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A DESCRIPTIVE ANALYSIS OF DIFFERENCES IN LEARNING STYLES AND ACHIEVEMENT GOALS AMONG UNIVERSITY STUDENTS

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ABSTRACT

Learning styles, a well-explored concept in educational and social sciences, reflect the diverse ways individuals acquire and process information. This study investigates the variations in learning styles and achievement goals among university students, emphasizing gender, medium of instruction, and residential differences. Employing Dunn and Dunn's Learning Style Framework and Elliot and McGregor's Achievement Goal Orientation Model, data were collected from 500 students of the University of Azad Jammu and Kashmir through stratified random sampling. The findings reveal significant differences in environmental, sociological, emotional, psychological, and physiological learning styles across gender and medium of instruction, while achievement goals vary notably with gender but not with medium of instruction or residential area. Understanding these distinctions is crucial for educators to tailor instructional strategies effectively, fostering improved academic performance and learner engagement. The study underscores the need for adaptive teaching approaches that recognize individual learner preferences and motivational orientations.

Keywords: *Learning styles, Achievement goals, Gender differences, University students, Learning preferences*

Introduction

Learning styles

Learning and learning styles are not new concepts to educationists and social philosophers; behaviorists and subsequent sociologists have discussed them. Due to their varying work directions and areas of academic specialization, scholars have differing opinions when describing learning styles. Learning and performance goals' effects are contingent upon their operationalization (Grant & Dweck, 2003). Numerous scholars have provided the most basic definitions and explanations of learning styles in two categories: visual learners and auditory learners. Visual learners, who learn by simply hearing and reciting the names of people they rarely encounter while reading or writing, are the first of these two types of learners. The second type of learners is known as auditory learners (Slavin, 2007; Srinivasan et al., 2007). In the view of two prominent rehears in the field of learning and education (Suzuki & Yamamoto, 2002), there is no single or common definition to define learning styles because it varies according to the learning preferences of learners.. In the view of Pashler et al. (2008a) Dunn and Dunn Learning Style Model was a scholarly effort that was a result of previous studies covering educational researches, dissertations as well as industrial researches.

According to Gregorc (1979) learning styles are not identical for everyone because every deification rely on the prescribe modus operandi of a particular learning style. Learning adaptabilities may vary among the students and learners (Cunningham-Atkins et al., 2004),

because they are not alike in to face the same experiences, situation and stimuli. They also vary because of their intellectual level and academic echelon. Many scholars have been intended to explain learning styles in more comprehensive way by following or criticizing philosophical and theoretical applications of learning itself. As per Brand et al. (2002) the term learning style might be thought to be wrought on the foundational principles of innate or seminal persona or these learning styles can have the biological roots because of nature. This argument gives a valid impression because human beings can have both nature and nurture inclinations for socialization and learning. According to Kolb (1976) learning styles are those defining approaches and means that can be used for data collection and processing adopted by the students in the field of research and experiments . Furthermore Kolb (2007) stated that these styles have variation on the basis of different summits because students do vary according to their abilities of data collection and analyses as well as they also have the momentous differences of research techniques and understating. Variations and definitions of these learning styles depend upon the theoretical orientations of learning styles (Felder & Spurlin, 2005).

Review of literature

Dunn and Dunn's Learning Style Framework

In the area of learning in general and learning styles in particular, a highly renowned researcher (Dunn & Dunn, 1978) had taken a very thorough approach. "Learning style is actually the way that learners and researchers begin to hold onto different information and can develop their interest and concentration on these information as well," according to Dunn & Dunn. In order to make the teaching and learning process more efficient and engaging for both teachers and students, they further elaborate on learning styles, illustrating that they are a unique collection of traits that are imposed biologically or developmentally. One distinctive feature of Dunn and Dunn's suggested learning design is that it incorporates the social, environmental, psychological, philological, and emotional components thought to be crucial for learning. Additionally, there has been an attempt to determine whether a person's learning style is influenced by their gender, race, or age. Evidence is not restricted to age, gender, or race; researchers also looked for other factors that can affect learning, such as how much food a student eats, the effect of light and dark, and whether a student learns best visually or auditorily.

Achievement Goals' Model

Although the person may also have other fundamental motivations or goals related to the learning situation (such as achieving high test scores, feeling proud of oneself, or avoiding ridicule), these are not necessary components of the accomplishment goal's formulation (Elliot et al., 2007). The degree to which a student or participant sets a goal to accomplish is explained by the metaphorical phrase of orientation (Elliot et al., 2007; Mann et al., 2013; Pintrich et al., 2003).

