and academic performance.

Many steps and measure have been taken to improve and stimulate students, academic performance at school level. This is a serious issue before many teachers and parents that their student and children achieve success in teaching and learning. Many teachers believe that positive attitude of student is helpful in achieving academic achievement. Along with several other factors, learning style of students is also in important factor in determining students' academic performance. It was found in a research study that when students were taught according to their preferred learning style, they achieved high marks in standardized test (Pashelr et al, 2009).

According to Cano-Garcia et al (2000), knowing of preferred and dominant learning style for students is also important and it plays significant role in setting and determining students' academic performance. It was concluded that maximum students gain and retain information in certain way which differs from other students. Getting information in a particular way also contribute immensely to students' learning and academic success. In a research study, it was found that information gained through reading is retained by 10% students. Students retained 26% information which they gained through hearing. It was concluded that students retained 50% information of what they hear and see, and 90% information were retained which came through seeing and doing (Sabatova et al, 2008).

From this information, it is evident that each learning LS has its own shortcomings and values. Some learners rely on single learning style while some learners learn in many ways. Such learners who have more than one learning style were more successful as compared to those students who have single learning style (Dunn et al, 1989). Compatibility in teacher teaching style and student learning style play significant role in achieving learning outcomes at lower school level. Student can learn more easily and effectively when teacher applies variety of approaches in the classroom. Such students show better performance in learning as compared to those students when teacher use a single approach to his teaching in the classroom (Felder, 1995).

Matching and mismatching of teaching and learning style has significant role in achieving academic success. Drysdel (2001) stated that academic success and failure of students depends on how the materials are presented before students and how students receive these materials to gain information. Knowing learning style of students has positive effect both for teacher and students. When teacher is aware about students' learning style, he will present new information accordingly. Learning style has positive and significant impact on students' learning skills. (Sarasin). When teaching style is linked with learning style, it results in better achievement of academic success. It has significant effect on student academic performance. In a research study it was found that there were gender differences in learning styles

and academic performance. Male students were dominant in kinesthetic learning style while female was high in auditory learning style (Brown, 2003). Gender learning style has positive and significant relationship between relationship with academic performance. These findings were in line with the findings of (Wing & Hoi (2009).

It is evident from the literature review that to some extent learning style of students has relationship with academic performance. On the basis of introduction and literature review, following objectives and research hypotheses were formulated

Objectives

- To find relationship between students' learning styles and academic performance
- To find gender differences in dominant learning style
- To determine gender differences in academic performance

Hypotheses

H1: There is significant relationship between students' learning styles and academic performance

H2: There are gender differences in dominant learning style

H3: There are gender differences in academic performance

Research Design and Methodology

Quantitative and descriptive research design was applied. This research study was undertaken in public sector schools in Karak. Secondary school students comprised population of the study. The students were selected from 10th class. 10 boy high schools and 10 girls high school were randomly selected for sample selection. There were total 438 boys and 364 Girls in these schools. It was not possible for the researcher to collect data from all students. So sample size was selected through Krejice and Morgan (1970) sample selection table. In this way 205 male students and 186 female students were randomly selected for data collection. Total 391 students were selected for data collection

Research Instrument

This study aimed to find gender differences in VAK learning style model and to study impact of learning styles on academic performance. As the study was quantitative in nature, so questionnaire was used for data collection. Two questionnaires were used for data collection. One questionnaire was for learning style and the other questionnaire was for academic performance. Standardized and adapted questionnaire was used for learning style. This questionnaire

was developed by Ehrman & Leaver (2003). This questionnaire measures three dimensions of learning styles which are visual, auditory and kinesthetic. Students' academic performance questionnaire was developed by the researcher. It was an objective type test which covers Physics, English, Islamic studies Urdu and Chemistry. Its face and content validity were checked through expert opinion. Although learning style questionnaire was standardized questionnaire, it was using in Pakistani context, so reliability of both questionnaires was checked through pilot study. Total 58 (36 boys and 22 girls) students were selected for pilot study. The reliability of learning style questionnaire was .73 and that of the academic performance was .78.

Result and Discussion

Result was concluded through SPSS using regression analysis and t-test

Table 1 Relationship between learning style and students' academic achievement

Model Summary

Model	R	R ²	Adjusted. R2	Err of Estimate	F
1	0.51	0.26	0.259	0.338	
	183.45				

Coefficient

Model	Unstandardized		Standardized	
	Coefficient	Sig	Coefficient	
t	B	Std.Err	Beta	
1 (Constant)	.297	.093		3.19
.002 VAK Learning Style	.341	.025	.510	
	13.54	.00		

It is evident from the result of the above table that there is significant relationship between learning style and academic performance of the students. R² value is 0.26 which indicated that our independent variable (Learning Style) explains 26% variations in our dependent variable (Academic Performance). F value is 183.45 which show model fitness. Standardized Beta (β) value is .510. It describes that a unit change in independent variable (Learning Style) will bring a positive change of 0.51 in dependent variable (academic performance). P value is .00 which is less than .05. It is determined that there is significant relationship between learning style and

academic performance of students. Hence hypothesis H₁ which states that there is significant relationship between learning styles and academic performance is accepted at 95% confidence level.

