CHAPTER 4

ANALYSIS OF THE DATA

Introduction

The purpose of this study was to examine the impact of teaching style and learning style match and mismatch on students' achievement as measured by Felder (1988). This study involved a quantitative analysis using descriptive analysis and statistical method to address learning and teaching style preferences, as well as match and mismatch level among the students.

Findings of this study may have an impact on teachers' teaching styles in the classroom setting. The results recommend some beneficial teaching styles to foreign language faculty that might support learning and successful achievement by students in an English major program. Thus, this chapter presents the demographic information of subjects who participated in this study, the data gathered using the Felder and Soloman (2006) inventory and also the final marks of the students who participated in this research. Thereafter, lecturers' experiences with learning styles and their experiences on how to accommodate different learning styles in class are discussed using transcripts of interviews and notes from observations.

A quantitative study design using the statistical method was chosen to test the relationship between learning and teaching style preferences and student achievement in an EFL setting in a foreign language faculty in Iran. Demographic information was obtained from an eleven- item questionnaire adapted from Oxford (1990), answered by the students.

In this chapter, the research reports the preferred learning styles of the 310 EMS participants based on their responses to the Felder and Soloman (2006) learning styles inventory. As the second step, the impact of gender, age, parents' educational background

and years of learning English on learning style preferences was explored. Thereafter, the association between the preferred learning styles of the students and the prevalent teaching styles used in English major courses in Iran is presented. Finally, this research investigates how four EFL lecturers (who participated in this research) accommodate a variety of learning styles in their classes.

Findings related to the instructors' experiences were obtained through interview and observations. These sections were for four case studies in which lecturers shared their experiences and plans. They provided their views on the differences in the classes they have taught with traditional methods compared to the methods with which they tried to address the students' learning preferences.

The independent variables were learning styles and teaching styles and the dependent variables were student achievement correlated with the results of teaching style and learning style match and mismatch. As mentioned earlier, students' achievement was considered as a dependent variable that is measured by final scores at the end of the course, which is a sixteen-week term. The measurement scale for student achievement is based on a 1-20 numeric system. The highest mark is 20, while the lowest is 1. This chapter provides the analysis for the research questions addressed in Chapter 1.

The primary goal of this study is to investigate the impact of the teaching style and learning style preferences match and mismatch on student achievement. The first step to attain this objective is to find out the learners' learning style preferences at the faculty of foreign languages in one of the universities in Tehran based on their responses to the Felder-Soloman (2006) LSI questionnaires.

Learners' Learning Styles Preferences

This section will answer research question 1 that discusses what are the learning style and teaching style preferences among the EMSs learners and lecturers in Iran. It is related to the patterns of the learning style preferences among the students and their lecturers. The results in Table 4.1 to Table 4.8 depict the learners' and teachers' style patterns in a university setting in Iran.

The results of the survey were based on 310 student and 4 teacher participants. In examining the learning style preferences among the EMS learners, the researcher used the mean, mode and frequencies to determine which one of the styles has been used more frequently by students. Using this types of analysis is useful because it gives an overall picture of student performance.

Table 4.1 pictured students' learning style preference distribution according to the Felder and Soloman (2006) model. Table 4.1 shows that 50.6% of the students are active learners while 49.4% of the students are reflective in class, which is slightly lower compared to the active learners. The results showed that the dominant dimension in EFL classes in a university in Iran is active compared to reflective. Table 4.1 displays the frequency and percentages of the LSP1 dimensions.

Table 4.1
Active /Reflective (ACT/REF) Frequencies among the Learners

Learning styles	Frequency	Percent (%)
Active	157	50.6
Reflective	153	49.4
Total	310	100.0

This result was confirmed through the class observation. The majority of the learners (active learners) in the class were willing to try new methods and participate in

group activities and discussions and were willing to explain the concept being discussed to their course mates and friends. However, there were times when active students showed no interest in taking notes or in being involved in any physical activities in the class; the researcher concluded that the activity in question happened to be one of the active learners' dislikes. On the other hand, the reflective learners were reluctant to try new approaches to learning; they were aloof and only willing to be in a group of just two participants. They were not really keen to sit in the class and listen to the lectures, nor were they eager to take notes.

Table 4.2 shows that 76.1% of the students are sensing learners while 23.9% of them are intuitive learners. The results showed the dominant dimension in EFL classes in an Iranian university is sensing dimension, while intuitive learners formed a lower percentage. Table 4.2 displays the frequency and percentages of the LSP2 dimensions.

Table 4.2
Sensing/Intuitive (SEN/INT) Frequencies among the Learners

Learning styles	Frequency	Percent (%)
Sensing	236	76.1
Intuitive	74	23.9
Total	310	100.0

However, this result was aligned with the results that the researcher obtained during the class observation. In class observation the researcher noticed that the majority of the students show their interest when the lecturer was expressing a fact or there was a problem solving situation in which they participated actively. They also show their interest towards memorizing the facts which were stated in the class; therefore, when the lecturer was asking them in the next session about the facts discussed in the last session they willingly volunteered to discuss and explain.

