

## A Study on Learning Styles, Gender and Academic Performance of Post Graduate Management Students in India

Ariz Naqvi\* and Farah Naqvi

American University of the Middle East, Egaila, Al Ahmedi, Kuwait

### Abstract

The management courses in higher education has experienced a rapid increase in the number of female students in the past decade. A number of factors were found attributing to the cause including some major social and educational factors. These factors are well studied by the scholars in the past. However, there is still considerable gap in the literature pertaining to the relationship between learning styles and gender differences in the context of management education. This paper focuses on management education using Experiential Learning Theory (ELT) and explores the effects of learning styles and gender on the performance scores of undergraduate students in three successive academic years. Results of the study indicate that the distribution of learning style type preference of the chosen sample of students was more concentrated towards assimilating and converging styles. Further results also indicate non-significant difference of learning style and gender in all groups. The performance scores of males were found higher in Finance and Marketing disciplines, whereas scores of females were higher in Human Resource and International Business disciplines irrespective of non consistency in all the groups. The study concludes that instructors should use a learning strategy matching with the style of each learner in different majors of management opted by the students.

**Keywords:** Learning styles; Kolb; Experiential learning theory; Gender; Management education

### Introduction

The term “learning styles” is being used in educational literature since 1970s. It has been used synonymously with cognitive style and thinking style. According to Curry [1,2], till now, 21 models of learning styles have been researched in educational literature. From a generic standpoint, learning style is defined in Oxford American College Dictionary as, “A way of behaving or approaching a situation that is characteristic of or favored by a particular person.” From a psychological standpoint, learning style involves more complexity, especially in the context of formal education. Therefore, a common consensus on the definition of learning styles among the scholars has never been achieved. As per ELT, learning style of a person can be defined in terms of preferred methods used by an individual for perceiving and transforming his/her learning experiences [3-5]. The person’s internal goals and specific needs shape an his/her approach towards learning, resulting in a dominant learning style. The alignment between dominant learning styles of students and teaching styles of instructor has strong implications for success in academic disciplines. The cohesion and compatibility between course major and learning styles is, infact, one of the most important factors to consider when deciding on an academic major [6].

Many studies have been conducted in different disciplines using ELT as a framework. In academic literature the most published research on learning styles is on education discipline, followed by business management and computer science engineering. The focus of educational research on learning styles emphasized on matching student learning styles with curriculum and teaching styles of instructors. However, as mentioned before, little research investigates the effects of learning styles and gender on the performance scores at different streams of courses in management education.

### Literature Review

#### Kolb’s learning theory

The work by Dewey, Lewin and Piaget have a strong influence

on Kolb’s experiential learning theory (ELT) and learning styles inventory (LST). Kolb’s experiential learning theory emphasizes on the role of experience in individual’s learning process. Kolb [7] explains experiential learning theory as a combination of perception, cognition and behavior which provides a holistic and integrative perspective on person’s approach to learning. To explain the same Kolb further proposed a model, which includes four-stage cycle:

- Concrete Experience (CE)
- Reflective Observation (RO)
- Abstract Conceptualization (AC)
- Active Experimentation (AE)

Kolb (1984) further stated that the learning style of the students must comprise different abilities. To enhance the effectiveness of learning styles the learners should be able to combine at least two abilities to form their learning styles. Kolb (1976) presented four types of learning styles’ combining two or more abilities under each styles:

- Diverging Styles (CE/RO)
- Assimilating (AC/RO)
- Converging (AC/AE)
- Accommodating (CE/AE)

**\*Corresponding author:** Ariz Naqvi, American University of the Middle East, Egaila, Al Ahmedi, Kuwait, Tel: +96597952687; E-mail: [ariz.naqvi@aum.edu.kw](mailto:ariz.naqvi@aum.edu.kw); [ariz.naqvi@yahoo.com](mailto:ariz.naqvi@yahoo.com)

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Diverging learning Style - combines feeling and watching (CE/RO), learners in this category are sensitive, and they prefer to watch rather than do, the gather information and use imagination to solve problems. Kolb refers to this style as diverging because these learners have their strength in situations that require ideas-generation, brainstorming imagination and so on. They tend to be strong in the arts and they are good listeners.

