

# Patterns of Learning Styles through E- Learning in Pakistan

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## **Abstract**

*E-learning is no longer confined to distance education but implies to the electronic elements and tools incorporated into day to day teaching of the traditional courses. This paper attempts to classify various levels of e-learning and how they are similar or disparate in nature. E-learning is an emerging field in Pakistan, therefore, in this paper; the cultural differences in the learning preferences are highlighted. The objective of this research is to determine the learning style preferences in various mediums of e-learning environment in Pakistan. Results revealed that Aural/Auditory style of learning is the preferred predominant style for both the genders in various categories of e-learning. However, it was also found that there are gender differences in learning styles. The research findings have both theoretical and practical implications for academia to improvise the emergent e-learning academic domain.*

**Keywords:** *Learning, Learning preferences, Classification of Learning, E-learning and Cultural learning preferences.*

## **Introduction**

With the revolutionary advancements in the field of electronics technology, Electronic learning (e-learning) has emerged as an ultimate and potent educational medium (Kio& Lau, 2017). The use of e-learning is ubiquitous in all the leading educational institutions including the ones in Pakistan. It is believed that enhancing online learning sources is widely addressed into supporting the learning process (Huda, et.al. 2018).

This paper highlights the importance and need for incorporating various learning styles into e-learning in Pakistan. There are many forms and innovative models of the e-learning system, which makes the e-learning system more interactive and productive (Ferguson, Barzilai, Ben-Zvi, Chinn, Herodotou, Hod, &Rienties, 2017).The e-learning approach include the process of sharing online innovative environment among the users, to disseminate educational resources &material; and support the communication and administration in teaching and learning systems (Anshari, Alas, & Guan, 2016).With the knowledge of different individual learning styles, the e-learning system can offer valuable assistance students and teachers, to enhance students' learning process. Furthermore, e-learning system which allows computerized and hi-tech technology offers the prospects to overcome downsides of the traditional research method that mainly uses



questionnaires (Truong, 2016). Thus, in this paper the authors have also categorized various E-learning forms adopted and followed in Pakistan.

Learning styles are cognitive attributes of how one prefers to learn, however, it is to be noted that it is not to categorize the people. The learning styles vary and differ from one individual to another. These differences prove to be more important in academia and result in making the process of designing the mode of deliverance more complex. The instructors need to keep in mind the diverse learning groups and the varied leaning styles each group prefers (Canavan, 2004). Thus, in this era of information technology, paradigms of conventional academia have been changed from instructor oriented to learner- centric (Taha, 2007; Fischer, Troendle, & Mandl 2003). Even many higher education institutions, are also considering to embrace smart phones, tablets and other mobile assisted technologies as part of learning aids in classrooms as students are more attached to them (Anshari, Almunawar, Shahrill, Wicaksono, & Huda, 2017).

Therefore, for effective education to take place (through any medium), it is of paramount importance that the learning preferences of the students are considered before designing any course. The extent of change, the information technology has brought to the world, no education institution can stay aloof or without incorporating e-learning into its program; it has to transform the learning systems sooner or later.

E-learning or electronic learning is the computer oriented or internet-based electronic learning. This electronic learning is further defined as employing and application of computer system as an aid in the processes of electronic communication, data assemblage, management and handling of databases, automation of processes and information (Roffe, 2002). 'E -learning is becoming an influential force in higher education thus providing professionals a dynamic environment for growth. The two core aspects which lead to create interest in e- learning are, the emerging need for upgrade skills and competencies and retain them; and the technological advancements and innovative progressions that have made teaching of a variety of subjects to far reaching areas' (UNESCO, 2002).

The internet, web and multimedia technologies have customized the way the knowledge is disseminated. Existing fast pace of life and transformation into knowledge societies have engendered the importance of distance learning. Distance learning can be simply defined as the means of imparting education where the learner and the teacher are physically separated from each other (McIsaac & Gunawardena, 1996), and where the learner has higher level of independence and control (Rahimi, Berg, & Veen, 2015; Holmberg, 1986). E-learning accommodates the diverse learning styles which a conventional system of education is unable to address.