Table 2 Gender Difference in Learning Style

Variable	Gender	N	Mean	Diff	F	t-value	Sig:
Learning Style	Male	205	3.44	-.37	30.98	-	.00
	Female	186	3.81				

Above table describes gender difference in learning style. It is evident from the result that there exists significant difference between male students and female students regarding learning style. Total 391 students were selected, in which 205 were male students and 186 were female students. Mean score value of male students is 3.44 and female students mean score value is 3.81. mean score difference is -.37 which shows that female students are high in VAK learning styles as compared to male students. F value is 30.98 which show model fitness. P value is .00 which is less than .05 at 95% confidence level. Hence our hypothesis H₂ which states that there is significant gender difference in learning style is accepted at 95% Confidence level.

Table 3 Gender Difference in Academic Performance

Variable	Gender	N	Mean	Diff	F	t-value	Sig:
Academic Performance	Male	205	1.39	-.27	81.18	-	.00
	Female	186	1.66				

Result indicates significant gender difference regarding academic performance. Mean score of male students is 1.39 and mean score of female students is 1.66. Mean score difference is -.27. Total 391 students were selected, in which 205 were male students and 186 were female students. F value is 81.18 which shows model fitness. P value is .00 which is less than .05. It is concluded that there is significant difference between male and female students regarding academic performance. Hence our hypothesis H₃ which states that there is significant difference between male and female students regarding academic performance is accepted.

Table 4 Gender Difference in Visual Learning Style

Gender Differences in VAK Learning Style Model					Zafar, Ali, Faiz	
Variable	Gender	N	Mean	Difference	F	t-value
Visual Learning style	Male	205	3.39			
	Female	186	3.62			
					-23	8.92

It is cleared from the result that female students were more prone towards male students in visual learning style. Total 391 students were selected, in which 205 were male students and 186 were female students. From the table it is concluded that mean score value of male students' responses is 3.39 and mean score value of female students' responses is 3.62. There is -.23 difference in the mean score value. It is determined from this mean score difference that there is significant difference between male students and female students regarding visual learning style. It means that female student can learn better through observation as compared to male student. F value is 8.92 which describes model fitness. P value is less .05 ($p < .05$) which also indicates significant difference between male students and female students regarding visual learning style.

Table 5 Gender Differences in Auditory Learning Style

Variable	Gender	N	Mean	Difference	F	t-value
Auditory learning style	Male	205	3.47			
	Female	186	3.90			

Table 4 describes result of gender differences regarding auditory learning style. There is significant difference between male students and female students regarding auditory learning style. Total 391 students were selected, in which 205 were male students and 186 were female students. Result indicates that mean score value of male students' responses is 3.47 while mean score value of female students' responses is 3.90. It indicates mean score difference which is -.43. It is cleared from the result that female students were high in auditory learning style than male students. Female students can learn better through present lesson before them. F value is 5.34 which show model fitness. P value is .00 which is less than .05. Hence it is concluded from the result that there is significant difference between male students and female students regarding auditory learning style.

Table 6 Gender Differences in Kinesthetic Learning Style

Gender Differences in VAK Learning Style Model				Zafar, Ali, Faiz		
Variable	Gender	N	Mean	Mean Difference	F	t-value Sig:
Kinesthetic learning style	Male	205	3.83	.43	108.14	5.14 .00
	Female	186	3.40			

Table 6 describes of gender differences in kinesthetic learning style. Total 391 students were selected, in which 205 were male students and 186 were female students. Result show ample difference in the responses of male and female students regarding kinesthetic learning style. It is evident from the result that means score difference is .43 which declares significant difference between male students and female students regarding kinesthetic learning style. F value is 108.14 which show model fitness. P value is .00 which is less than .05 ($p < .05$). hence it was concluded that male students were strong in kinesthetic learning style as compared to female students. It also means that male student can learn in better way through practical work and doing a thing.

Conclusion and Discussion

In most cases, a successful learner learns in different ways. He/she is not restricted to single learning style. However, every student has certain degree of preference towards learning style. By applying preferred learning style, student can learn in best way. If learning style is matching with teaching style of the teacher, the result would be more productive. Most of the students possessed multiple learning styles. Such students are able to learn more effectively.

Knowledge of learning style has great importance both for teachers and students. When teacher knows learning style of students, he/she can adopt teaching and learning strategies according to dominant learning style of students. This study was aimed to find impact of learning style on student academic performance and to find gender differences in learning style and academic performance. It was cleared from the findings of this study that learning style has significant relationship with academic performance. It was also concluded that there was significant difference in the responses of male students and female students regarding three dimensions of VAK learning style model. Female students were high in visual learning style and auditory learning style. On the other hand, male students were high in kinaesthetic learning style.

It reveals that female students can learn in better way through lecture and observation method while male students can learn better through practical activity methods. There was significant difference between male students and female students regarding academic

performance. Female students showed better academic performance than male students. The result of this study support findings of Kruse (2009) study which also concluded significant relationship between learning style and student academic performance.

The findings of this research study are helpful for teachers, students and other stake holders. When student is aware about his preferred learning style, then they can acquire new information by applying dominant learning style. Matching teachers' teaching style with student learning style, improve student's cognitive development and students can gained retain new information more effectively. Teacher can change his teaching strategies according to students' preferred learning style. Ofodu & Lawel (2010) that it essential for teacher to knows students' preferred learning style and teach students accordingly. Mismatching between teaching and learning style has significant effect on student cognitive development and academic performance.

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