They were a little slow in performing the task given compared to intuitive learners but they were willing to practice what they have learned. On the contrary, there were points which seemed to be disliked by the intuitive learners in the class. For example, they did not like to see the ambiguous, complications or surprises; they were also reluctant to accept explanations that were unrelated to the real world or real life. Another interesting point about these learners was that they did not like it when the lecturers were testing their ability to manipulate symbols quickly and see the patterns. On the other hand, the minority group that were the intuitive learners show their interest to know the unknown things and relationships; they were not bored when asked to participate in any type of innovative activities such as new games or new styles for the group discussion. They were faster in performing the task compared to sensing learners and they show their interest in grasping new ideas.

Table 4.3 shows that 67.7% of the students are visual learners while 32.3 % of them are verbal learners in class. The results showed the dominant dimension in EFL classes in university are visual learners and the verbal learners form a lower percentage compared to visual learners. Table 4.3 displays the frequency and percentages of the LSP3 dimensions.

Table 4.3
Visual/Verbal (VIS/VER) Frequencies among the Learners

Learning styles	Frequency	Percent (%)
Visual	210	67.7
Verbal	100	32.3
Total	310	100.0

This result was aligned with the results the researcher obtained during the class observation. In class observation the researcher noticed that the majority of the students show their interest when the lecturer was expressing the lecture with diagrams, flowcharts, time lines, multimedia content or in other words using different ways of demonstration. But, on the other hand, they dislike to deal with content which is without any visual components. On the contrary, verbal learners are very comfortable with the class environment which is mostly based on the verbal type of teaching styles. In contrast to visual learners, the verbal learners prefer the presentation or teaching styles which are based on spoken and written explanation compared to visual presentation.

Table 4.4 shows that 48.4 % of the students are sequential learners while 51.6 % of the students are global learners in class. The results showed the dominant dimension in EFL classes in an Iranian university are global learners and the sequential learners comprise a lower percentage compared to global. Table 4.4 displays the frequency and percentages of the LSP4 dimensions.

Table 4.4
Sequential/Global (SEQ/GLO) Frequencies among the Learners

Learning styles	Frequency	Percent (%)
Sequential	150	48.4
Global	160	51.6
Total	310	100.0

Above result was supported by the results obtained through class observation. In class observation the researcher noticed that the majority of the students show their interest in the outline that the lecturer prepared and they were willing to study that concept deeply so when the lecturer was explaining the lesson they were able to grasp the gist of the topic. They were trying to relate the new material with what they have

learned before and trying to find the link. This was observed when in one of the sessions the lecturer was explaining the new topic, one of the students asked her whether it is possible to rationalize that this part is the subcategory of what we have discussed last week. If we want to relate this to the last week's topic "can we just look at the social aspects and categorize it under that aspects". On the contrary, the sequential learners were eager to ask questions to fill in the knowledge gap and they also look at the course outline in a logical order.

Teachers' Learning Styles Preferences

Table 4.5 shows that 3 of the lecturers show active preference while the other 1 has reflective preference. The results showed the dominant dimension among the EFL lecturers in university is active dimension in LSP1. Table 4.5 displays the frequency and percentages of the LSP1 dimensions.

Table 4.5
Active/Reflective (ACT/REF) Frequencies among the Lecturers

Learning styles	Frequency
Active	3
Reflective	1
Total	4

Table 4.6 shows that 3 of the lecturers are sensing preferred while the other 1 is intuitive preferred. The results showed the dominant dimension among the EFL lecturers in university is intuitive dimension. Table 4.6 displays the frequency and percentages of the LSP2 dimensions.

Table 4.6
Sensing/Intuitive (SEN/INT) Frequencies among the Lecturers

Learning styles	Frequency
Sensing	3
Intuitive	1
Total	4

Table 4.7 displays the frequency and percentages of the LSP3 dimensions. Table 4.7 shows that 3 of the lecturers are visual preferred while the other 1 is verbal preferred. The results show that the dominant dimension among the EFL lecturers in university is visual dimension.

Table 4.7
Visual/ Verbal (VIS/VER) Frequencies among the Lecturers

Learning styles	Frequency
Visual	3
Verbal	1
Total	4

Table 4.8 shows that 2 of the lecturers are sequential preferred while the other 2 are global preferred. The results show that the dominant dimension among the EFL lecturers in university is equal between the two dimensions (Global/ Sequential). Table 4.8 displays the frequency and percentages of the LSP4 dimensions.

Table 4.8
Sequential/Global (SEQ/GLO) Frequencies among the Lecturers

Learning styles	Frequency
Sequential	2
Global	2
Total	4

Investigating the Impact of the Age, Gender, Years Learning English and Parents' Educational Background on Learning Styles Preferences

This section will answer research question 2 that is on how personal factors, namely age, gender, number of years studying English and parental educational background relate to learning style preferences for EMSs learners in a university classroom setting in Iran. It focuses on the impact of age, gender, years learning English and parental educational background on learning styles preferences. The results in Table 4.9 to 4.24 depict the impact of the named factors on learning style preferences.