In spite of the fact that there is a substantial academic research available applying achievement goal orientation in academia and research (Midgley et al., 1998; Pintrich, 2000; Ryan et al., 1998; Wolters, 2004), a very few researches focused on the external measures (demographic variables and transitions) of behaviour and achievement goals (Elliot & McGregor, 2001; McGregor & Elliot, 2002). A man with performance goals concentrates on outside components; endeavoring towards a specific review or performing admirably in contrast with other individuals (Senko & Dawson, 2017).

Learning Styles and Achievement Goals' Differences

According to Felder and Spurlin (2005) learning styles vary on the basis of their subject matter, theoretical orientation and domain of the study. These various types of learning styles include Cognitive Learning Styles, Philological Learning Style and Psychological and Learning Styles. In the view of researchers (Amponsah, 2024; Pashler et al., 2008b) learning styles actually depict the differences and preferences based on the qualitative extent rather measuring quantities of

level of differences, rather difference can be found on the basis of demographic flux. Learning styles and methods are aligned with the process socialization and they are considered to be lifelong trials (Mamula et al., 2016).

Numerous studies have been conducted while applying Dunn's Model as a theoretical framework. Differences and similarities of learning styles and adaptation of learning styles has been found in the study of (Rudd et al., 2000), according to the their conjecture, these diffrences among students are absed on age, gedner, race, ethnicity and on the basis of their academic abilities and disticntions. It is important for the instructor to analyse these smimliarites and diffreneces but this is also factual in the mentioned studies that by simple observation, it seem hard for an instrctor to judge these diffrences. Instructors are required to understand the diffrences and similarities of learning styles for an effective communication between leanrner and instrutor (Rudd et al., 2000).

Researchers like (Hendry et al., 2003) suggested some differences of learning styles of students at post graduate level. Differences of learning styles do exist on the basis of area of the study, research domain, nature of the subject, methodological phases and variations. It is very imperative for the instructor to understand these differences especially for the students at higher level of education. Understanding of these differences will lead both, instructors and students to incorporate strengths of learning process and get rid of the learning inconsistencies for an effective communication and learning. In the studies of (Fauziyah & Rahmad, 2023; Peresamy et al., 2011), the researchers found that understanding of learning styles of the students is the pivot responsibility of an instructor in the field of academia and research. Instructors should adopt the identification strategy and gathers information as an effective tool to measure their own inaptitude, they should incorporate these information for improvement in their (teachers) research, curriculum designing and academic strategies.

Research Methodology

Two structured questionnaires were used to gather data from selected students of University of Azad Jammu and Kashmir by applying multistage stratified random sampling technique. A sample of 500 students was determined form the given area of study.

Instruments

Data collection tool comprise of two parts (1) learning styles of the students and (2) achievement goals of the students. Detail of the instruments is mentioned below:

Dun and Dun learning style scale: Dun and Dun scale (1986) was used to identify the learning style preferences of students. The scale measures five different learning styles: (1) Environmental, (2) Emotional, (3) Sociological, (4) Physiological and (5) Psychological.

Achievement goal orientation questionnaire: Achievement goals were measured using a modified version of Elliot and McGregor's (2001). This tool assesses 4-dimension of achievement goals, (1) mastery-approach, (2) mastery-avoidance, (3) performance-approach, and the (4) performance-avoidance.

Results

Table 1 *Frequency and Percentage Distribution of Respondents by Selected Variables*

Variable	Frequency	Percentage
Gender of the Respondent		
Male	225	45
Female	275	55
Level of Education		
BS	369	73.8

M.Sc./MA	115	23
MS/M.Phil.	16	3.2
Medium of Instruction in Previous Schooling		
English	399	79.8
Urdu	92	18.4
Other	9	1.8
Family Type		
Joint	308	61.6
Nuclear	161	32.2
Extended	31	6.2
Residential Area		
Rural	247	49.4
Urban	253	50.6

Table 1 divulges data of the respondents which demonstrates that 45 % of the respondents were male students whereas and 55% were female students. Responds were categorized on the basis of their educational level such as; students enrolled in bachelor programmers were 78.3%, whereas enrolled students in master programs were 23 % and MS or M. Phil were just 3.2 percent. Medium of direction in past education of the students uncovered that 79.8% of the respondents were having English, 18.4% Urdu and 1.8 % had their medium of instruction in previous schooling, whereas other than these two dialects that incorporates, students had also local languages like Hindko and Pothohari. Family kind of the respondents incorporates 61.6% in joint family category, 32.2% in nuclear and just 6.2 in extended family network.