Assimilating learning style - (AC/RO) combines the ability to watch and think. Learners in this category prefer concise and logical approach to instruction. Honey and Mumford as cited by O' Neill [8] categorize learners with assimilating learning style as theorist. The learners with such style needs clear explanation of the concepts to be able to generate learning out of it. Such kind of learners are found more inclined towards ideas and abstract concepts. They excel at organizing wideranging information and interpreting it in a clear and logical format.

Converging learning style (AC/AE) - combines learners abilities to think and act. Learners in this category are more skilled in solving problems. Such learners are found generating learning by finding solutions to practical problems. They excel at technical tasks and like to experiment with new ideas, and its implementation with practical applications.

Accommodating learning style (CE and AE) - integrates learner's abilities to act and feel. Learners in this category depends more on intuition than logic. They take a practical and experiential approach while using other people's analysis. These people are attracted to new challenges and use their own experiences to carry out plans. People with such learning styles found giving preference to others as a source of information than carry out analysis by themselves.

### **Relationship between learning style, gender and academic performance**

Since past decade the research on ELT is concentrated on the concept of learning style and using Learning Style Inventory (LSI) to examine the preferred learning styles of the individuals. However, some of the researches also aimed at investigating the relationship between gender and learning style. The research concluded that both men and women are different in their approach towards learning and use of learning styles [9,10]. The question which requires further exploration is whether or not traditional education curriculum addresses these differences in learning styles. There are evidences that traditional education curriculum does not support all preferred learning styles. As per Philbin et al. [11], traditional education curriculum supports learning styles of men more than women. However in the contemporary discipline like management education more emphasis is given on application based learning. This shift from traditional classroom education to application based learning has increased the importance of creating a culture that puts emphasis on different learning styles [12]. Most researches suggest that preferred learning styles of both the genders can be distributed equally among the four approaches of learning; however, there are considerable evidences suggesting inequality between male and female scores in the abstract- concrete dimension of learning. Studies suggest that the males score high on the abstract conceptualization whereas females tend to score high in the concrete learning mode of the continuum. Women with a preferred learning styles based on concrete experience usually rely on hands-on experiences to learn, their judgments were found mostly based on intution and feelings, they are people oriented being, and are typically comfortable with handling ambiguity. Women were found excelling

at understanding people, problem identification, brainstorming, imagining, risk taking, getting work done and leading. Conversely, men who rely on abstract conceptualization take an analytic approach to learning, they think rationally and logically, they were found enjoy working with symbols and like formalized structure.

There are also several researches that have investigated the relationship between learning style and academic performance in various disciplines. While few studies indicate a strong relationship between converging learning style and performance scores of the students [13], others explain the difference of learning styles in student performance as the function of the chosen assessment technique. When all courses across the management curriculum are taken, it is possible to propose that all learning styles should be considered in management education. However, when the characteristics of different courses (HR, Marketing, Finance and IB) are considered, different learning styles may have more effectiveness in enhancing learning of the participants. Since it is claimed that management education is interdisciplinary [14-18], all learning styles may be considered as effective in different stages of courses.

The purpose of this study is to increase the instructor's awareness of learning styles for bringing flexibility in teaching and enhance the effectiveness of the learning process between instructor and management students. Drawing on the fundamental theories of Dewey, Lewin, and Piaget, ELT provides a framework for the enhancement of management education through curriculum development and course assessment.

### **Research questions**

Most of the recent studies which are based on the use of Experiential learning styles in management education, investigate the effects of learning styles on the performance of students with a cross sectional view. Also, very few studies attempt to investigate relationship between gender and learning style. Therefore, an attempt was made in this research to answer the following questions:

1. What is the learning style distribution of post graduate management students across two years?
2. Are there any significant differences in the performance scores at different streams (HR, Finance, Marketing and IB) of courses across learning styles and gender?

### **Methods**

#### **Procedure**

Firstly, the objective of the study was to investigate the distribution of four original learning styles of post graduate management students. Also the nine distinct styles [19] were used to analyze the distribution of students. Secondly, it sought to determine if there was any relationship between gender, learning styles and performance scores on different streams (HR, Finance, Marketing, and IB) of the course. Since various streams in post graduate management course involve different learning activities, the performance scores of students with different learning styles might differ in these streams. Gender was selected as a second variable since it is an individual difference that can influence performance scores of management students.

