British Journal of Education

Vol.5, No.2, Pp. 10-20, February 2017

Published By European Centre For Research Training And Development UK (www.eajournals.org)

INDICES OF DISCREPANCY BETWEEN STUDENTS' LEARNING STYLES AND THEIR GRADE ACHIEVEMENT AT MASTERS' LEVEL

Dr. Marium Din
Assistant Professor,
Department of Education,
National University of Modern Languages, Islamabad
0092-345-5353573

ABSTRACT: *The present study aimed at finding out indices of discrepancy between students' learning styles and their grade achievement at Masters' level. Sample consisted of eight hundred and twenty students studying in third and fourth semester of Masters level in public sector universities (Pakistan). Sample was drawn from Education, Psychology, Mass Communication, Economics, Statistics, History, Defence and Strategic Studies, Sociology, Pakistan Studies, Anthropology, and Management Sciences. Kolb's Learning Style Inventory was used for assessing learning styles of students. The students' first two semesters' results were used in order to find out their grade achievement. Data were analyzed by using, frequencies/percentages, and one way ANOVA. Divergent learning style was found to be learning style of majority of student irrespective of the difference of departments or disciplines of study. It was concluded that learning styles had a significant effect on grade achievement at Masters' level. The divergent, assimilative, accommodative, and convergent learners acquired higher grades respectively.*

KEYWORDS: Experiential Learning, Learning Styles, Divergent Style, Assimilative Style, Convergent Style, Accommodative Style

INTRODUCTION

Learning is indispensable ingredient of human life. No one can survive in this world without learning. As man is a social being, he has to learn in order to lead his life in a better way. Learning does not mean only the product or outcome for which the whole process of formal and non- formal education is organized. It is the process of reconstructing of experiences and modifying the existing knowledge in light of previous knowledge.

Background of the Problem

Learning consists of two processes which are grasping knowledge and transforming that knowledge. Learning is based on personal experiences of the learner. Every individual is unique to other individuals in terms of physique, emotional demands, gender, and other personality dimension. He is different to other individuals in terms of the way he or she learns. If one person prefers to learn through assignments, the other may like to learn through lectures. These choices form one person's personal style that is called learning style.

Learning style has been an area of great interest in the foreign countries. A lot of researches have been conducted in order to know its relevance with different aspects of teaching and learning, like its

ISSN 2054-6351 (print), ISSN 2054-636X (online)

relationship with the learning achievement, learning style preferences in different races, learning styles of university on- campus students, and distance learning students etc. A lot of learning style instruments have been designed in order to assess the learning styles of students. Some people use the terms 'cognitive styles', 'thinking styles', and 'affective styles' interchangeably with 'learning styles'. Some of them are based on perceptual modalities; some on other types. But all of these instruments assess the differences found in different learners. Demographic variables like, gender, age, socio, cultural factors, professional experience, and type of education also are important factors in shaping the learning preferences of students. Learning can be effective if learning styles of the learners are kept in mind while planning the education. But unfortunately in Pakistan, this area does not get importance in researches, as well as in designing instruction. This is one of the ignored areas of research in Pakistan. Unfortunately neither in libraries nor in on line search engines like Google, yahoo, msn etc is there any useful data regarding Pakistan. That is why the need was felt to give emphasis to learning styles in the research so that some important areas related to teaching and learning can be facilitated through it. The purpose of this study was to explore different learning styles of the learners, as well as its relationship with their actual grade achievement. Thus there is every need to explore what the different learning styles of the students are in order to bring the teaching in harmony with the preferred learning styles of the students.

There are different learning styles. Each person has her own learning style that provides her opportunity to acquire the knowledge and transform that knowledge according to his preferred way. The researches have proved that learning style has its profound impact on other dimensions of teaching and learning. The students have their own preferred way to grasp and process according to their own way. The study aimed at exploring the indices of discrepancy between students' learning styles and their actual grade achievement at the masters' level in public sector universities of Rawalpindi and Islamabad (Pakistan).

