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Exploring the Association of Selected Learning Styles and Academic Achievement at Post Graduate Level

Abstract *The study aimed at finding out the association between selected learning styles (LS) and academic achievement (CGPA) of postgraduate learners in the faculty of social sciences. The study was quantitative. The population of the study was postgraduate learners enrolled in the fourth semester of the social sciences faculty at the University of Sargodha. The sample was drawn using random sampling technique from five social sciences departments. The sample size was three hundred. The questionnaire was comprised of 60 items on a five-point Likert scale Cronbach alpha calculated for reliability of the questionnaire and it was.84. Academic achievement was measured while accessing the CGPA of learners. It was found that mostly learners use auditory learning style (ALS) in the social sciences and there is a strong association of auditory style of learning and CGPA. The study has ultimate, implications for classroom planning, organizing and teaching at postgraduate level.*

Key Words: CGPA, Learning Style, Auditory, Perceptual, Kinesthetic, Tactile

Introduction

Individuals are born with various appearance, abilities capabilities, potentials and they enjoy different learning because of these physiological, biological, sociological and psychological differences. In educational settings, educational and managerial practices are adapted to facilitate the learner by addressing their individual needs of learning. The difference in nature and nurture of every individual requires them to learn in a different way in classroom settings. It is noted that each and every student, in a variety of learning environments, acquire a unique learning style and achieve differently in academics. The literature stated that all learners have individual attributes relating to their learning processes ([Jonassen & Grabowski, 2012](#)). Learning style (LS) is a unique way of knowing and understanding the concept, fact and phenomenon by an individual in teaching and learning experiences provided by the classroom and ultimately by the school. Learning and Learning process is affected by many factors including teaching methodologies, learning environment and styles of learning. Considerable research has been undertaken as an attempt to define and demonstrate the effects of a student learning styles on academic performance in the classroom ([Wilson, 2011](#); [Tulbure, 2012](#); [Bhatti & Bart, 2013](#); [Din, 2017](#); [Jayakumar, Sundaramari & Prathap, 2017](#)).

Literature reports a variety of LS and from these it is noted that almost every LS has an effect on the performance of learners in a classroom. Researchers identified that independent and dependent learning style (LS) have an impact on the academic performance of the learners in classrooms ([Jantan, 2014](#)). Hence, it is asked to encourage learners to identify and understand their learning styles and the provision of such opportunities to the learners so that they may identify their choice of style of learning. When learners are provided learning experiences that best addresses their learning style, their performance does change. They are able to explore more and mastery learning with more confidence and in later on can achieve the level of applying information more easily in real life situations ([Healey, Kneale & Bradbeer, 2005](#)).

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However, Learning styles, identified in the literature under these three areas: Intellectual, psychological, and Social ([Hale & Hale, 1982](#)). The way an individual involves in thinking , perceiving, remembering and solving problems is classified as intellectual learning styles ([Cook, 2006](#)). Learning styles that include reactions to the physical environment affecting the learning are classified as psychological learning styles (Buttler, 1988). Social and sociological characteristics, such as consistency, preference of working in groups or alone, and accepting or rejecting the external reinforcement in learning experiences ([Borich & Tombari, 1997](#); [Solis, 2006](#); [Schmeck, 2013](#)). It is reported that independent learners are able to organize more effectively and putting their efforts in working on projects and problem-solving tasks and setting their goals alone. For such learners, the field can be abstract or perceptual (Maghsudi, 2007). While paradoxically it is reported that dependent learners, on the other hand, are more social and prefer to learn in groups, like frequent interaction with the teacher and peers. Such learners learn more when tasks are more structured and with external reinforcements ([Richardson, 2011](#)).

It is pertinent to mention that a conducive learning environment is the prime requirement for true and mastery learning as it is noted that [Dunn et al. \(2009\)](#) include five stimuli for learning environment i.e., physiological, psychological, sociological and. Physiological elements are described as perceptual elements, and related to the physical environmental aspects of the learning experiences that may also involve the environmental and atmospheric elements of learning including temperature, sound, light and air quality along with design affect the way of learning of a learner. Sociological elements deal with one's own self, in a pair, as a peer and as a member of a group. Psychological stimulus is related with intellectual processing and includes analytical and reflective elements and hemispheric. All these stimuli help to under the learning style of a learner.