Gender and Active /Reflective Dimension

A chi-squared test was conducted to explore any significant association between gender and Active/Reflective learning styles preferences. Table 4.9 displays the result of the chi square test between LSP1 and Gender.

Table 4.9
Chi-Squared Test of Difference between Males and Females across Active/Reflective

LSP1	Gender			
	Female		Male	
	N	%	N	%
Active	79	50.0	78	51.3
Reflective	79	50.0	74	48.7
Chi-Squared Test	Value	df	Sig. (2-sided)	
Pearson Chi-Squared	.53	1	.47	

The result of Chi-Squared test of independence in Table 4.9 indicates that no significant difference [χ^2 (1, N=310) = .53, p = .47] exists between males and females

on the Active/Reflective (LSP1) dimension. The result shows that there was no significant relationship between gender and LSP1. The data in Table 4.9 clearly indicate that the percentages for the active and reflective learning styles across gender are only slightly different (Active style: male: 50.0%, female: 51.3%; Reflective: male: 50.0%, female: 48.7%).

Gender and Sensing/Intuitive Dimension

A chi-squared test was conducted to explore any significant association between gender and Sensing/Intuitive learning style preferences. Table 4.10 displays the result of the chi-squared test between the LSP2 and Gender.

Table 4.10
Chi-Squared Test of Difference between Males and Females across Sensing/Intuitive

LSP2	Gender			
	Female		Male	
	N	%	N	%
Sensing	120	75.9	116	76.3
Intuitive	38	24.1	36	23.7
Chi-squared Test	Value	df	Sig. (2-sided)	
Pearson Chi-Squared	.711	2	.70	

The result of chi-squared test of independence in Table 4.10 indicates no significant difference [χ^2 (2, N = 310) = .711, p = .701] between males and females on the Sensing/Intuitive (LSP2) dimension. The result shows that there was no significant relationship between gender and LSP2. The data in Table 4.10 clearly indicate that the percentages for the sensing and intuitive learning styles across gender are different (Sensing style: male: 76.3%, female: 75.9%; Intuitive: male: 23.7%, female: 24.1%).

Gender and Visual/ Verbal Dimension

A chi-squared test was conducted to explore any significant association between gender and Visual/Verbal learning style preferences. Table 4.11 displays the result of the chi-square test between the LSP3 and Gender.

Table 4.11
Chi-Squared Test of Difference between Males and Females across Visual/Verbal

LSP3	Gender			
	Female		Male	
	N	%	N	%
Visual	105	66.5	105	48.4
Verbal	53	33.5	47	30.9
Chi-Squared Test	Value	df	Sig. (2-sided)	
Pearson Chi-Squared	1.685[a]	2	.43	

The result of chi-squared test of independence in Table 4.11 indicates that no significant difference [χ^2 (2, N = 310) = 1.685, p = .43] is found between males and females on Visual/Verbal (LSP3) dimensions. The result shows that there was no significant relationship between gender and LSP3. The data in Table 4.11 clearly indicate that the percentages for the visual and verbal learning styles across gender are different (visual style: male: 48.4%, female: 66.5%; verbal: male: 30.9%, female: 33.5%).

Gender and Sequential/Global Dimension

A chi-squared test was conducted to explore any significant association between gender and Sequential/Global learning styles preferences. Table 4.12 displays the result of the chi-squared test between the LSP4 and Gender.

Table 4.12
Chi-Squared Test of Difference between Males and Females across Sequential/Global

LSP4	Gender			
	Female		Male	
	N	%	N	%
Sequential	76	48.1	74	48.4
Global	82	51.9	78	51.6

Chi-Squared Test	Value	df	Sig. (2-sided)
Pearson Chi-Squared	2.641[a]	2	.27

The result of chi-squared test of independence in Table 4.12 indicates that no significant difference [χ^2 (2, N = 310) = 2.641, p = .27] can be found between males and females on Sequential/Global (LSP4) dimensions. The result shows that there was no significant relationship between gender and LSP4. The data in table 4.12 clearly indicate that the percentages for the Sequential and Global learning styles across gender are not different (sequential style: male: 48.4%, female: 48.1%; Global: male: 51.6%, female: 51.9%).

Age and Active /Reflective Dimension

A chi-squared test was conducted to explore any significant association between age and Active /Reflective learning styles preferences. Table 4.13 displays the result of the chi-squared test between the LSP1 and age.