Objectives of the Study

The study was conducted to:

1. Explore learning styles of students of at Masters' level in public sector universities.
2. Investigate effect of students' learning styles on their grade achievement at Masters level.

Hypothesis of the Study

Following null hypothesis was formulated to initiate the study

Ho1: There is no significant effect of learning styles on grade achievement of students at Masters' level.

LITERATURE REVIEW

Learning style is the combination of characteristic cognitive, affective, and psychological elements. These elements determine the way of perceiving, interacting with, and responding to the learning environment. They decide that how one particular individual will react to a specific situation and how he or she will behave in a unique or common learning situation. The unique integration of these elements paves a path for perception of the individual in a unique style. This leads to a different interaction with the same learning environment by different people and it is a matter of learning style (Gordon 1998). Learning styles are taken as stable individual preferences for receiving and processing

ISSN 2054-6351 (print), ISSN 2054-636X (online)

information by many of the theorists. The person who is concrete learner will grasp and process information by using concrete abilities like concrete experience and active experimentation most of the time, whereas abstract learner will rely on abstract abilities of reflective observation and abstract conceptualization in order to perceive and process information, and their this habit will be uniform in many or most of situations overtime.(Kolb, 1984) .

The biological uniqueness and developmental changes are individualized and vary from person to person in many ways that is the reason of developing different learning styles (Dunn and Griggs,2000). Learning style not only has its connections with environment but always focus on the needs of the learner. Different people have different needs and these needs prompt the individual; to interact and deal with environment in such a way that best satisfy the needs. As learning style consists of different cognitive, psychological and affective behaviors, they make it relatively permanent and consistent to perceive and relate with environment with a unique way. This uniqueness makes the educational experience unique for every person (Bennet, 1990).

Kolb believed that learning that is based on experience is the true learning. These are four primary adaptive modes. Concrete experience, reflective observation, abstract conceptualization, and active experimentation. Kolb (1981) says that with each of these four modes, a major dimension of personal growth is associated. Development in the concrete experience adaptive mode is characterized by increase in affective complexity. Development in the reflective observation mode is characterized by increase in perceptual complexity. Development in the abstract conceptualization and active experimentation mode is characterized, respectively, by increase in symbolic complexity and behavioral complexity.

The persons who have concrete experience (CE) ability emphasize the ability to employ feelings. This ability demands sensitivity towards people's emotions and values. They perform well in social professions, like education, and social work etc.
Persons who have command on reflective observation (RO) rely on watching and listening. They try to use their reflective observation in order to find out the solutions to the problems. People who have ability in abstract conceptualization (AC) use logic, ideas and concepts. They give preference to models. In the last those persons who are social and want to work on key positions in organizations, have ability of Active Experimentation (AE). They trust more on people rather than concepts or ideas. For these people only those things matter which are practical. In other words they are pragmatists. They can easily take different actions.

Kolb's Learning Styles
Kolb has identified four types of learning styles. He believes that every individual chooses a different phase of learning cycle because of difference in their hereditary equipment, their particular life experiences, and the demands of present environment.
Kolb 1984 cited in Yamazaki 2002, 2003 believes that learning style is influenced by personality type, educational majors, or the subject choices, career choices; nature of job, roles and duties one has to perform in the profession. It means that people learn differently as they are different in terms of the above mentioned variables.
There are four primary modes of grasping and processing information the combination of any two creates a new style of learning that different in terms of relating to the environment.

ISSN 2054-6351 (print), ISSN 2054-636X (online)

Each learning style results from using two types of abilities in order to learn. These four learning styles are diverging, assimilating, converging, and accommodating. Diverging learning style is the combination of concrete experience (CE), and Reflective Observation (RO); Assimilating style is based on Reflective Observation (RO) and Abstract Conceptualization (AC). While the combination of Abstract Conceptualization (AC) and Active Experimentation (AE) gives birth to converging learning style. The most comprehensive or the highest order learning style i.e accommodating learning style is resulted from the interaction of Active Experimentation (AE) and Concrete Experience (CE). The accommodating style comes in the last because it has the ability to have all the qualities of the previous learning styles. Some detail of these learning styles is given below.