Dynamics of learning environment interact and coordinated with the learning style of an individual/student ([Kolb, 2007](#)) and impact the performance of the learners in classrooms. It is also found that there is a close connection between the learning style of an individual and his/her academic achievement. Pakistan is a developing country that is struggling hard for the quality of education and autonomy of the learner. Classroom experiences play a vital role in shaping the future of a learner. To bridge the learning theory and practice gap, there is a need to address the dynamics of learning that may also include learners learning styles ([Pritchard, 2017](#)). Learning styles and awareness of the learning style can benefit both teacher and student in classroom. It is, however, observed in the literature that learning style studies are dominant in language learning classrooms ([Akhtar, 2011](#)), Nurse Education ([Cavanagh, Hogan & Ramgopal, 2015](#)). There is a need of studies to explore the preference in the field of social sciences as well. Keeping in view, a few number of researchers in exploring the learning styles in the faculty of social sciences the current study is taken up and carried out by the researchers.

Literature Review

Research on learning and learning styles is not a new area of research. It can be traced back to the literature of human development specifically in the early years of cognitive school of thought and later in behaviorist school of thought. Psychology, education, intellectual sciences, innovative technologies, and pedagogic research are helping us appreciate how humans learn ([Dunn, Beaudry, & Klavas, 2002](#)). An emphasis on the individual differences affecting the individual learning and instructional design is also explored in many pieces of researches since the last few decades ([McLoughlin, 1999](#)). Similarly, in recent years, Fallace (2019) as cited by [Doroudi, \(2019\)](#), presented historical research on learning styles. According to Doroudi (2019), Fallace did a great inquiry of tracing the idea of cultural deficiencies in intellectual history, which In turn reflects that how cultural differences affect the learning styles of various ethnicity.

The models, theories and principles of learning styles were developed with the development in the field of pedagogical research and learning. As it has been mentioned that one after the other presented

theories, inventories and models of styles of learning are considered to produce simplification dilemma in the field of styles of learning. With this, the expansion of knowledge also contributed to an intellectual movement that primarily aimed at simplifying the scattered literature of styles of learning. In this regard, the most significant models presented to simplify and organize the literature of styles of learning. These include: [Curry Onion Model \(1987\)](#), Riding and Cheema Learning style taxonomy model (1991) and Rayner and Riding typology of styles of learning (1997). All these models of styles of learning exhibit some similarities as cognitive directions are utilized to classify different models of styles of learning.

However, another classification of styles of learning is also reported in the literature. This classification is known as the families of learning styles. Both these models and families of styles of learning, utilize almost the same inventories of learning style for categorizing the variety of styles of learning indifferently. The metaphor only carries the difference of inventories. The models of the style of learning exhibit preference over families of styles of learning by the scientific community ([Farid & Abbasi, 2016](#)). It is noted that the following four layers (a) Instructional preference (b) Social interaction (c) Information processing (d) Cognitive personality style are the basics of Curry Onion Model.

Whereas, [Riding & Cheema \(1991\)](#) classify thirty styles of learning which purposefully explain the association of styles of learning and cognitive styles. These styles are labeled as a wholist-analytic and verbalizer-imager. The process and representation of the information provide the basic difference between these two dimensions. The way in which information is processed is referred as and the dimension in which information is presented is known as verbalizer-imager.

Rayner & Riding used learning, personality and cognitive centered approaches to classify the styles of learning. Both have not extensively described the personality centered approach and only personality centered model was identified. The preference, process and cognitive skill based models frame the basis of the approach. The perception and information processing is known as process model while the preference models reflects the individual's preference of learning situations and the preferred environment that could be light, sound, temperature and social interaction ([Farid & Abbasi, 2016](#)).

The extensive literature of the domain was categorized metaphorically that synchronized different models. Researchers like Curry (1987), Riding and Cheema (1991), [Rayner and Riding\(1997\)](#), and Coffield and others are most important names in this regard. ([Farid, Rehman & Abbasi,2014](#)). There is a part of literature that categorized the learning styles as learning style families. Major work in this regard is of coffield, Mseley, Hall and Ecclestone (2004). Literature reported that Coffield and his colleagues identified seventy one styles of learning in the scholarly literature and they stated that the main source of confusion in styles of learning literature is the overarching characteristic. In fact, their basic attempt was to focus on the extensive literature which was created after Curry and other researchers.

Likewise, in literature, there are many studies that focused on the importance of learning styles and its effect on the academic performance of the students (Aremu & Soken 2003; [Gokalp,2013](#); [Maureen, Jonathen & Robert, 2001](#); Rajshri,2013) concluded that there is a strong evidence of adoption of learning style and its effect on the performance in students in classroom tests. The studies focusing on style of learning and academic achievement (CGPA) can be evidenced in variety of discipline like in language learning ([Reid, 1987](#); [Oxford, 2003](#); [Gilakjani, 2012](#); [Lee, Yeung & Ip, 2016](#)). Similarly studies in medical sciences (Bond, Cheng & Kairuz, 2017; Piza et.al, 2019) concluded that ineffective study strategies are adopted by health graduate and health professionals teaching them hold a misconception about evidence based learning.