Table 4.13
Chi-Squared Test of Difference between Group1 and Group 2 across Active/Reflective

LSP1	Age			
	1		2	
	N	%	N	%
Active	88	56.1	69	43.9
Reflective	92	60.1	61	39.9

Chi-Squared Test	Value	df	Sig. (2-sided)
Pearson Chi-Squared	.53	1	.47

The result of chi-squared test of independence in Table 4.13 indicates no significant difference [χ^2 (1, N = 310) = .53, p = .47] between group 1 and group 2 on Active/Reflective (LSP1) dimensions. The result shows that there was no significant relationship between age and LSP1. The data in Table 4.13 clearly indicate that the percentages for the Active and Reflective learning styles across Age are different (Active style: group1: 56.1% and group 2: 43.9%; Reflective: group 1: 60.1%, group 2:39.9%).

Age and Sensing/Intuitive Dimension

A chi-squared test was conducted to explore any significant association between age and Sensing /Intuitive learning style preferences. Table 4.14 displays the result of the chi-squared test between LSP2 and age.

Table 4.14
Chi-Squared Test of Difference between Group 1 and Group 2 across Sensing/Intuitive

LSP2	Age			
	1		2	
	N	%	N	%
Sensing	130	55.1	106	44.9
Intuitive	50	67.6	24	32.4
Chi-Squared Test	Value	df	Sig. (2-sided)	
Pearson Chi-Squared	3.605	1	.058	

The results of chi-squared test of independence in Table 4.14 indicates that there is no significant difference [χ^2 (1, N = 310) = 3.605, p = .058] exists between group 1 and group 2 on Sensing/Intuitive (LSP2) dimensions. The result shows that there was no significant relationship between age and LSP2. The data in Table 4.14 clearly indicate that the percentages for the Sensing/Intuitive learning styles across Age are different (sensing: group 1: 55.1%, group 2: 44.9%; intuitive: group1: 67.6%, group2: 32.4%).

Age and Visual/Verbal Dimension

A Chi-Squared test was conducted to explore any significant association between age and Visual/Verbal learning styles preferences. Table 4.15 displays the result of the chi-squared test between LSP3 and age.

Table 4.15
Chi-Squared Test of Difference between Group 1 and Group 2 across Visual /Verbal

LSP3	Age			
	1		2	
	N	%	N	%
Visual	121	57.6	89	42.4
Verbal	59	59.0	41	41.0

Chi-Squared Test	Value	df	Sig. (2-sided)
Pearson Chi-Squared	.053	1	.81

The result of chi-squared test of independence in Table 4.15 indicates that no significant difference [χ^2 (1, N = 310) = .053, p = .81] exists between group1 and group 2 on Visual/Verbal (LSP3). The result shows that there was no significant relationship between age and LSP3. The data in Table 4.15 clearly indicate that the percentages for the Visual/Verbal learning styles across Age are different (Visual: group 1: 57.6%; group2: 42.4%; Verbal: group1: 59.0%; group2 41.0%).

Age and Sequential /Global Dimension

A chi-squared test was conducted to explore any significant association between age and Sequential /Global learning styles preferences. Table 4.16 displays the result of the chi-squared test between LSP4 and age.

Table 4.16
Chi-Squared Test of Difference between Age Group1 and Age Group 2 across Sequential/ Global

LSP4	Age			
	1		2	
	N	%	N	%
Sequential	90	60.0	60	40.0
Global	90	56.3	70	43.8

Chi-Squared Test	Value	df	Sig. (2-sided)
Pearson Chi-Squared	.447[a]	1	.50

The result of chi-squared test of independence in Table 4.16 indicates that no significant difference [χ^2 (1, N = 310) = .447, p = .50] was found between group 1 and group 2 on Sequential /Global (LSP4) dimensions. The result shows that there was no significant relationship between age and LSP4. The data in Table 4.16 clearly indicate that the percentages for the Sequential /Global learning styles across Age are different (Sequential: group1: 60.0%; group 2: 40.0%; Global: group1: 56.3%; group1:43.8%)

Years of Learning English and Active/Reflective Dimension

A chi-squared test was conducted to explore any significant association between years of learning English and Active/Reflective learning styles preferences. Table 4.17 displays the result of the chi-square test between the LSP1 and years of learning English.

Table 4.17
Chi-Squared Test of Difference between Groups with Different English Language Experience across Active/Reflective

LSP1	Years of learning English					
	Group1		Group2		Group3	
	N	%	N	%	N	%
Active	68	43.6	62	39.7	26	16.7
Reflective	64	41.8	68	44.4	21	13.7

Chi-Squared Test	Value	df	Sig.(2-sided)
Pearson Chi-Squared	.901	2	.64

The result of chi-squared test of independence in Table 4.17 indicates that no significant difference [χ^2 (2, N = 310) = .901, p = .64] was found between groups with different English language experience on Active/Reflective (LSP1).The result shows that there was no significant relationship between years of learning English and LSP1. The data in Table 4.17 clearly indicate that the percentages for the Active/Reflective learning styles across groups with different English language experience are different (Active: group1: 43.6%, group2: 39.7%, group 3: 16.7; Reflective: group1: 41.8%, group2: 44.4%, group3:13.7%).