#### **Sample description**

The researchers sought approval from different management institutes at National Capital Region (NCR) in India prior to embarking

on this study. The protocol was reviewed by the management and the approval was given to carry it out further. Post graduate management students in the department of business administration at different institutions located across NCR region in India were the study population. The two groups of samples are chosen for the study. The samples comprised of postgraduate management students in two successive academic years at different management colleges at NCR region. The reason for selecting the first year students was the assumption that management education has not yet influenced their learning styles up to a considerable extent. The assumption is based on the conclusion taken from the longitudinal research by Kolb and Kolb which shows a considerable increase in learning style starting from reflective to active orientation through progression in higher education years. In order to examine the validity of the distribution of students on the Learning Style Type Grid, the study was conducted with two different groups who are the management students of the two successive academic years of same course. The two samples were named as the first group and second group. There were 98 management students in the first group comprises of first year management students and 87 students in the second group of second year management students. The age range was 21 to 26 in all groups. The mean age for the first group was 23.1 (std. dev. 0.15) and for the second group was 23.9 (std. dev. 1.46). In the first group, there were 50 (51.02%) males and 48 (48.97%) females and in the second group, there were 59 (67.81%) males and 28 (32.18%) females.

## Instruments

The third version of the Learning Styles Inventory Test (LSI) designed and standardized by Kolb [20] was used to determine the learning styles of the selected students. At first, the scores on Concrete Experience (CE), Reflective Observation (RO), Abstract Conceptualization (AC) and Active Experimentation (AE) or each participant were determined. At second step each student's CE scores from AC scores and RO scores from AE scores were subtracted to classify learning style of each participant either as 'accommodating', 'diverging', 'assimilating' or 'converging'. In addition, the distribution of the students as per to the Nine-Region Learning Style Type Grid was also determined [21].

The semester academic performance scores (GPA) of the students in the four streams of post graduate management course, viz. HR, Marketing, Finance and IB were analyzed with respect to their learning styles and gender differences within each group. In order to bring homogeneity the performance scores of the students were converted to letter grades with pluses and minuses for performance scores. Passing grades were made range from 'A' to 'D' with 'F' a failing grade. The highest grade is 'A' while the lowest is 'F' and quality-point equivalence was provided to each grade. Total academic performances of a student including grades achieved during that semester on four different streams were determined at the end of each semester by computing the weighted-average. Finally, these four different performance scores were analyzed with respect to gender difference and learning styles.

