Volume and Issues Obtainable at Center for Sustainability Research and Consultancy

Review of Economics and Development Studies
ISSN:2519-9692 ISSN (E): 2519-9706
Volume 4: No.2,December 2018
Journal homepage: www.publishing.globalcsrc.org/reads

Learning styles preferences and diagnostics at higher education level: A comparative perspective among three faculties

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ARTICLE DETAILS

History
Revised format: November 2018
Available Online: December 2018

Keywords
Learning Styles, Grasha-Reichmann Scale, Avoidant, Collaborative, Competitive, Dependent, Independent, Participant Style

JEL Classification:
A23, C12, D83, I23, I29

ABSTRACT

This study aimed at exploring and comparing learning styles preferences among students of Management sciences, Social sciences and Languages. Homogenous purposive sampling technique was used to select sample of study comprising of 300 graduating students of the three faculties. Grasha-Reichmann Scale consisting of 60 five point likert scale statements was used to explore learning styles preferences of students on six variables namely; avoidant, collaborative, competitive, dependent, independent, and participant. Results based on One-way ANOVA and Post-hoc Tukey's test revealed that a statistically significant difference occurred among the learning styles preferences of students enrolled in three faculties. Management sciences students preferred competitive and independent learning style, social sciences students were mostly avoidant and dependent learners whereas languages students have adopted collaborative as well as dependent learning styles. It is recommended that teachers may require to bring variation in teaching learning process to cater to the needs of diverse learners. It is advisable for teachers to plan such learning activities which make them independent and self-directed learners. It is also recommended that situational factors such as nature of course requirements and motivation to attend the classroom could also have an impact on the preferred learning styles.

Corresponding author's email address: waurangzeb@numl.edu.pk
Recommended citation: Shaheen, H., Malik, H. and Aurangzeb, W. (2018). Learning styles preferences and diagnostics at higher education level: A comparative perspective among three faculties. Review of Economics and Development Studies, 4 (2), 313-320
DOI: 10.26710/reads.v4i2.416

1. Introduction

'Learning Styles" is a process which encompasses the fact that every student experiences learning differently. The particular way in which a learner learns or accepts, interpret and digest and then retains information can be regarded as his/her learning style. For example while experiencing how a clock can be constructed some students understand the process by merely focussing on instructions which were given orally while others need the practical demonstration. In classroom management strategy and education theory this concept of individual learning styles has gained significant acceptance. Previous experiences, cognitive ability, emotional ranks and environmental factors affect individual learning styles. In similar words, this can be expressed as everybody is a unique individual.

The top priority of mentors thus, is to differentiate between the learning dynamics of their students and introduced varied teaching practices accordingly.

Learning styles of students do not measure a single aspect of student personality. Different researchers identified various learning styles measuring different ways or aspects how students take information and process it. A significant amount of literature on the topic is present in studies done by Cassidy (2004) and Swanson (1995). Individual dissimilarities led to the creation of the literature in learning dynamics. During the era of 1960's these matters were trending in ranks of investigative psychology which then continued in early 1970's with same flow but due to the evolution of professional interest, societal focus got diverted and these matters saw a decline (Curry, 1983). Curry (1983) also expresses that learning is a dual phenomenon, a product and a process.

It is a process as it is adaptive in nature, focusing on future with a holistic view, thus altering an individual's mental, emotional, moral and social skills. A product, on the other hand refers to the more of a permanent shift in one's potential or actual behaviour. The enhanced capability of the individual to adjust to surroundings impulse exhibits the process. King (2011) emphasized that various students have distinct learning styles in which they comprehend efficaciously. This argument is supported by considerable amount of literature and discusses how dissimilarities in culture affect learning styles. Furthermore, learning or mentoring process can be less efficacious if learning style of learner and teaching styles are inharmonious.