Years of Learning English and Sensing/Intuitive Dimension

A chi-squared test was conducted to explore any significant association between years of learning English and Sensing/Intuitive learning styles preferences. Table 4.18 display the result of the chi-squared test between the LSP2 and English learning background.

Table 4.18
Chi-Squared Test of Difference between Groups with Different English Language Experience across Sensing/Intuitive

LSP2	Years of learning English					
	Group1		Group2		Group3	
	N	%	N	%	N	%
Sensing	103	43.8	104	44.3	28	11.9
Intuitive	29	39.2	26	35.1	19	25.7

Chi-Squared Test	Value	df	Sig.(2-sided)
Pearson Chi-Squared	.8.40[a]	2	.015

The result of Chi-Squared test of independence in Table 4.18 indicates that a significant difference [χ^2 (2, N = 310) = 8.40, p = .015] exists between groups with different English language experience on Sensing/Intuitive (LSP2). The result shows that there was significant relationship between years learning English and LSP2. The data in Table 4.18 clearly indicate that the percentages for the Sensing/Intuitive learning styles across groups with different English language experience are different (sensing: group1: 43.8%, group2: 44.3%, group 3: 11.9%; intuitive: group1: 39.2%, group2: 35.1%, group3: 25.7%).

Years of Learning English and Visual/ Verbal dimension

A chi-squared test was conducted to explore any significant association between years of learning English and Visual / Verbal learning style preferences. Table 4.19 displays the result of the chi-square test between the LSP3 and English learning background.

Table 4.19
Chi-Squared Test of Difference between Groups with Different English Language Experience across Visual/ Verbal

LSP3	Years of learning English					
	Group1		Group2		Group3	
	N	%	N	%	N	%
Visual	93	44.5	89	42.6	27	12.9
Verbal	39	39.0	41	41.0	20	20.0

Chi-Squared Test	Value	df	Sig.(2-sided)
Pearson Chi-Squared	2.75	2	.025

The result of chi-squared test of independence in Table 4.19 indicates that a significant difference [χ^2 (2, N = 310) = 2.75, p = .025] exists between groups with different English language experience on Visual/ Verbal (LSP3) dimensions. The result shows that there was significant relationship between years of learning English and LSP3. The data in Table 4.19 clearly indicate that the percentages for the Visual/ Verbal learning styles across groups with different English language experience are different (Visual: group1: 44.5%, group2: 42.6%, group 3: 12.9%; Verbal: group1: 39.0%, group2: 41.0%, group3: 20.0%).

Years of Learning English and Sequential/ Global Dimension

A chi-squared test was conducted to explore any significant association between years learning English and Sequential/ Global learning styles preferences. Tables 4.20 display the result of the chi-squared test between the LSP4 and English learning background.

Table 4.20
Chi-Squared Test of Difference between Groups with Different English Language Experience across Sequential/ Global

LSP4	Years of learning English					
	Group1		Group2		Group3	
	N	%	N	%	N	%
Sequential	65	43.3	64	42.7	21	14.0
Global	67	42.1	66	41.5	26	16.4

Chi-Squared Test	Value	df	Sig.(2-sided)
Pearson Chi-Squared	.331[a]	2	.85

The result of Chi-Squared test of independent in Table 4.20 indicates that no significant difference [χ^2 (2, N = 310) = .331, p = .85] exists between groups with different English language experience on Sequential/ Global (LSP4) dimensions. The result shows that there was no significant relationship between years learning English and LSP4. The data in Table 4.20 clearly indicate that the percentages for the

Sequential/ Global learning styles across groups with different English language experience are different (sequential: group1: 43.3%, group2: 42.7%, group 3: 14.0%; Global: group1: 42.1%, group2: 41.5%, group3: 16.4%).

Parental Educational Background and Active/Reflective dimension

A chi-squared test was conducted to explore any significant association between parental educational background and Active/Reflective learning style preferences. Table 4.21 displays the result of the Chi-Squared test between the LSP1 and family educational background.

Table 4.21
Chi-Squared Test of Difference between Groups with Different Family Educational Background across Active/Reflective

LSP1	Parents' Educational background			
	1		2	
	N	%	N	%
Active	76	48.4	81	51.6
Reflective	71	46.4	82	53.6

Chi-Squared Test	Value	df	Sig. (2-sided)
Pearson Chi-Squared	.125	1	.72

The result of chi-squared test of independence in Table 4.21 indicates that no significant difference [χ^2 (1, N = 310) = .125, p = .72] exists between groups with different parental educational background on Active/Reflective (LSP1) dimensions. The result shows that there was no significant relationship between parental educational background and LSP1. The data in Table 4.21 clearly indicate that the percentages for the Active/Reflective learning styles across groups with different Family Educational background are different (Active: group1: 48.4%, group2: 51.6%; Reflective: group1: 46.4%, group2: 53.6%).

Parental Educational Background and Sensing/Intuitive dimension

A chi-squared test was conducted to explore any significant association between parental educational background and Sensing /Intuitive learning styles preferences. Table 4.22 displays the result of the chi-squared test between the LSP2 and family educational background.