The first form of distance learning is attributed to St Paul for spreading his teaching, the Gospels through letters to his disciples in remote and dispersed places (Natarajan, 2015). Isaac Pitman is considered to be the pioneer in distance education who started his correspondence course of short hand through letters, in England in 1840 (Levenburg, n.d). The university of London also started e-learning courses during the same era (Jonassen et.al, 2008; McIsaac & Gunawardena, 1996). In 1880 other colleges in

London and also in USA started correspondence courses and thus setting the trend for distance learning. This trend further grew, and distance learning embraced new emerging technologies like instructional films, radio, television and so forth. The first Open University was established in England in 1969. However, in Pakistan the concept of distance learning was initiated by Allama Iqbal Open University in May 1974 (Iqbal & Ahmed, 2010). With the advent of computing and internet, distance learning now also encompasses e-learning. Taha (2007), in his research cited that historically it has been observed that the progression of distance education took place through three appreciably dominant systems:

1. Stand-alone learning system (1950-1990): It included radio, television and cassette instructions.
2. E-learning system (1993-2004): It incorporated transfer of learning materials via computing network.
3. Mobile learning (2005 - to date): This incorporates mobile devices such as mobile phones, Tablets, laptops, and personal digital assistant (PDA). These devices have led to the emergence of mobile learning structure (M-learning) (Taha, 2007).

Since the year 1999, when the term e-learning was apparently devised, the demand for online education aided by multimedia technologies has escalated intensely. In Pakistan, the credit of E-learning goes to Virtual University (VU) of Pakistan, which started functioning in March 2002. The shift towards E- learning can be attributed to the fact that this year VU is receiving more admission applications every year.

### **Theoretical Frame Work**

The learning styles as described by Keefe (1979) are the “composite of characteristic cognitive, affective, and physiological factors that serve as relatively stable indicators of how a learner perceives, interacts with, and responds to the learning environment”. It is quite apparent from above descriptions that learning styles are not categorically related with “what” the learners learn, but rather “how” they choose to learn. The definitions postulate that it is not actually learning “styles”, rather the learning “preferences”, that how one prefers some learning style/styles over others. To signify the teachers’ and students’ learning experiences, four categories were suggested by Fleming and Mills in 1992. These four categories include the audio learning aids, visual assistance, reading/writing supports and kinesthetic apparatus. Grasha (1984) has defined learning styles as a person’s innate qualities to influence a learner’s ability to procure and comprehend knowledge, a means to interact with peer group and teachers, and further adhere to the learning experiences. Educationalists throughout history have acknowledged the fact that students exhibit distinct preferences in learning. Blackmore (1996) stressed that the first step perhaps to enhance learning process is a realization that there are diverse learning styles. The notion that people learn differently is believed to be an ancient concept and dates as far back to ancient Greek (Wratcher, Morrison, Riley, & Scheirton, 1997).

Jonassen et.al. (2008) emphasized in their research that most students are unaware of their learning styles and if no intervention is allowed, they are unlikely to start learning in new ways. This finding accentuates that knowledge of one's learning styles can be a potent tool to increase self-awareness about their strengths and shortfalls as learners. If one is encouraged to know his and other's learning styles, the maximum benefits of meta cognition can be accrued (Coffield, Moseley, Hall, & Ecclestone, 2004). Learning styles can be considered as various stages along a continuum that help to discover the different forms of cognitive attitudes. It is worthwhile to mention that these are not useful to characterize of what people are or are not like (Stewart, 1992).

Diaz and Cartnal (1999) argued that many educationists are under the perception that the traditional teaching methods which prove to be effective in conventional teaching setup will work effectively in distance learning as well. Furthermore, it is assumed that the distance education learners have same preferences of learning styles as students in traditional classroom setup.

Many studies have been carried out to rectify that there is no significant difference between traditional and distance learners. Moreover, it was also found that most research on distance learning has been done prior to cyber revolution and before induction of internet and multimedia in the learning process. Therefore, their results showed that the cyber learners (a term coined to represent those who use internet and multimedia as a study mode) performed significantly better, by gender, ethnicity or class level, than the traditional group (Navarro & Shoemaker, 2000).