Divergent style

The concrete experience and reflective observation are dominant learning abilities of Divergers. A characteristic question of this type is "***Why".*** Divergers view concrete situations from many different points of view. They can generate many ideas and have broad cultural interests. They like to gather information and they are interested in people.

Divergers are considered to be imaginative and emotional. They specialize in people. The Divergers in formal learning situations prefer to work with in groups. They listen with an open mind. They like to receive personalized feedback. Their imagination and power of observation help them to consider events, issues or problems from a variety of angles. The persons with diverging learning style respond well if they know that the learning material relates to their experience. They like their instructors to work as motivators.

The divergent learners prefer to receive information by using concrete experiencing and then processing by reflective observation. Such learners view different situation according to their own point of view. But they prefer to see its different aspects carefully. They try to think that why this particular incident has happened and then reflect on it. Their focus is on various aspects of a single issue or problem. They demand such type of educational opportunities which are practical as well providing the chance for reflection. They find relationships in different things. They employ their imaginative ability and use multi- perspective approach. (Holley & Jenkins, 1993).

Assimilative style

Reflective observation and abstract conceptualization are the dominant abilities of assimilators. A characteristic question of this type is "***What"***. Assimilators accommodate diverse observation and reflection in an integrated explanation or in theoretical models. They use practice and sharp logic to judge information and models on their merits. They assimilate diverse ideas and information or adapt them to an encompassing theoretical framework. The assimilators make model and then judge them. Their interest is mainly in the beauty and completeness of the models themselves. These people try to fit the summarized information in model that they already know.

The assimilators are good in understanding a large amount of data as well as variety of data. They focus more on ideas and less on people. They are good in putting a large amount of data into concise and logical order. They prefer theory's logical soundness than practical value. Such people are effective in information and science careers. In formal learning situations assimilators prefer reading, lectures, exploring analytical models, and having time to think things through. This type of learners

ISSN 2054-6351 (print), ISSN 2054-636X (online)

prefers to have information in an organized and logical fashion. Such type of learners likes to have opportunities for reflection. They like such type of instructors, which are expert in their field. These learners reflect on abstract concepts and convert the information into logical form, using inductive reasoning to achieve theory building (Holley & Jenkins, 1993). These learners are more concise and logical than divergent learners. There strength is reflection. They are good to think that why a particular thing has happened and what can be its further implication. They are inductive in terms of moving from specific to general in a well manner.

They can reflect very well on abstract concepts and transform the information into logical form. They build their own theories while using their power of inductive reasoning. Their emphasis is not on the practical value of the theories but logical soundness and logical beauty. (Felder, 1996).

Convergent style

Abstract conceptualization and active experimentation are the dominant abilities of convergers. A characteristic question of this type of learning type is "***How"***. Convergers combine theory and practice for achieving practical and achievable solutions. They use selective attention, problem-solving capabilities and progress- oriented decision-making. They adapt and apply models in order to provide new answers and solutions to practical questions. Convergers transform ambiguous tries into a single, defensible approach. This style is suitable where a single correct answer or solution is necessary and possible. These people have concentrated attention. They prefer technical tasks and problems rather than with social issues and interpersonal issues. They are considered to be effective in specialist and technology careers. In formal learning situations they prefer to experiment with ideas, simulations, and laboratory assignments and practical applications. Convergers work well when they have the opportunities to deal with well-defined tasks. This type of learners demand coaching, guided practice and feedback.