Table 2 ***Descriptive Statistics of Selected Variables***

	Range	Mean		SD	Variance	Skewness		Kurtosis	
	Statistic	Statistic	SE	Statistic	Statistic	Statistic	SE	Statistic	SE
Environmental	19	20.92	0.153	3.421	11.703	-0.650	0.109	0.576	0.218
Sociological	13	08.61	0.109	2.447	05.985	0.562	0.109	0.269	0.218
Emotional	20	18.50	0.150	3.360	11.293	-0.853	0.109	0.785	0.218
Psychological	13	09.97	0.110	2.473	06.119	-0.012	0.109	-0.507	0.218
Physiological	23	21.51	0.195	4.363	19.036	-0.056	0.109	-0.503	0.218
MAP	12	05.81	0.095	2.134	04.553	1.103	0.109	1.916	0.218
MAV	12	08.99	0.133	2.965	08.790	0.161	0.109	-0.534	0.218
PAPG	12	05.42	0.094	2.097	04.396	1.115	0.109	1.743	0.218
PAVG	12	07.86	0.150	3.353	11.240	0.549	0.109	-.655	0.218

Note: (MAP= Mastery Approach, MAV= Mastery Avoidance Approach, PAPG= Performance Achievement Goal, PAVG= Performance Avoidance Achievement Goal).

Data reported in table 2 shows descriptive statistics of selected variables (i.e. Environmental Learning Styles, Sociological Learning Styles, Emotional Learning Styles, Psychological Learning Styles and Physiological Learning Styles) it also reveals information about components of Achievement Goal's Model. Data given in table 2 shows that mean value and standard deviation of environmental learning styles as, Mean=20.92 and Standard Deviation =3.421. Whereas for sociological learning styles the Mean=8.61 value and Standard Deviation =2.447 were recorded respectively. It has also been reported that values of mean and standard deviation of the variable,

emotional learning styles have Mean=18.50 and Standard Deviation =3.360 whereas psychological learning styles have values of Mean=09.97 and Standard Deviation=2.473 respectively. Data reveals that physiological learning styles have their Mean=21.51 with Standard Deviation =4.363 which is found as the highest. Table 2 also depicts the required information of mastery approach goal as Mean=5.81 and Standard Deviation =2.134 whereas mastery avoidance goal has Mean=8.99 and Standard Deviation =2.965. Whereas second component of achievement goals framework i.e. performance approaches goal has mean and slandered deviation, Mean=5.42, Standard Deviation =2.097 respectively however performance avoidance the values of Mean=7.86, Standard Deviation =3.353 were also calculated and reported in table 2.

Table 3 ***Gender-Based Differences in Learning Styles and Achievement Goals***

								95% C. I	
	Gender	N	Mean	SD	SEM	t	*p*	L	U
Environmental	Male	225	20.080	03.667	0.244	-4.981	0.000	-2.124	-0.922
	Female	275	21.610	03.046	0.184				
Sociological	Male	225	08.320	02.339	0.156	-2.406	0.017	-0.950	-0.096
	Female	275	08.850	02.511	0.151				
Emotional	Male	225	18.000	03.720	0.248	-2.942	0.003	-1.503	-.298
	Female	275	18.900	02.980	0.179				
Psychological	Male	225	09.600	02.515	0.167	-3.016	0.003	-1.103	-.0232
	Female	275	10.200	02.401	0.144				
Physiological	Male	225	21.300	04.875	0.325	-.566	0.572	-1.015	0.561
	Female	275	21.600	03.899	0.235				
MAP	Male	225	06.050	02.268	0.151	2.283	0.023	0.062	0.822
	Female	275	05.610	02.000	0.121				
MAV	Male	225	08.710	03.046	0.203	-1.911	0.057	-1.036	0.014
	Female	275	09.220	02.882	0.174				
PAPG	Male	225	05.550	02.199	0.147	1.292	0.197	-0.128	0.619
	Female	275	05.310	02.006	0.121				
PAVG	Male	225	07.800	03.363	0.224	-.359	0.720	-0.701	0.485
	Female	275	07.910	03.349	0.202				

Note: (MAP= Mastery Approach, MAV= Mastery Avoidance Approach, PAPG= Performance Achievement Goal, PAVG= Performance Avoidance Achievement Goal).