## Results

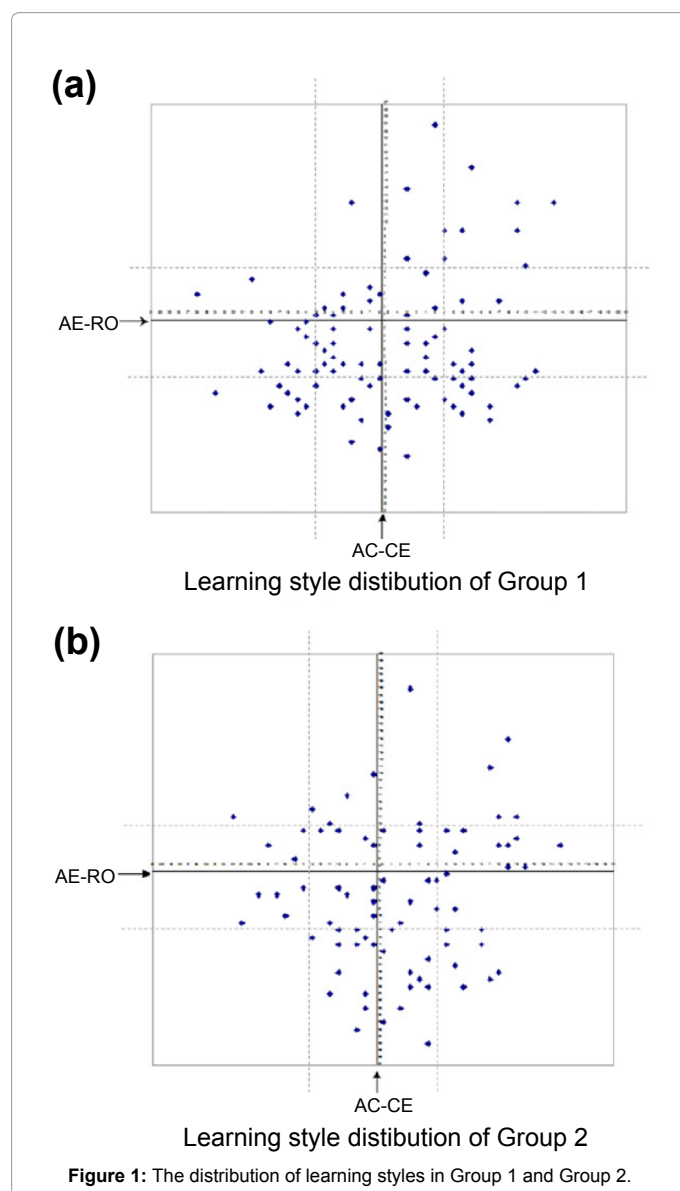
### Learning styles of students

The learning styles distribution of the chosen sample was determined at first step of analysis using the Learning Style Inventory (Table 1). In both the groups of post graduate management students, there was no significant difference found between observed and expected frequency ( $\chi^2=11.68$ ,  $df=4$ ,  $p=0.16$ ) in preferred learning

style of the students. The learning styles distribution in each group is produced in Figure 1. The numbers of accommodating were found lowest irrespective of no significant difference in both groups. In both the groups the majority of learners were falling between assimilating and converging learning styles. While analyzing the distribution of the students as per the nine distinct styles (Table 2), the general flow of the distribution tends towards the balancing learning style for first group (32.09%). The students of this group were found having balancing style ranging between thinking/feeling (AC and CE) and acting/reflecting (AE and RO). The most preferred learning style in the second group

Learning Styles	First Group		Second Group	
	Frequency	Percentage	Frequency	Percentage
Accommodating	10	10.20%	07	8.04%
Diverging	15	15.30%	13	14.94%
Assimilating	34	34.69%	36	41.37%
Converging	39	39.79%	31	35.63%
Total	98	99.98%	87	99.98%

**Table 1:** Analysis of students learning styles using learning style inventory 3.0.



was southerner (28.89%). The focus of southerners was on thinking (AC) while balancing acting (AE) and reflecting (RO). This observation validates the research by Hunt, as these learners do not reflect their feelings in the learning process. The learning styles distributions of post graduate management students on nine distinct styles showed that in both the groups, the learning styles were generally either falling on the vertical axis ranging from AC to CE or on the horizontal axis ranging from AE to RO of the Learning Style Type Grid. This result confirmed the integration of AC and CE and AE and RO of most of the students with balancing learning style. These findings supported the assumption that the management students at postgraduate level are expected to learn through an integration of experiencing, thinking, reflecting and doing in the process of finding solutions to assigned management problems in organizational or personal context.

### Cronbach alpha score of the inventory

The four basic (CE, RO, AC and AE) and two combination items (AC-CE and AE-RO) showed a approximately close internal reliability as measured by Cronbach's alpha (Table 3). The alpha values ranged from 0.56 to 0.76 for group 1 and from 0.61 to 0.76 for group 2. The values found in this study are lower than those of Kolb's study. Nevertheless, the calculated alpha scores were considered as quite satisfactory and within acceptable range in the existing study since the participants had a very constant profile as being post graduate management students, with a small age range, and sample sizes, as Schmitt (1996) argues that alpha values of 0.5 would not attenuate validity coefficient. The low reliability scores in RO, AE and AE-RO scales can be explained by the less number of learners with accommodating and diverging styles in both the groups.