The person with convergent learning style focus on theories just to find their practical use, and to solve the problems in light of the sound theories.. These learners work well with well defined, well structured tasks. Their learning is through trial and error. They like to work in such environment that is safe and sound (Felder, 1996). Converges use theory to solve the problems. For convergers any situation that demands the free use of theories is more appreciated than the situations where they have to use the already decided solutions.

Convergers excel in finding practical uses for theories (Kolb, 1985). They favor problem-based learning, wherein the instructor assigns open-ended questions and allows the students to discover things on their own (Felder & Brent, 2005).

Accommodative style

The Accommodators want to know what will happen if they do this (Felder, 1996). Concrete experience and active experimentation are dominant abilities of accommodators. A characteristic question of this type is "***What if"***. They try things out and seeking out new experiences. They use adaptability, commitments, and entrepreneurships. These people adapt and react to changing circumstances. Such types of people are suited for situations where immediate progress is required. They believe on trial-and- error approach. Their interest is directed towards action and new experiences. They prefer "gut" feelings rather than logical analysis. They primarily learn from "hands-

ISSN 2054-6351 (print), ISSN 2054-636X (online)

on experiences. They rely on people in order to get information rather than on technical analysis for solving the problems. They like applying course material in new situations to solve those problems that are real. For such type of learners it is better that the instructor provides maximum opportunities to the learners that they discover things for themselves. The teacher should provide them the chances that they utilize whatever they have learnt. These types of learners like the situations where they are having the maximum freedom to apply the knowledge.

Jarvis (1998) also supports the point of view of Kolb. As he also believes on the pivotal role of experience in learning he believes that it is prerequisite for learning. Without experience no learning can occur it works as stimulator for learning. He also supports the point of view of Kolb again as he says that it is the process of constructing the knowledge by the learner himself. Learning is not what is imposed by the teacher or the system on the learner; it is the process of creating or constructing experience in the light of personal experiences and personality dimensions. He also supports Kolb in the way that he also encourages the learner to have active contact with his environment and learning that is socially and culturally constructed it is much better than that learning that is ad hocked or adopted from outside of the environment. Learning cannot be free from the influence of socio-economic conditions in which it has occurred. It has a strong influence on learning. It is very much evident from the propositions of experiential learning proposed by Kolb, and tenets of experiential learning proposed by Jarvis are very much similar in their essence. Both believe that experiential learning is not like traditional learning imposed by teacher on student, or it is not that type of learning which is totally out of control to learner. It is a learning that is totally in control of learner. He himself creates the knowledge and has the equal opportunity to modify it in the light of new experiences. It is a process that initiates or stimulates with the personal experiences of the learner. It has its roots in society and culture and socio-economic conditions have strong influence on learning. It is a holistic process that covers every step in it.

RESEARCH METHODOLOGY

The research was carried out to investigate effect of students' learning styles on their grade achievement at Masters' level in Public Sector Universities of Rawalpindi and Islamabad (Pakistan). The following methodology was adopted.

Approach of the Study

The Quantitative approach was employed for this study.

Population

All the students of Social Sciences and Management Sciences studying at master's level that had completed their first and second semester, and were at the time of data collection in third and fourth semester in public sector universities of Rawalpindi and Islamabad (Pakistan) constituted the population of the study. The departments which were considered in Social Sciences were Education, Mass Communication, International Relations, Economics, History, Pakistan Studies, Sociology, Anthropology, Defense and Strategic Studies, Psychology, and Statistics

ISSN 2054-6351 (print), ISSN 2054-636X (online)

Sample
Total sample was eight hundred and twenty. The sample was selected through stratified sampling technique. Firstly the strata were formed on the basis of universities, and then within those universities, all the available departments made the strata for the study. Within those departments the students were selected randomly. Almost one third of the total students of third and fourth semester of each discipline of Social Sciences and management sciences were selected.

Data Collection Instruments
Data were collected by using three instruments.