Results of independent sample t-test showed that students have significant differences of learning styles and achievement goals on the basis of their gender. Recoded data in table 3 shows that male and female students diverge in adaptation of social, environmental, philological and psychological learning styles and likewise differences can be found in the adaptation of achievement goals as well. Description of mean value and standard deviation shown in table 3 reveals that environmental learning styles' factor has mean value Mean=21.61 whereas value of Standard Deviation =3.1. Similarly, social, emotional, psychological and physiological factors of learning styles have (Mean=8.9, Standard Deviation=2.5), (Mean=19.9, Standard Deviation=2.9), (Mean=10.2, Standard Deviation=2.4) and (Mean=21.6, Standard Deviation=3.8) respectively. In tandem, these factors have significant differences because (p<0.05). In chorus, differences of achievement goals were also recorded in table 3 in which students have mean and standard deviation's values of mastery approach Mean=6.1, Standard Deviation=2.3 and the required values of mastery avoidance goal are Mean=9.22, Standard Deviation=2.8, yet again these variables have

significant differences on the basis of gender of the students because (p>0.05).

Table 4 ***Differences in Learning Styles and Achievement Goals Based on Medium of Instruction in Previous Schooling***

	MIO	Mean	SD	SEM	t	p	95% C. I	
							L	U
Environmental	English	20.842	03.458	0.186	-0.833	0.406	-0.915	0.371
	Urdu	21.112	03.341	0.268				
Sociological	English	08.524	02.459	0.132	-1.280	0.201	-0.762	0.161
	Urdu	08.826	02.413	0.194				
Emotional	English	18.287	03.402	0.183	-2.226	0.027	-1.329	0-.081
	Urdu	18.988	03.223	0.258				
Psychological	English	09.810	02.397	0.129	-2.102	0.036	-1.001	0-.032
	Urdu	10.323	02.608	0.209				
Physiological	English	21.175	04.442	0.239	-2.715	0.007	-1.903	-0.303
	Urdu	22.276	04.092	0.328				
MAP	English	05.812	01.996	0.107	0.081	0.935	-0.419	0.455
	Urdu	05.791	02.419	0.194				
MAV	English	08.911	02.866	0.154	-0.886	0.376	-0.851	0.323
	Urdu	09.170	03.175	0.255				
PAPG	English	05.433	02.073	0.112	0.249	0.804	-0.354	0.457
	Urdu	05.380	02.154	0.173				
PAVG	English	07.774	03.355	0.181	-0.897	0.371	-0.928	0.347
	Urdu	08.060	03.349	0.269				

Note: (MAP= Mastery Approach, MAV= Mastery Avoidance Approach, PAPG= Performance Achievement Goal, PAVG= Performance Avoidance Achievement Goal).

Table 4 shows difference of medium of instruction of students regarding learning styles and achievement goals. Independent sample t-test revealed that only three variables (emotional learning styles, psychological learning styles and philological learning styles) were found to have significant differences (p<0.05) on the basis of medium of instruction in previous schooling of the students. Whereas values of mean and standard deviation of emotional factors of learning styles of those students who have English as a medium of instruction in their previous schooling have mean=18.287 and standard deviation=3.402. Whereas students having Urdu language as a medium of instruction have Mean=18.988 and Standard Deviation=3.223. Data reveals that students preferring psychological factors with English as a medium of instruction have Mean=09.810 and Standard Deviation=02.397 similarly students with physiological learning styles along with English medium of instruction have Mean=21.175 and Standard Deviation=04.442. On the other hand students preferring psychological learning styles with Urdu as a medium of instruction have Mean=10.323 and Standard Deviation=02.608 while those who have physiological learning styles along with Urdu medium of instruction have Mean=22.276 which is highest recorded value of mean in this study and they have Standard Deviation=04.092. Furthermore data reveal that mastery approach, mastery avoidance approach, performance approach and performance avoidance goals have no significant differences (p>0.05) on the basis of medium of instruction in previous schooling.