Table 4.22
Chi-Squared Test of Difference between Groups with Different Family Educational Background across Sensing/Intuitive

LSP2	Parents' educational background			
	1		2	
	N	%	N	%
Sensing	102	43.2	134	56.8
Intuitive	45	60.8	29	39.2
Chi-Squared Test	Value	df	Sig. (2-sided)	
Pearson Chi-Squared	6.9 [a]	1	.008	

The result of chi-squared test of independence in Table 4.22 indicates that a significant difference [χ^2 (2, N = 310) = 6.455, p = .09] exists between learners with different parental educational background on the Sensing/Intuitive (LSP2) dimension. The result shows that there was significant relationship between different parental educational background and LSP2. The data in Table 4.22 clearly indicate that the percentages for the Sensing/Intuitive learning styles across different Family Educational background are different (sensing: group 1: 43.2%, group 2: 56.8%; intuitive: group1: 60.8%, group2: 39.2%).

Parental Educational Background and Visual/Verbal Dimension

A chi-squared test was conducted to explore any significant association between parents' educational background and Visual/Verbal learning styles preferences. Table 4.23 displays the result of the chi-squared test between the LSP3 and parents educational background.

Table 4.23
Chi-Squared Test of Difference between Learners with Different Family Educational Background across Visual/Verbal

LSP3	Parents' educational background			
	1		2	
	N	%	N	%
Visual	96	45.7	114	54.3
Verbal	51	51.0	49	49.0

Chi-Squared Test	Value	df	Sig. (2-sided)
Pearson Chi-Squared	.76	1	.38

The result of Chi-Squared test of independence in Table 4.23 indicates that there was no significant difference [χ^2 (1, N = 310) = .76, p = .38] between learners with different parental educational background on Visual/Verbal (LSP3) dimensions. The results show that there was no significant relationship between different parental educational background and LSP3. The data in Table 4.23 clearly indicate that the percentages for the Visual/Verbal learning styles across Age are different (Visual: group 1: 45.7%; group 2: 54.3%; Verbal: group 1: 51.0%; group 2: 49.0%).

Parental Educational Background and Sequential/Global dimension

A chi-squared test was conducted to explore any significant association between Family Educational background and Sequential/Global learning styles preferences. Table 4.24 displays the result of the chi-square test between the LSP4 and family educational background.

Table 4.24
Chi-Squared Test of Difference between Learners with Different Family Educational Background Across Sequential/Global

LSP4	Family Educational background			
	1		2	
	N	%	N	%
Sequential	65	43.3	85	56.7
Global	82	51.3	78	48.8

Chi-Squared Test	Value	df	Sig. (2-sided)
Pearson Chi-Squared	1.95	1	.163

The result of chi-squared test of independence in Table 4.24 indicates that no significant difference [χ^2 (1, N = 310) = 1.95, p = .163] is found between learners with different parental educational background on Sequential/Global (LSP4) dimensions.

The result shows that there was no significant relationship between different parental educational background and LSP4. The data in Table 4.24 clearly indicate that the percentages for the Sequential/Global learning styles across Age are different (Visual group 1: 45.7%; group 2: 54.3%; Verbal group 1: 51.0%; group 2: 49.0%).

Summary

The results indicated that there is no significant relationship between learning style preferences and gender in all four dimensions of the Felder and Soloman learning styles inventory (LSP1: .47, LSP2: .70, LSP3: .43, LSP4: .27) for this sample. The findings also showed that there is no significant relationship between age and learners' learning styles preferences in LSP1: .47, LSP3: .81, LSP4: .50, but on the other hand there is a significant relationship between the LSP2: .058 and Age.

It is also indicated that there is no significant relationship between years learning English and learners' learning styles preferences in LSP1: .64, , LSP4: .85 but on the other hand there is a significant relationship between the LSP2: .015 LSP3 : .025 and years of learning English. The findings showed that there is no significant relationship between parents' educational level and learners learning styles preferences in LSP1: .72, LSP3: .38, LSP4: .163 but on the other hand there is a significant relationship between the LSP2: .008 and parental educational background.

Match and Mismatch of Teaching Styles and Learning Styles and Its Impact on EMSs Learner Achievement

This section will answer research question number 3 that investigates the impact of the match or mismatch of teaching and learning styles impact on the achievement of EMSs learners in a university classroom setting in Iran.

In order to answer research question 3 that discusses the impact of the match and mismatch of teaching and learning styles impact on the achievement of EMSs learners in a university classroom setting in Iran, three steps have been designed:

First step: one way analysis of variance (ANOVA) was conducted to determine the relationship if a relationship exists across all the four learning style pairs.

Second step: comparing the achievement scores between the match and mismatch category for individual LSPs.

Third step: comparing the achievement scores between the match and mismatch category across all LSP dimensions. Following is the description for the steps that have been taken in order to answer research question 3. The results displayed in Table 4.25 to 4.32 represent the steps mentioned above.