Demographic sheet.
Data regarding demographic variables like name, gender, University, Program, Mother's academic qualification, father's academic qualification, mother's profession, and family's monthly income was collected through a demographic sheet.

Kolb's learning style inventory.
Kolb's Learning Style Inventory Version 3 was used as one of the major research instruments. This was used with special permission granted by Hay Group after providing the necessary details about research and signing Conditional Use Agreement. This instrument was employed to find out learning styles of students at the Masters' level

Semester results
Third instrument was the cumulative result of first and second semesters of those students who were in third and fourth semesters of Masters' program. The official records of first and second semesters' results of those students' were obtained who were selected as sample. Few universities provided their results in the form of percentages, whereas some provided in the form of Grade Point Average (GPA). As to bring harmony and congruence between the results structure, the Cumulative Grade Point Average (CGPA) was calculated . Four categories of CGPA were kept in the study.

Table 1: Categories of cumulative grade point average (CGPA).

Categories	Cumulative grade point average(CGPA)
1	3.50-4.00
2	3.00-349
3	2.50- 2.99
4	Below 2.50

The results in the form of percentage were translated into grade points averages. After that mean of two semesters GPAs was calculated to get cumulated grade pointy average.

Procedure of Data Collection
Data were collected through visiting universities personally. The respondents were approached in lecture halls formally and where it was not possible they were accessed informally after the lectures. They were asked to fill the questionnaires. The researcher herself in most of the cases informed them about the research topic, its purpose, about the questionnaire, and how it was to be filled out. Along

ISSN 2054-6351 (print), ISSN 2054-636X (online)

with that the instructions were also available on the questionnaire. Data regarding grade achievement was calculated through first and second semesters' results of respondents.

Table 2: Learning styles of students

S.No	Learning Styles	Frequency	Percent
1	Divergent	346	42.2
2	Assimilative	274	33.4
3	Convergent	102	12.4
4	Accommodative	98	12.0
	Total	820	100.0

Majority of the students (42.2 %) had divergent learning style, 33.4% had assimilative learning style, 12.4% had convergent learning style and 12% had accommodative learning style.

Table 3: Distribution of students' cumulative grade point average (CGPA)

S.No	CGPA	Frequency	Percent
1	3.50-4.00	124	15.1
2	3.00-3.49	203	24.8
3	2.50-2.99	194	23.7
4	Below 2.50	299	36.5
	Total	820	100.0

There were15.1 percent those students who were having CGPA 3.50-4.0024.8 Percent were having the CGPA 3.00-3.49. 23.7 percent were having CGPA 2.50-2.99. 36.5% were having CGPA of first two semester's from2.50 or below.

Table 4: Effect of students' Learning styles on their actual grade achievement at Masters' level.

Learning Styles	N	M (SD)	F	P
Divergent	346	2.91 (1.062)	4.839	0.002
Assimilative	274	2.79 (1.101)		
Convergent	102	2.46 (1.132)		
Accommodative	98	2.92 (1.032)		
Total	820			

The mean difference is significant at the .05 level.

The Table shows that F-Value (4.839) regarding the effect of students' learning styles on their actual grade achievement at Masters' level is significant at 0.05 level of significance, Therefore the null

ISSN 2054-6351 (print), ISSN 2054-636X (online)

hypothesis that there is no significant effect of learning styles on grade achievement at Masters' level is rejected and it is concluded that there is a significant impact of students' learning styles on their grade achievement at Masters' level.

DISCUSSION

The majority of the students were found to be divergers. According to Kolb such type of people has concrete experience and reflective observation as their dominant learning abilities. They can see one concrete situation from many points of view. Such type of students collects information from various resources and find comfortable with other people. According to Kolb's studies the students of business major belong to accommodating learning style but in this study they are found to be divergers. The possible reason can be that education system that does not offer varied types of experiences to all the students, and they just remain to experience the things and only reflecting on those experiences. It does not permit the students to go for higher order levels of learning like abstract conceptualization, and active experimentation. Now some private schools have started to base their education systems on experiential learning, where they rely heavily on students past experiences, field works, projects, hand –on –experiences, but they are quite few, and make only a nominal percentage.