A belief cannot only be legit because of its wide acceptance. Recent study of empirical literature shows that little evidence supports the argument that end results are remarkable when individuals' learning dynamics are in accordance with instructional techniques. But also various researches deny this concept as well. Clearly, some people have firm understating of their own learning preferences but the importance of those preferences is unclear (Lewis, 2014). Learning style which is prioritized by an individual some time causes contradictions among learners. In view of few scholars, educational performances of a learner arealso influenced by learning styles. To lead teaching and learning process it is vital to point out students learning styles,owing to the reason that it can make learning procedure effective by aiding teachers to educate their students in accordance with certain characteristics of students. The most crucial hurdle mentors face is distinguishing differences between students learning styles preferences (Anderson & Adams, 1992).

Many theories have been built regarding learning style; many of them are based on cognitive styles (Kolb's learning styles, impulsive ─reflective, etc). These styles are classified by Keefe (1979) into five classes: receptive, attentional, expectancy, physiological and incentive, retention and concept formation. Personality-oriented, activity-oriented, mental self-government styles and cognitive-oriented are four classes in which Sternberg and Grigorenko (1997) classified learning styles. Many researchers have proved that performing impulsively or reflectively is influenced by previous experience not the style itself and so it cannot be regarded as definition of style as preference, as being previously assumed that individuals perform differently according to their cognitive styles (impulsive vs. reflective) to solve problems. A model on learning styles was given by Grasha and Riechmann concerning learners' involvement and interaction insread of personality and cognition, due to which, this design isn't ranked in discussed divisions. They believed that this model helped teachers and professors acknowledge which teaching methodology would be appropriate for a specific learning style (Grasha,1996).

Various characters that learners' have in connection with their surroundings, teachers, content of course and classmates are social interactions and these social interactions are considered as learning styles by Grasha and Reichmann (1996). They also recommended that emotional and social aspects, like learners attitude towards teachers, learning and classmates are factors which identify learning styles. Their design of learning style is not focused on overall evaluation of cognition and personality (due to the fact that styles are preference of individual whereas personality is continuous) characters but on learners' reaction towards activities done in class room.This idea of learning styles has emerged with the investigation of type of personality studies along with how a person with a particular personality must be treated within system of education. The concept of universal strategies further supports the idea that every learner is unique. Moreover, the most scientifically supported techniques involve planning, such as scheduling your class over a series of days, putting in significant effort such as making your students practice a number of times before evaluating them, and to be honest, teachers are not willing to put so much into it(Markus& Kitayama,1991).

Every student is a unique individual and his/her learning style preference also differs from others. A rich and authentic course may be developed only if the teacher knows learning style preferences of the respective students.

Furthermore, teachers must be aware of students' learning styles and their preferences in order to effectively tailor the instructional methods and strategies to cater to student needs. This helps to build a conducive learning environment which is imperative for excellent performance of students. This study may help to build an insight for educators to assess the learning style preferences of their students and then design teaching-learning environment accordingly.

2. Literature Review

In 1950's and early 1960's the interest in effect of individual differences in process of learning led to studies regarding learning styles (Samadi, 2011). Different explanations have been given regarding learning styles after the term was firstly discussed by Talan in 1954.Relatively stable components of students' interaction' with the learning surrounding can be described as learning style (Karimi, 2012). The capacity of an individual to learn and assimilate the surrounding can be regarded as learning style (Azarkhordad & Mehdinezhad, 2016). Learning styles also refer to the method of learning how to respond to current stimulants in learning area (Seif,2011). Daff (2004) elaborates learning style as a various perception type, encoding, processing, and storage. The particular way students learn and remind is learning style,as classified by Smith & Dalton (2005). Various roles where learner establish connection with mentors, content of course and fellow class members is also learning style as suggested by Grasha and Reichmann (1996). Grasha (1996) also suggests the students to show flexibility of styles of learning and efficient contact with teacher (Halili, Naimie, Sira, Abuzaid and Lenge, 2014). Three aspect bipolar have been raised as initial model for classroom interaction (Rafati, 2012): Competition-participation, dependent-independent and avoider-partnership, but after revising their model they argued that individuals in each aspect are not situated at contrary poles but are on monopole continuum. Competition avoidance, participation, dependence, independence and partnership can all be in an individual, according to new classification.

Table 1: Learning Styles proposed by Grasha-Riechmann

Competitive style: where students compete in a teacher-cantered classroom.
Cooperation style: where students work in groups by sharing ideas with others.
Avoiding style: when a student is least bothered and tries to be anonymous in class.
Participatory style: these students actively participate in discussions during lectures.
Dependent style: they are strong students who follow clear-cut instructions
Independent style: they are independent thinkers and determine their goals and learning process.