Similarly, many studies are carried out in higher education to find out the learning style of the students and their impact on the academic achievement of the students. For example, studies conducted by Evans and Kozhevnikov (2016) concluded that there is a strong association between learning style, teaching strategy and academic performance of the learners in undergraduate classes. While on the other hand, Sahragard, Khajavi and Abbasian (2016) carried out a study to explore the relationship between the style of learning, language learning and academic performance and found that there is no significant relationship between learning styles and academic achievement of the university students.

Similarly, a study conducted by Alkathiri, Alshreef, Alajmi, Alsowayan & Alahmad (2018) found an inconclusive association between learning strategies of the students and academic performance.

Almost all public sector universities in Pakistan offers social sciences subjects. These universities offer admissions in bachelor and masters programs. Though catering a large number of graduate but still it is a suffusing perception that as compared to quantitative subjects, the social sciences and humanities have become superfluous and this conception was scrutinized most of the time (Ali, 2017). Along with this perception, there is a disconnection of social sciences with our social setting that can be observed. So, empirically redefining the social sciences is an utmost need in accordance with our own indigenous realities (Kamran, 2017). In this redefinition, social sciences classrooms can play an important role. Effective classroom planning and management play an important role to achieve this and many other related objectives. For effective classroom planning and management, teacher should have awareness about the individual differences of the learners.

Along with this, one more factor that plays an important role is the styles of learning of the learners. There is a need to address the strategies or styles of learning of the learners in order to bring alignment between social theories and practice in classrooms and later at workplace. To work effectively in classroom and achieving the objectives of education, it is required to explore the the learning styles of the students in social sciences. The current research is an addition to the knowledge domain of learning style of social sciences students at postgraduate level.

Framework of the Study (Conceptual)

The conceptual framework of the study presents how LS is perceived in this study. Five selected learning styles are used in this study and learners were being explored about the perception of usage of these LS and their association with the academic achievement of the learners in the faculty of social sciences. In the context of the study, the auditory learning style (ALS) refers to the preference of the lecture method and the passive role of a student (Csapo & Hayen, 2006). As defined by Gadt-Johnson and Price (2002), tactile learning style (TLS) is providing experience to the student where the student can learn by using their senses i.e. feelings. Visual learning style (VLS) preferred to use graphs and charts that can aid the student in understanding a concept (Dobson, 2009). Perceptual learning style (PLS) is the use of perceptions to extract information about an experience or within an experience (Jinter, Scalise, Brown & Ripley, 1989). Kinesthetic learning style (KLS) is learning by doing and activity-based learning (Lincoln & Rademacher, 2006). Academic achievement means the cumulative grade point average (CGPA) a student achieved in the final semester of the program. Below is the diagram that can show the variables of the study.

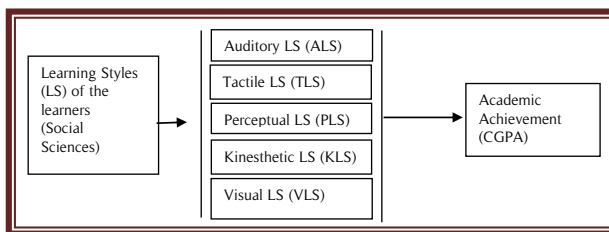


Fig 1: Framework of the study

Research Methodology

The current study is quantitative in nature. It was conducted to find out the association between selected learning styles i.e. Auditory, Tactile Perceptual, Kinesthetic and Visual and CGPA of postgraduate level learners in the social sciences at the University of Sargodha. Random sampling technique was used to select three hundred learners from five departments of social sciences i.e. education, psychology, social work, sociology and political sciences. The study is carried out to answer the questions that what are the perceptions of postgraduate level learners of the faculty of social sciences about their LS? And is

there any association between learning style and CGPA of the post graduate level learners at faculty of social sciences? For the purpose, a 60 item LS tool was developed after consulting literature on learning and learning styles. The tool was validated by the literature review, conceptual framework of the study and expert opinion. The reliability of the tool was established by using Cronbach alpha with a value of .84. LS. Tool was distributed among 375 postgraduate learners enrolled in 4 semester. The response rate calculated was 80%.

Results

Data were collected, tabulated and analyzed using SPSS version 22. Descriptive analysis was used to find out the mean score and standard deviation of LS of the learners while inferential statistics was used to determine the association between LS and CGPA of the learners.