First Stage	First Group	Second Group
Accommodating	0.89	2.72
Diverging	3.12	2.36
Assimilating	15.56	11.73
Converging	7.04	1.45
<b>Second Stage</b>		
North	4.35	11.14
East	5.46	15.08
South	15.31	28.89
West	15.37	6.88
<b>Central</b>		
Balancing	32.09	19.75

**Table 2:** The percentage distribution of participants through nine-region learning styles grid.

	First Group	Second Group
Concrete experience (CE)	0.73	0.72
Reflective observation (RO)	0.56	0.64
Abstract conceptualism (AC)	0.66	0.76
Active experimentation (AE)	0.64	0.61
Abstract-concrete (AC-CE)	0.76	0.71
Active-reflective (AE-RO)	0.53	0.57

**Table 3:** Cronbach's Alpha Score of the scale for Group 1 and Group 2.

	AC-CE/AE-RO	AC-CE/RO	AC-CE/AE	AE-RO/CE	AE-RO/AC	CE/AC	RO/AE	CE/RO	AC/AE	CE/AE	AC/RO
First Group	0.19	-0.07	0.08	-0.11	0.17	-0.44**	-0.43**	-0.32**	-0.15	-0.46**	-0.41**
Second Group	0.11	-0.11	0.04	-0.05	0.07	-0.40**	-0.13	-0.30**	-0.30**	-0.41**	-0.45**

\*Correlation is significant at the 0.05 level (two-tailed).

\*\*Correlation is significant at the 0.01 level (two-tailed).

**Table 4:** Pearson correlations between learning styles and combined scores.

### Pearson correlations of the learning styles dimensions

Since the learning cycle is composed of two bipolar dimensions, the perceiving dimension measured by the combination item AC-CE and the processing dimension measured by the AE-RO combination item, they should be uncorrelated. As seen in Table 4, these items are uncorrelated in the first and second groups. The prediction is that CE and AC items should not correlate with AE-RO and AE and RO items should not correlate with AC-CE. As seen in Table 4, none of them are significantly correlating with each other in both the groups; hence the obtained result is validating the study by Smith and Kolb. The dialectic poles (AC and CE, AE and RO) of both combination items should be negatively correlated in all groups. In the second group, there was no significant negative correlation in AE and RO combination. Finally, the cross-dimensional items (CE/RO, AC/AE, CE/AE, and AC/RO) were not correlated as highly as within dimension items in both the groups.

### Learning styles and gender

In this study, the chi-square tests for both the groups showed that learning styles and gender were independent. The frequencies of learning style preference were not significantly different by gender in both the groups.

### Relationship of performance scores and gender

In the first group, statistically significant mean difference score of 0.35 was observed across gender and the performance scores of students in the Finance and Marketing Courses. The performance score means of males ( $M=1.24$ , std. dev.=1.05) and females ( $M=0.89$ , std. dev.=0.83) showed that males' performance scores were higher than females in the Finance and Marketing Courses.

In the first group, statistically significant mean difference score of 0.88 was observed across gender and the performance scores of students in the HR and IB Courses. The performance score means of males ( $M=1.36$ , std. dev.=1.07) and females ( $M=2.24$ , std. dev.=1.17) showed that female's performance scores were higher than males in the HR and IB Courses.

In the second group, no statistically significant difference was observed between gender and the performance scores of post graduate management students in any of the streams.

In both the groups no statistically significant difference was observed between gender and academic performance (GPA).

### Relationship of performance scores to learning style

In the first group, statistically significant mean difference score of 0.72 was observed across learning styles and performance scores of students in HR, IB, Finance and Marketing streams. The Bonferroni test showed the significant difference in the performance scores of converging and diverging students ( $p=0.04$ ) in a 95% confidence interval of 0.05-1.42 in favor of converging students ( $M_{converging}=2.36$ ,  $M_{diverging}=1.64$ ).

In the second group, statistically significant mean difference

score of 0.38 was observed across learning styles and the performance scores of students in the HR, IB, Finance and Marketing streams. The Bonferroni test showed the performance scores of converging and diverging students differed significantly ( $p=0.002$ ) in a 95% confidence interval of 0.37-1.86 in favor of converging students ( $M_{\text{converging}}=2.27$ ,  $M_{\text{diverging}}=1.89$ ); and the significant difference in performance of accommodating and diverging students ( $p=0.006$ ) at 95% confidence interval of 0.31-2.09 in favor of accommodating students ( $M_{\text{accommodating}}=2.49$ ,  $M_{\text{diverging}}=1.92$ ).

## Discussion and Conclusion

### Distribution of learning style

In the current research the Kolb's Learning Style Inventory test, was used to determine the predominant learning styles among management students. By repeating the study on two different groups who are the postgraduate management students from two successive academic years, it was observed that there was a specific distribution of learning styles for these students. The students were found to be more concentrated in assimilating and converging groups.