Gregg (2007), referred other researchers and presented his research the learning model for cognitive information processing indicating that customized learning materials constructed on student's learning style preferences or on personality traits can deliver a considerable benefit to the learners (e.g. better comprehension)" (Mathew & Dohery-Poirier, 2000)

### **Categories of E-learning**

Research explore and identify the various categories of e-learning is inevitable as limited literature is available on the classifications of e-learning styles. Fryer (1997), has proposed that internet based teaching can be classified into three styles:

1. The desktop instructor;
2. The online lecture; and
3. The ultra-interactive model.

Bate and Steketee (2006); Mathew and Dohery-Poirier (2000), among other researchers, categorized various modes of e-learning and described them as Computer-Mediated Learning (CML), Distributed Learning Network (DLN), Web-Based Learning (WBL), Computer- Managed Instruction (CMI), and Synchronous Asynchronous Learning Networks. Furthermore, Williams, Nicholas, and Gunter (2005), summarized platforms, mechanism and formats for E-learning in current scenario as follows.

1. *Digital interactive television (DiTV)*
2. *Video-conferencing*
3. *Audio-conferencing*
4. *World wide web/internet*
5. *Video/audio tapes*
6. *Telephone/Fax*
7. *CD-ROM CD-ROMs*

As latest technologies are too expensive for a third world country like Pakistan, and e-learning is still in its infancy here, a very few universities Like CASE Islamabad, and IBA Karachi, other than Virtual University of Pakistan are offering online/distance learner courses. Mostly top ranked universities in Pakistan are using multimedia in class rooms thus making use of computer mediated learning. Keeping in view all the resources available with Pakistani universities and the extent of e- facilities in the universities, the authors in this study have categorized E-learning on the basis of most prevalent mechanism through which e-learning is being imparted in Pakistani universities in general. These fall broadly into three categories.

1. Multimedia approach for Regular students. (On campus use of multimedia e.g. power point)
2. Distance learning program that incorporate use of tapes/ CD (s) of recorded lectures
3. Online web- based studies

### **Measures**

To conduct the research study, the model developed by Neil Fleming, best known as VARK questionnaire (version 7) has been adopted. The acronym VARK stands for Visual, Aural, Read/write, and Kinesthetic sensory modalities that are used for identifying learning information. Broadly speaking, these are four preferences. They differ in strength and usage, but they are not discrete. People may adopt any learning style but simply put, it is just not their preference. Learning preference and the choice of model selection also depends upon the cultural context. This model relates closely to the general learning styles best fit in cultural context of Pakistan society. Thus, the main learning styles identified are as follows:

**Visual (V).** Any learner who prefer educational material in graphics or pictures instead of spoken words, like charts, diagrams, maps, graphs, pattern shapes etc. and who is more interested in color and layout and design and know where they are in their environment is said to fall into the learning style category of visual.

**Aural/auditory (A).** People with this type of conceptual preference like to learn by words they can hear or that are spoken. They like to learn by lectures, debates, discussion, audio tapes etc. They sort things by speaking, instead of first sorting things then speaking up.

**Read/Write (R).** People with this kind of learning preference like words to be displayed in book form, or any written form in hard or soft copy, like dictionaries, thesaurus, books magazine power points, web-surfing etc. Their input is reading, and output is writing. Most educationists and literary people) like to learn by reading and writing fall into this category.

**Kinesthetic (K).** People with this preferred learning style like to learn by demonstrations, simulations, videos and movies of "real" things, as well as case studies, practice and applications. They like to learn by experience and practice. They are quite connected to reality.

**Multi Modal (MM).** People with multi modal learning preferences finds it necessary to use more than one learning preference (VARK) learning and communicating as they may feel insecure with just using one. The people with this type have the choice to use the preferred style as and when it suits them for instance by switching modes or by using the different modes in combination. In west most dominant preferred learning style is MM.