Table 1. Learning Styles (LS) of Post Graduate Level Learners

Learning Styles(LS)	N	%age	Minimum	Maximum	Mean	Std. Deviation
Auditory LS (ALS)	100	33%	16	45	34.11	8.546
Tactile LS (TLS)	35	11%	22.0	39.0	30.114	4.8311
Perceptual LS (PLS)	70	23.3%	18.0	39.0	29.833	4.8977
Kinesthetic LS (KLS)	47	15.6%	9.0	41.0	28.872	7.1858
Visual LS (VLS)	48	16%	9	45	22.96	12.571

Table 1 reflected that there are 100 (33%) learners with mean score 34.11 claimed to show agreement of using ALS in classrooms of social sciences faculty. 70 (23.3%) learners with a mean score of 29.8 perceive to use PLS, 48(16%) with a mean score of 22.96 shows preference to use VLS. Table, further, reveals that 47(15.6%) learners with mean score of 28.8 perceives to use KLS and 35 (11%) claimed perception to use TLS.

Table 2. Association between ALS and CGPA of learners

	Mean	Std. Deviation	r	Sig(2-tailed)
CGPA	3.076	.5788	.824	.811
ALS	34.11	8.546		

N=100 , P=.05

Table 2 revealed the association between ALS and academic achievement of the learners with the help of Pearson Product Moment (r) correlation. The value of r is .824 reflects that there is a strong positive correlation between ALS and CGPA of the learners from social sciences

Table 3. Association between TLS and CGPA of learners

	Mean	Std. Deviation	r	Sig 2-tailed
CGPA	3.091	.4346	-.025	.888
TLS	30.114	4.8311		

N=35, P=.05

Table 3 showed the association between TLS and academic achievement of the learners with the help of Pearson Product Moment (r) correlation. The value of r is -.025 reflects that there is a negligible negative correlation between TLS and CGPA of the learners from faculty of social sciences

Table 4. Association between PLS and CGPA of learners

	Mean	Std.Deviation	r	Sig.(2- tailed)
CGPA	3.081	.4357	-.362**	.003
PLS	29.833	4.8977		.

N=70, P=.01

Table 4 reflects the association between PLS and academic achievement of the learners with the help of Pearson Product Moment (r) correlation. The value of r is -.362 reflects that there is a moderate negative correlation between PLS and CGPA of the learners from faculty of social sciences. It is further, reflected that the correlation is significant at .01 level of significance

Table 5. Association between KLS and CGPA of learners

	Mean	Std. Deviation	r	Sig.(2-tailed)
CGPA	3.280	.2998	.04	.792
KLS	28.872	7.1858		

N=47, P=.05

Table 5 reflected the association between KLS and academic achievement of the learners with the help of Pearson Product Moment (r) correlation. The value of r is .04 reflects that there is a negligible correlation between KLS and CGPA of the learners from social sciences

Table 6. Association between VLS and CGPA of learners

	Mean	Std. Deviation	r	Sig.(2-tailed)
CGPA	3.163	1.101	.308	.041
VLS	22.96	12.571		

N=48, P=.05

Table 6 reflects the association between VLS and academic achievement of the learners with the help of Pearson Product Moment (r) correlation. The value of r is .308 reflects that there is a weak positive correlation between VLS and CGPA of the learners from social sciences. Moreover, there is a significant association at P<.05.

Discussion

The study was conducted to find out the learners' perceptions about their learning styles and to determine the association between selected LS and CGPA of the learners in the social sciences faculty. The study found that the majority of learners in the faculty of social sciences perceive that their LS is auditory and very few learners reported that they perceive that their LS is tactile. The findings of the study are in line with the study concluded that female prefer to use auditory learning style to learn better (Ibrahim & Hussein., 2016; Khmakhien, 2012). Paradoxically it is found in a study by Vaishnav and Chirayu (2013), that kinesthetic is most preferred style of learning reported by the learners. Study also found that there is strong positive association between ALS and CGPA of learners. This finding of the study is in accordance with a study conducted by Kayalar and Kayalar (2017) that concluded a positive association between ALS and CGPA of learners. The study found that there is a moderate negative association between perceptual learning style and academic achievement of the learners. The study, further, finds that there is a weak positive association between VLS and CGPA of the learners. The present study concluded that in the faculty of social sciences mostly learners' use ALS and ALS has a strong association with the learner's CGPA. The study has implications for effective and better classroom planning and management. As the research study concluded that ALS is the most preferred learning style by the learners, both traditional and innovative methods should be used to teach the class in a way that this style may help the learners and teachers to get the desired results in classrooms of post graduate level.

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