Table 5 *Differences in Learning Styles and Achievement Goals Based on Students' Residential Area (Rural vs. Urban)*

						95% C. I	
	Residence	Mean	SD	SEM	t	*p*	L	U
Environmental	Rural	20.40	03.428	0.222	-3.753	0.000	-1.744	-0.545
	Urban	21.55	03.241	0.209				
Sociological	Rural	08.70	02.574	0.167	0.369	0.712	-0.361	0.527
	Urban	08.61	02.366	0.152				
Emotional	Rural	18.61	03.530	0.228	0.552	0.581	-.43411	0.773
	Urban	18.44	03.180	0.204				
Psychological	Rural	09.88	02.614	0.169	-0.368	0.713	-.53488	0.366
	Urban	09.97	02.396	0.154				
Physiological	Rural	21.15	04.320	0.280	-1.628	0.104	-1.44259	0.135
	Urban	21.81	04.466	0.287				
MAP	Rural	06.11	02.267	0.147	2.752	0.006	0.153	0.920
	Urban	05.57	01.989	0.128				
MAV	Rural	08.96	02.732	0.177	-0.707	0.480	-0.723	0.341
	Urban	09.15	03.180	0.205				
PAPG	Rural	05.79	02.087	0.135	3.715	0.000	0.329	1.068
	Urban	05.09	02.028	0.131				
PAVG	Rural	07.52	02.951	0.191	-3.042	0.002	-1.519	-0.327
	Urban	08.44	03.657	0.236				

Note: (MAP= Mastery Approach, MAV= Mastery Avoidance Approach, PAPG= Performance Achievement Goal, PAVG= Performance Avoidance Achievement Goal).

Data recorded in table 5 shows that students of Azad Jammu and Kashmir University have different residential background, as 247 students belong to the rural areas whereas 253 out of 500 belong to the urban area of the state. Results of independent sample t-test divulged that, students have significant differences of solicited learning styles (environmental, sociological, emotional, psychological and physiological) and achievement goals on the basis of their residential area. Measured differences of learning styles and achievement goals on the basis of residential areas of the students enclosed values of mean and standard deviation concerning to the selected variables as, students belong to the rural area have their preferences of environmental learning styles (p<0.05) with Mean value= 20.40 and value of Standard Deviation= 3.428, these students (belong to the rural areas) differ from students belong to the urban areas in the adaptation and preferences of environmental factors of learning styles. Mean value of urban students is Mean=21.55 with the value of Standard Deviation SD=3.241. Table 5 shows that students don't have significant differences or preferences to adopt sociological, emotional, psychological and physiological factors of Dunn's Learning style model. However they (students) have differences of mastery approach with Mean=06.11 and Standard Deviation=02.267 of rural students at the same time as Mean=05.57 and Standard Deviation=01.989 of those students who belong to the urban area. Differences of performance and performance approaches can also be find significant in tale 4 because (p<0.05) and mastery avoidance approach has no differences i.e. (p>0.05)

Conclusion

Since the rise of education and the term learning and socialization, researchers have been attempting to discover the intensions and reasons of learning. By the endeavors of behaviorist scholar, analyst and educationist numerous scientific experimental and cross sectional studies have been conducted to find out the qualitative

and quantitative measures and factors of learning styles. Research scholars develop and differentiate families and taxonomies of learning styles and learning essentially, they also worked to developed comprehensive models and frameworks for achievement goals and achievement intrinsically. Researchers have been attempting to portray learning styles by thinning out numerous philosophical and hypothetical applications (Brunstein, 1993; Elliot & Church, 1997; Elliot et al., 2005; Harackiewicz et al., 2000; Pekrun et al., 2009; Senko & Harackiewicz, 2002; Wolters, 2004), these scholars indicated the significance of achievement goals and learning styles in the field of academic because there is no solitary cause and impact of learning that determines achievement goals of students, instructors, trainers and researchers. In this study, selected students from University of Azad Jammu and Kashmir were surveyed and it has been find out that students belong to the rural area have different approaches of learning styles and achievement goals as compare to the students of urban locality and similar they have significant differences based on their gender as well as the medium of instruction. For an innovative and interactive learning environment, two important aspects are required to be incorporated, one is for the students to pre-determine their learning styles and they should develop a nexus of learning styles and achievement goals. While the second aspect for such an academic endowment is the responsibility of the teachers to have a method, away from 'walk and chalk' and they (teachers) need to understand these significant differences of learning styles and achievement goals among the university students.

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