IMPLICATIONS TO RESEARCH AND PRACTICE

There are following implication

- The students may try to find out their preferred learning style.
- They may critically analyse their different professions and then get admission in those programs of study which match with their learning styles.
- The teachers may be trained to teach students with different learning styles.
- The may introduce variety of elements to the learners, like music, visuals, movement, experience, and logic.
- The management of the universities and colleges should arrange seminars and conferences in order to give awareness about the importance of learning styles and the differences they made in the academic achievement of the learners.
- The management should arrange the workshops in order to train their teachers in the use of different teaching strategies.
- The management should invest serious efforts in order to provide facilities to every department according to their preferred learning styles.

CONCLUSION

A significant mean difference was found between students' learning styles and their actual grade achievement at Masters level. The Divergent learners performed best in terms of grade achievement. Then assimilating learners performed better than Accommodative learners. It was also found out that convergent learners benefited less in terms of grades.

ISSN 2054-6351 (print), ISSN 2054-636X (online)

FUTURE RESEARCH

There are the following recommendations for the researchers who want to do research studies in the area of learning styles:

- The research should be carried out to investigate the relationship of teaching styles and the learning styles of the students.
- The teachers' teaching styles, the students learning styles and the effects of those on the academic achievement of the learners should be investigated as well.
- The relationship of personality of students with their learning styles should also be investigated.
- The experimental study should be conducted while employing strategies according to the learning styles of students. Before introducing any strategies a learning style test should be conducted, after knowing the learning styles the teacher should try to teach one group according to those strategies which match with the learning styles of the students and one group with the traditional methods. After a certain time period the academic achievement of both groups be checked and brought the difference in it, if any.
- The studies should be conducted in natural sciences as well in order to find the learning styles of those learners.
- The comparative studies should be conducted between the Social Sciences and Natural Sciences.
- The studies should be conducted at the national level on learning styles.

REFERENCES

Bennet, C. I. (1990) Comprehensive Multicultural education Theory and Practice. 2nd ed, Boston: Allyn and Bacon

Dunn, B., and Griggs, S.A. (2000) Practical Approaches to Using Learning Styles in Higher Education, Westport: Bergin and Garvey.

Felder, R.M (1996) Matters of style, http://www.ncsu.edu/felder.public papers/Prism.htm

Gordon, H.R.D. (1998) Identifying Learning Style, Paper presented at the annual Summer Workshop for Beginning Vocational Education Teachers, West Virginia University Institute of Technology, July 20, 1998.

Holley, J. H., & Jenkins, E. K. (1993) The relationship between learning style and performance on various test question format,. Journal of Education for Business, 68, 301-308.

Jarvis,P., Holford,J., and Griffin, C., (1998) The Theory and practice of learning, London: Kogan Page Publishers.

Kolb, D (1981) Learning Styles and Disciplinary differences, California: Jossey- Bass, Inc., Publishers.

Kolb, D. A. (1984) Experiential Learning: Experience as a source of learning and development, Englewood Cliffs, NJ: Prentice Hall

Kolb, D. A. (1985) Learning style inventory. Self -scoring inventory and interpretation booklet, Boston: McBer

Yamazaki, Y. (2002) Learning Styles and Typologies of cultural differences: A Theoretical and empirical

Comparison. Working Paper 02-1, Cleveland: Case Western Reserve University

ISSN 2054-6351 (print), ISSN 2054-636X (online)

Yamazaki, Y. (2003) An Experimental Approach to Cross-Cultural Adaptation: A Study of Japanese Expatriates' Learning Styles, Learning Skills, and Job Satisfaction in the United States, Cleveland: Case Western Reserve University.

ISSN 2054-6351 (print), ISSN 2054-636X (online)