Source: Grasha, 1996

Students' learning styles were inspected by Rezayi, Koohestani, Ganjeh and Anbari (2008), Mansouri (2000) and Najafi, Karimi & Jamshidi (2009). All of themconcluded that, converging and absorbing learning style are repeatedly used by students. Further these scholars indicated that in order to elevate use of training techniques by teachers they should apply manuscripts, speeches, use of diagrams and self-learning. Students' educational record can be predicted through the use of learning styles like abstract conceptualization and active learning, aswas recommended in a research conducted by Izadi and Mohammadzadeh (2008). Further learning styles were scrutinized by number of researchers like Ayati & Khoshdaman (2012) who studied connection between cultures and learning styles, Graf (2005) worked upon the relation between cognitive aspects of learners and learning styles and Karimi (2012) established connection between student's previous record and learning styles. In order to improve the methods of learning and student performance, he suggested the fusion of two or more methods, like non-verbal – visual, verbal – visual.

Because of Gender element, both male and female have difference in learning styles.This was revealed by the research conducted in relation with learning styles proposed by Grasha-Riechmann. The content of study is also a factor in difference between learning styles. For example the students of arts have inclination regarding participative and collaborative learning whereas independent learning style is preferred by students of scienceand also different learning styles can be seen in students of different majors. Verily, it appears obvious that different fields have different learning styles (Amin & Rajaei, 2013 and Căpiță, 2014). The purpose of this study is to investigate the males and females preferred learning styles, since there is difference between the cultures and personality aspects of every society, and it will further investigate the contrast between social sciences, languages and management science majors because of need of various learning styles and different contents.

3. Conceptual Framework

The primary focus of Grasha-Reichmann model is the attitude of the students towards, activities conducted in classroom, learning, teachers and fellow mates; Grasha-Reichmann highlighted the enhanced ability to communicate with others, organize materials and to solve a problem rather than investigating connection between student style, achievement and methods. For examining learning styles of students of management science and social sciences and languages at higher level of education they provided six styles:

3.1 Competitive

These students retain content in context to perform better in class than others. They perceive they should compete with other class members in a path of perks that are being offered. They prefer to lead the discussion by becoming a leader in a more teacher oriented class.

3.2 Collaborative

These students have understanding that they can learn better through sharing of talents and ideas. They coordinate with fellow class members and teacher and prefer working cooperatively with others. Their preferences are lectures.

3.3 Avoidant

They are not interested in learning and going to class.They avoid participating in class and cooperating with teacher and fellow students and are completely least bothered about class happenings. They prefer to avoid activities in classroom.

3.4 Participant

They are the quality segment of class. They appreciate coming to class and own the duty of extracting much out of the course. Throughout the course activity they participate as much as they can. They prefer discussion oriented lectures and discussion of material.

3.5 Dependent

The students of this character possess small amount of curiosity towards intellect and retain the necessity. They look for specific guidelines regarding how to do and what to do and see teacher and fellow students as support. Their preferences include obvious directions and outlines written of board.

3.6 Independent

The genre of students is the one who are self-dependent and think for themselves. In class they listen to the ideas of others but their primary choice is to work on their own. They grasp the necessary content and feel confident on their abilities. Their preferences include independent study.

The objectives of the study are to explore learning styles preferences of students enrolled in Management sciences, Social sciences and Languages at higher education level and to compare learning styles preferences of students studying in Management sciences, Social sciences and Languages at higher education level. The hypothesis of the study is “There is statistically no significant difference in learning styles preferences of students enrolled in Management sciences, Social sciences and Languages at higher education level”.

4. Methodology

Descriptive survey design was applied to explore and compare the learning styles preferences of students across three faculties (Management Sciences, Social Sciences & Languages) at higher education level from one public sector university of Islamabad. This design was appropriate because the intention was to collect large scale data about learning styles preferences of graduating students (Boudah, 2016).Homogenous purposive sampling technique was used to select sample of study due to the sample having same set of characteristics.Population included 3000 graduating students of Social sciences, Management sciences and Languages. Sample included 300 students (10% of the population)enrolled in the graduating semesters of faculties of Management sciences, Social sciences and Languages in two public sector universities of Islamabad.