As per the scores, neither AC nor CE had a correlation with AE-RO, in the first and second groups (Table 5). This correlation showed that when the concrete experience (CE) score was high, learning activity on the horizontal axis of learning cycle moved towards learning by reflecting (RO) and when concrete experience score was low, the learning activity moved towards learning by doing (AE).

When considering the nine distinct styles, management students in the first group was concentrated in the balancing learning style that integrates thinking/feeling and acting/reflecting (Table 2). Kolb and Kolb have found that learners with balanced learning profiles are more adaptive and flexible learners. Management students in the second group were concentrated in the thinking oriented southern region, which was different than the art students in Kolb and Kolb study who have found that "more art students are in the eastern regions than in the western region". None of the two groups were concentrated either in the eastern or western regions, but they were balancing between acting and reflecting. This supports the proposition that management education is not only an art-oriented education, but is an integration of art and science education. To attain continuous improvements in the quality of learning in management education, departments should conduct systematic reviews of the curriculum to ensure that courses would cater for students with different learning styles.

### Gender and learning style characteristics

Previous studies related to Learning Style Inventory tests concluded that males were more oriented towards abstract conceptualization (AC) than females on the perceiving dimension (AC-CE) and that there

Groups	$\chi^2$ scores	df	P value
Group 1	$\chi^2=5.094$	df=3	$p=0.165$
Group 2	$\chi^2=1.752$	df=3	$p=0.625$

**Table 5:** Chi-square scores of both groups.

Groups	Performance Scores in different streams				Total Aggregate Performance
	HR	Marketing	Finance	IB	
Group 1	F>M	M>F	M>F	F>M	No significant difference Observed
Group 2	No significant difference Observed	No significant difference Observed	No significant difference Observed	No significant difference Observed	No significant difference Observed

**Table 6:** Relationship between Performance scores and gender of Post graduate management students.

were no significant gender differences on the processing dimension (AE-RO). In our study, it is found that learning styles and gender were independent for management students both on the perceiving and processing dimensions. This study provides further empirical support for the findings in study of Smith and Kolb, on processing dimension.

### Performance scores and gender

Results in this study indicate that there is a significant mean difference in performance scores across gender in Marketing, Finance, HR and IB courses. The performance scores of males were higher in Marketing and Finance courses in the first group whereas scores of females in first group were higher in the HR and IB courses as shown in Table 6. Only in the second group, no statistical significant difference was found between gender and performance scores of students in any of the courses or GPA. This can be explained by being mostly southerner learners who do not provide feedback from emotions and they are concentrated in thinking. There is no study in management education literature field to compare the findings of this study.

### Implications of the study

The management education should provide the opportunity to employ different learning styles in design process. The goal of this research is to ensure that the instructors can relate concepts of learning to the specific conditions during the delivery process. Furthermore, it is important to stimulate the diverging students for bringing their range of ideas and ways of problem solving in class. These students although are not successful in performance as converging students, they play an important role in the conceptual understanding of the course material. These students are the most creative ones [22] and the other students can learn from them. Students also can be grouped into teams that made-up members with different learning styles. These teams may work on different company and field projects compared to individual student project. Besides knowing the distinct learning styles may be helpful to the instructor in giving critiques to students to overcome their weaknesses towards learning process. In management education, the courses are usually assessed through standard methods such as coursework, examination, paper and project-based work. The teachers should be encouraged to review their course and syllabi so all students have an opportunity to perform their best and be exposed to all learning styles [23-25]. Increasing the instructor's awareness of learning styles might lead to increase flexibility of teaching styles and enhance the communication between instructors and management students.

### Limitations and future research

The work presented here is subject to several limitations. First, the study is based on only postgraduate management program at institutes and it should be generalized by having data from several other disciplines. Second, it should cover all two years of the course to have a general view of management education. Third, there may be cultural differences that are affecting the learning styles of students; therefore, it must be repeated in different countries.

Further work may be required to examine the change in the

learning styles of the students in the following years and professional life. Furthermore, a country wise comparative analysis may be of interest to the scholars who are working in this field.

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