### Research Methodology

The VARK questionnaire (version 7), was administered to one hundred and thirty respondents out of which one hundred and two were males and twenty-eight were females. Random sampling technique was used for selection of the respondents and data was collected from four different locations. For the first category of E-learning (multimedia) group, forty-seven samples were taken from CIIT and CASE Islamabad. For the second category of E-learning i.e. distance learners forty-two samples were taken from AIOU and CASE, Islamabad. The last category of E-learning, for online learning was filled by forty-one respondents from VU, Islamabad campus.

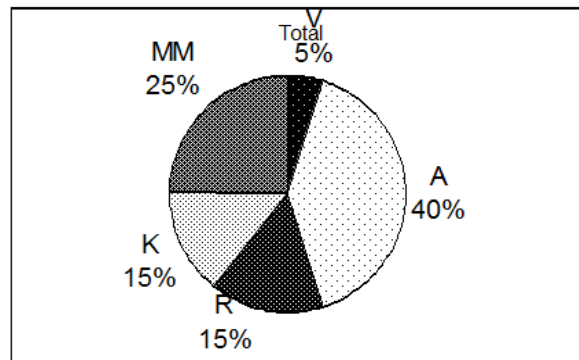
VARK survey was used because of ease of use and to standardize the questions required selection and comparison of the data. James and Gardner (1995), and Keefe (1979), proclaim that 'While selecting a learning style instrument three important factors should be considered which include: considering the expected use of the data to be gathered; finding the learning apparatus and matching it to the proposed use; and lastly, decide on the most suitable instrument.' There is an apparent disagreement on ways to best measure the learning styles, as every model has its own merits and demerits (Murray Harvey, 1994). The VARK model was chosen for this study as in author's view the learning preferences of this measure are compatible with the cultural learning preferences in the study area. It is to be noted that at present, use of various forms of media is not incorporated in Pakistan educational system.

### Results and Analysis

The data were collected from three categories including regular (e-learning with multimedia and power point); distance learners; and online learners. The responses were tallied and assessed for gender differences in learning style preferences. Table A. shows the preferred learning style in these three categories. Importantly, 46% of males and 43% of females preferred Aural/Auditory style of learning collectively in all the three categories.

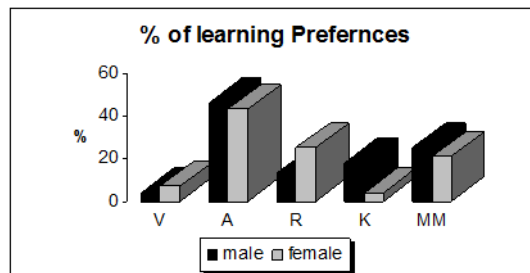
Neil Fleming in his website about VARK states that the most dominant learning style in the west is Multimodal (McLean & Sander, 2003). However, it was very interesting to find that in Pakistan Aural/Auditory style of learning is the most dominant style i.e. 41% of the total population prefers the aural style for learning. The second dominant style is Multimodal 25% for total sample which is dominant among both males and females. The study shows that Multimodal is the second most dominant learning style among male students in contrast to Read/Write which is the second most predominant style among females. Table “A” shows that result may vary among different categories of E- learning but overall the trend remains the same, regarding the learning preferences, as shown in figure. 1. It is evident that the Aural/ Audio mode of study is the most preferred learning style in various forms of e- learning in Pakistan.

Therefore, the results show that our cultural preference in learning styles is auditory. It also shows that male and females have different preferences for their second most preferred style of learning. Thereby establishing an inference that male and females have different preferences in learning.



**Figure 1 Pie Chart Depicting the Percentage of Total Sample’s Learning Preferences for each Learning Style**

Figure 1 depicts that aural/auditory is the most dominant style, and the next preferred dominant learning style is Multimodal when data are not grouped into male and females.



**Figure 2 Bar Chart of Total Sample Depicting Male and Female Learning Preferences**

Figure 2 illustrates that auditory style is overall dominant preferred learning style but for males and females the next dominant style is different.