Grasha-Reichmann Scale was used to explore learning styles preferences of students on six variables namely; avoidant, collaborative, competitive, dependent, independent, and participant. The instrument comprises of 10 questions per scale that is 60 elements in total. The responses were recorded on a five-point Likert scale These included (1) strongly disagree, (2) disagree, (3) neutral, (4) agree and (5) strongly agree. The Grasha-Reichmann Student Learning Styles Scale (GRSLSS) had been constructed to measure learning preferences of adults,

undergraduate and above all; it measures affective and cognitive behaviours of students instead of perceptual behaviours.

5. Results

Table 2 displays the mean value scores of students of management sciences, social sciences and languages on GRSLSS. It reveals that highest mean score on competitive subscale was by students of management sciences (m=24.90). It means that students of management sciences prefer competitive learning style as compared to students of other faculties. Almost all students preferred collaborative learning style. Students of social sciences showed more mean score on avoidant learning style as compared to others (m=24.47). Participant learning style was again preferred on about same mean scores by students of all faculties. Students of Languages scored highest on dependent learning scale (m= 24.84) and students of Management Sciences scored highest on independent learning styles (m=24.30).

Table 2: Mean scores of Management Sciences, Social Sciences and Languages students on GRSLSS (n=300)

Sub scales	Management Sciences		Social Sciences		Languages	
	Mean	SD	Mean	SD	Mean	SD
Competitive	24.90	6.99	20.47	4.04	19.84	3.98
Collaborative	23.89	6.93	23.30	5.85	23.79	5.89
Avoidant	17.90	3.92	24.47	4.04	21.84	3.98
Participant	23.82	6.74	23.21	5.78	23.09	6.39
Dependent	21.90	3.92	22.47	4.04	24.84	4.98
Independent	24.30	6.19	21.43	4.22	19.73	3.54

Table 3: One way ANOVA for difference in learning styles preferences among three faculties (n=300)

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	3664.560	2	1731.770	79.388	.010
Within Groups	6185.360	297	22.855		
Total	9558.980	299			

A One-way ANOVA between subjects was conducted to compare the learning styles preferences among students of management sciences, social sciences and languages. There was a statistically significant difference in the learning styles preferences among social sciences, management sciences and languages students at $p<.05$ level for the three conditions mentioned in table 3[$F(22.855) = 79.38$, $p=.01$]

Table 4: Post hoc Comparisons using Tukey HSD test for dependant variable "Learning styles"

(I) Subject	(J) Subject	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
					Lower	Upper
Management sciences	**social sciences**	7.660*	.655	.046	8.19	5.15
	languages	6.040*	.655	.034	7.54	5.52
Social sciences	**Management sciences**	7.670*	.655	.046	6.25	9.19
	languages	1.530*	.655	.039	3.11	2.05
Languages	**Management sciences**	6.140*	.655	.034	4.52	3.56
	social sciences	1.630*	.655	.039	3.15	3.11

Note: *. The mean difference is significant at the 0.05 level.

Tukey HSD test indicates that the learning styles preferences of students of social sciences, management sciences and languages were significantly different from each other , thus H_{01} is not accepted, where $p<0.05$ levels.

6. Discussion

In regular fashion the dominant learning styles of students enrolled in all three faculties were collaborative and participative. This conclusion aligns with findings of Rahimi & Abedi (2014) who elaborated that students of Iran prioritize participative learning styles. But results have shown that there are notable differences in competitive and avoidant learning styles preferences among students of all three faculties. Competitive styles were clearly preferred by management sciences students and avoidant style was dominant among social sciences students. Contrarily, participant style was dominant among all students. The number of students who preferred the style of dependence