Relationship between Matched Teaching-Learning Styles and Achievement (Step 1)

In order to determine if a relationship exists between matched teaching-learning styles with achievement, two statistical tests were carried out. Analyses using *t*-tests were performed to determine if matched individual learning style pairs (LSPs) affected achievement. A one-way analysis of variance (ANOVA) was conducted to determine if a relationship exists across all the four learning style pairs.

Comparison in Achievement Scores between Matched Teaching-Learning Styles with Mismatched Teaching-Learning Styles for Individual LSPs (Step 2)

As mentioned above, *t*-tests were conducted to determine if matched teaching-learning styles affected achievement for individual LSPs. Thus for LSP1, a *t*-test was performed to determine if a relationship exists between a matched active/reflective teaching-learning style with achievement. Similarly *t*-tests were performed for the other LSPs with respect to achievement scores. Results of these steps are displayed in Table 4.25 to table 4.28.

Achievements Scores and Active/Reflective Dimension

The following analysis pictures the *t*-test analyses for the achievement scores and Active/Reflective dimension. Table 4.25 displays the comparison of achievement scores between matched and mismatched groups and LSP1.

Table 4.25
Comparison of Achievement Scores between Matched and Mismatched Teaching-Learning Styles (LSP1)

Learning Style Pair (LSP)	Groups		*t*-value	*p*
	Matched	Mismatched		
LSP1				
Active/Reflective				
Mean	16.87	15.20	5.35	.00*
S.D.	2.15	3.30		
N	173	137		

Note. The level of significance is at $p < .05$.

As can be seen from Table 4.25, for LSP1, the mean for the Matched Group was 16.87 while that for the Mismatched Group was 15.20. Analysis using *t*-tests showed the difference in mean to be significant, $t(308) = 5.35$, $p = .00$. The results indicated that the Matched Group outperformed the Mismatched Group in terms of achievement scores. In other words when a student is an active learner and his or her teacher uses an active teaching style, the student is more likely to do better than if the teacher uses a reflective teaching style. Likewise, if the student is a reflective learner, he or she will perform better if his or her teacher uses a reflective teaching style as opposed to an active teaching style.

Achievements Scores and Sensing/Intuitive Dimension

Table 4.26
Comparison of Achievement Scores between Matched and Mismatched Teaching-Learning Styles (LSP2)

Learning Style Pair (LSP)	Groups		*t*-value	*p*
	Matched	Mismatched		
LSP2				
Sensing/Intuitive				
Mean	16.47	14.98	3.95	.00*
S.D.	2.80	2.70		
N	240	70		

Note. The level of significance is at $p < .05$.

As can be seen from Table 4.26, for LSP2, the mean for the Matched Group was 16.47 while that for the Mismatched Group was 14.98. Analysis using *t*-tests showed the difference in mean to be significant, $t(308) = 3.95$, $p = .00$. The results indicate that the Matched Group outperformed the Mismatched Group in terms of achievement scores.

In other words when a student is a sensing learner and his or her teacher uses a sensing teaching style, the student is more likely to do better than if the teacher uses an intuitive teaching style. Likewise, if the student is an intuitive learner, he or she will perform better if his or her teacher uses an intuitive teaching style as opposed to a sensing teaching style.

Achievement Scores and Visual/Verbal Dimension

Table 4.27
Comparison of Achievement Scores between Matched and Mismatched Teaching-Learning Styles (LSP3)

Learning Style Pair (LSP)	Groups		*t*-value	*p*
	Matched	Mismatched		
LSP3				
Visual/Verbal				
Mean	16.52	15.17	3.88	.00*
S.D.	2.62	3.13		
N	221	89		

Note. The level of significance is at $p < .05$.

As can be seen from Table 4.27, for LSP3, the mean for the Matched Group was 16.52 while that for the Mismatched Group was 15.17. Analysis using *t*-tests showed the difference in mean to be significant, $t(308) = 3.88$, $p = .00$. The results indicate that the Matched Group outperformed the Mismatched Group in terms of achievement scores. In other words when a student is a visual learner and his or her teacher uses a visual teaching style, the student is more likely to do better than if the teacher uses a verbal teaching style. Likewise, if the student is a verbal learner, he or she will perform better if his or her teacher uses a verbal teaching style as opposed to a visual teaching style.

Achievements Scores and Sequential/Global Dimension

Table 4.28
Comparison of Achievement Scores between Matched and Mismatched Teaching-Learning Styles (LSP4)

Learning Style Pair (LSP)	Groups		*t*-value	*p*
	Matched	Mismatched		
LSP4				
Sequential/Global				
Mean	16.77	15.06	5.35	.00*
S.D.	2.40	3.18		
N	194	116		

Note. The level of significance is at $p < .05$.