**Table A: Learning Preferences between Different categories of E-learning by gender**

Percentage of Sample's Learning Preferences								
Learning Styles	Online		DI		Regular		Total	
	Male	Female	Male	Female	Male	Female	Male	Female
<b>V (%)</b>	3	0	6	9	2.5	14	4	7
<b>A (%)</b>	32	60	29	36	55	29	46	43
<b>R (%)</b>	23	20	13	27	5	29	13	25
<b>K (%)</b>	13	0	23	0	17.5	14	18	4
<b>MM (%)</b>	29	20	29	27	20	0	25	21
<b>Sample size</b>	<b>41</b>	<b>10</b>	<b>31</b>	<b>11</b>	<b>40</b>	<b>7</b>	<b>102</b>	<b>28</b>

### Research Implications

The growing trend towards E-learning globally in general, and particularly in Pakistan, entails to assess the personal learning needs of the most important stakeholders, the students, in their cultural context. Very few (if any) studies have been carried out in Pakistan to stress the importance of learning preferences in e-learning. Most of the studies focus on the discovery of relationships between learning styles and specific student achievement outcomes (Wenglinsky, 2002). Therefore, this study helps in bridging the gap between e-learning methodologies to incorporate preferred learning styles of students to help them make learning experience more prudent, effective and fruitful. It will also help the students to capitalize on their strengths by knowing their learning styles, in order to achieve excellence in education. The study findings will further help Academicians and institutions in considerations while designing the courseware, curriculum, and determining the medium of delivering. Thus, stressing that e-learning should also be focused around preferred learning styles.

### Conclusion and Future Research

It has been identified through present literature that there are a variety of learning style preferences present in the various mediums/categories of e-learning. The research investigation on the matter leads to a conclusion that there are some students that do not reach their full potential as they are either unaware or find learning medium not conducive, thus are unable to put into practice their preferred learning style. However, determining the most predominant preferred learning style of a student would help the teachers and Academicians to meet the learning needs of the majority of students. Though, this study demonstrated that the predominant style is the same for both genders, at the same time it also showed that there are gender differences in learning styles.

The results show that auditory style of learning was the most dominant style and visual least preferred by males and females both. This has huge implications as most of the universities teachers have resorted to power point presentations as the mode for teaching aid. This study suggests that use of power point as the sole mode of teaching might not be prudent pedagogy. The females least preferred style was kinesthetic where



as in west kinesthetic is most preferred category the difference is quite evident for males and females suggesting that males are more inclined than females for kinesthetic style of learning. Other important difference lies in read/write mode of learning. Female students are clearly more inclined to learn through read/write method than males' counterparts. The second most dominant style for both males and females is multimodal. Therefore, a careful reevaluation of teaching methodologies needs to be done to assess whether the universities are aware of the dominant e-learning preferred learning styles of students. This research can give insight for policy makers and university bodies concerned with teacher's training to help them understand the learning needs of the students.

Therefore, this may call for teacher trainings on teaching styles. For inclusion of learning styles, a multiple approach should be adopted based on multimodal and auditory style of learning. The research also points that from the early start students learning style may be assessed to let them know how they learn best. As for the sample most of the students were themselves not aware how they learned best. The survey was information for them as well as to what category of learning they preferred. This calls for a screening test at the time of admission too to find the preferred learning style so the university can alter their pedagogy accordingly.

The present research focused only on the categorization of e- learning and preferred learning styles in these categories. There are several issues that still require to be explored. Including, does the learning style preferences associate with performance and retention? Does student's awareness of their learning style preferences facilitate them to execute better? Most importantly, how does the teacher modify or customize the lesson to facilitate all learners?

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### Acknowledgements

- The authors would like to thank Mr. Neil Fleming for allowing us to use © Copyright Version 7.0 (2006) held by Neil D. Fleming, Christchurch, New Zealand and Charles C. Bonwell, Green Mountain Falls, Colorado 80819 U.S.A.
- Syeda Nasreen Sultana (Reference Librarian, CII, Johar Campus, Sector H-8/1, Islamabad, Pakistan for helping in retrieving the scholarly articles.
- Dr Zahid Iqbal, for advising and helping in collecting data from AIOU.