was more among languages students. This result contradicts with the findings of Rahimi (2014) who claimed that languages students prioritize participative, independent and cooperative learning styles. Regional culture and environment of university surely caused this difference. Deducting from these findings, larger proportion of management sciences students primarily preferred competitive style, while social sciences students had largely stuck to avoidant and dependent style and languages students manifested collaborative and dependent learning style. Findings of Safavi, Shooshtaryzadh, Mahmoudi & Yarmohammadian (2010) are harmonious with these results. However, the findings of Ayati & Khosh-Daman (2012) and Hossein, Zadeh, Farmanbar, Yeganeh and Asadpour (2017) deny the existence of connection between subject / faculty and learning styles and this contradicts with these results. Hence it appears that in advancement of the process of teaching-learning, learning styles have a vital role and modifying methods of teaching and learning styles is a fruitful way of continuing learning. The genesis of such environment is necessary where thoughts and opinions can be expressed to get learners thinking. Undeniably, the involvement in group discussion and activities is of primary significance and appealing way for the fostering of creativity and innovation and social progress, and students can evolve their mental capabilities by becoming a part of these types of activities. The researchers concerning cooperative teaching methods have a firm believe since learning is a social practice, learning activities is necessary for harvesting of information and ideas. For achieving positive mental activity and different educational objectives, the teaching method with cooperative style roots aid that opportunity. Whereas student study for grades and marks because of the use of racing or competitive methods in teaching and learning. Nevertheless it enhances the motivation but not efficacious in context with quality learning, so by the nourishing participative and cooperative styles student learning can be enhanced.

Results have shown that management sciences students are more inclined towards doing things which require more interaction with others and they are more comfortable with interaction, competition and cooperation as compared to others. Whereas the reason of management sciences students having independent styles is their inclination towards doing things individually and desire of making decision and also they have less inclination towards dependence and collaboration. The results of Amir and Jelas (2010) are aligned with these as they concluded that in competitive and dependent style management sciences students got higher grades. Mahamod et al. (2010) also discovered that collaborative, participative and dependent styles are more used by social sciences students. O'Faithaigh (2000) expressed that because social sciences and languages students naturally have the underlying fear of failure, they are dependent upon educator, whereas males embrace competitive and independent styles. While discussing the learning styles preferences with respect to the field of science and humanities, Fuhrman and Grasha (1983) explain that participatory learning style is influenced more by the type of personality characteristics being involved while choosing particular area of study. Therefore, preferring a specific learning style and choosing the particular field of study may have some common grounds. Hence, people having extrovert nature would preferably opt for fields that require interaction whereas introverts would choose the other way round. Not only that, learning styles are not fixed, and therefore can vary in different circumstances depending on environment; thus, majors that provide greater opportunity of teamwork and collaboration, may gradually result in loss of an individual's independence by solely focusing on cooperative and participative styles.

7. Conclusion

The findings of learning styles preferences of participants have shown that learning styles of participation will get affected by styles of teaching, choice of subjects, and classroom communication. Learners who possessed significant communication styles and had friendship web are more successful by the use of cooperative and independent learning (Cho et al., 2007) which results in top of the line academic result. The verdicts of current study also prevailed in expressing that languages and social sciences students have lower mean scores as compared to management sciences students on independent learning styles subscales. It is mentionable that higher level of education demands from its students to become self-directed learners. Grasha proposed that various learning styles of students and teaching styles should coincide with each other. Therefore, he proposed the use of various activities in classroom to encourage adaptability, flexibility, perpetual and independent learning devoid of choice of any subject. In order to uncover learner with both, familiar and unfamiliar paths of learning the mentors must possess set of skills that would assist them to use different pedagogical methods that may be in line with the fact that students possess various degree of learning styles. Empirically proven evidence exhibits that when students are able to manage and monitor their styles of learning, their accomplishments can be enhanced.

Learning styles preferences may vary from variation in choice of subjects, as pedagogy for each discipline varies. However, teachers may require to bring variation in teaching learning process to cater to the needs of diverse

learners. Students of Social Sciences and Languages manifest dependent learning style significantly as compared to their counter parts, so it is advisable for teachers to plan such learning activities which make them independent and self-directed learners. It is also recommended that situational factors such as nature of course requirements and motivation to attend the classroom could also have an impact on the preferred learning styles. Learning becomes more effective and meaningful when classroom managers/teachers understand how and why students think and learn.

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