As can be seen from Table 4.28, for LSP4, the mean for the Matched Group was 16.77 while that for the Mismatched Group was 15.06. Analysis using *t*-tests showed the difference in mean to be significant, $t(308) = 5.35$, $p = .00$. The results indicate that the Matched Group outperformed the Mismatched Group in terms of achievement scores. In other words when a student is a sequential learner and his or her teacher uses a sequential teaching style, the student is more likely to do better than if the teacher uses a global teaching style. Likewise, if the student is a global learner, he or she will perform better if his or her teacher uses a global teaching style as opposed to a sequential teaching style.

Comparison in Achievement Scores Between Matched Teaching-Learning Styles with Mismatched Teaching-Learning Styles Across All LSPs (Step 3)

As mentioned above, a second analysis was performed using one-way ANOVA to determine if a relationship exists between matched teaching-learning styles with achievement across all the four learning style pairs. For that, the learners were categorized into five groups. The recoded variable was called Match. For learners

whose learning styles matched their teachers' teaching styles across all four LSPs, Match = 4, indicating that their learning styles had a perfect match with their teachers' teaching styles across all the four LSPs.

Similarly, if a learner matched his or her teachers' learning style in three of the four LSPs, the learner was categorized into Match group 3, indicating that the learner matched his or her teacher's teaching style in three of the four LSPs. If there existed a complete mismatch between a learner's learning style and his or her teacher's teaching style across all four LSPs, the learner was categorized into Match group 0. Based on the categorization above, there were five groups under the variable Match.

A one-way analysis of variance (ANOVA) was performed to determine if there were significant differences between the groups in their achievement scores. The means and standard deviations of the achievement scores for the five groups are as shown in Table 4.29. Table 4.30 shows the results of the one-way ANOVA. Table 4.31 shows the results of the Tukey HSD post-hoc multiple comparisons. Table 4.32 shows the summary of all the analyses that have been made.

Table 4.29
Means and Standard Deviations of Achievement Scores for the Match Groups

Match Group	Frequency	Mean	Standard Deviation
0	18	13.47	2.69
1	27	14.00	3.06
2	61	14.78	3.35
3	136	16.79	2.16
4	68	17.57	1.97

Table 4.30 displays the results of the one way ANOVA for achievements scores for the match group. The results showed that there is a significant mean difference between groups.

Table 4.30
Results of the One-Way Analysis of Variance on Achievement Scores for the Match Groups

Dependent Variable	Source	Sum of Squares	df	*F*	*p*
Achievement Scores	Between gps	562.04	4	22.22	.00*
	Within gps	1928.41	305		
	Total	2490.45	309		

*significant at $p < .05$

Table 4.31 reports the results of the Tukey HSD post-hoc multiple comparisons. As can be seen, significant differences were found between Match Group 0 with Match Groups 3 and 4, *MD* (Mean Difference) = -3.32, $p = .00$ and *MD* = -4.10, $p = .00$ respectively.

Table 4.31
Tukey Post-Hoc Comparisons on Achievement Scores for the Match Groups

Dependent Variable	(I) GROUP	(J) GROUP	Mean Difference (MD) (I-J)	*p*
Achievement Scores	Match Group 0	Match Group 1	-0.53	.96
		Match Group 2	-1.31	.30
		Match Group 3	-3.32	.00*
		Match Group 4	-4.10	.00*
	Match Group 1	Match Group 2	-0.78	.66
		Match Group 3	-2.79	.00*
		Match Group 4	-3.57	.00*
	Match Group 2	Match Group 3	-2.01	.00*
		Match Group 4	-2.79	.00*
	Match Group 3	Match Group 4	-0.78	.23

*significant at $p < .05$

As can be seen from Table 4.29, the mean achievement scores for Match Groups 0, 1, 2, 3 and 4 are 13.47, 14.00, 14.78, 16.79 and 17.57 respectively. The results of the one-way analysis of variance, as can be seen from Table 4.30, showed a significant difference in the means [$F(4, 305) = 22.22$, $p = .00$]; however the results of Post-hoc multiple comparisons using the Tukey HSD (Table 4.31) tests showed significant

differences between Match Group 0 with Match Groups 3 and 4, *MD* (Mean Difference) = -3.32, $p = .00$ and *MD* = -4.10, $p = .00$ respectively. Significant differences were also recorded for Match Groups 1 and 2 with both Match Groups 3 and 4. However, no significant differences in achievement were found amongst Match Groups 1, 2 and 3 or between Match Groups 3 and 4. The results indicate that Match Groups 3 and 4 outperformed the other Match Groups in achievement scores but their performance did not differ from each other. In short, the results imply that generally if teaching styles are matched to learning styles, achievement of students will be significantly better up to a point. The results in this section are consistent with that in the section above where it was found that when teaching and learning styles are matched for individual LSPs, performance would be much better than if they were not.

Table 4.32

The Findings of the Impact of Teaching Styles and Learning Styles on Learner Achievement

Learners				**Teachers**								
	LS type	N	%		LS type	N	%	Dependent variable	(i) group	(j) group	Mean difference (i-j)	*p*
	Active	157	50.6		Active	3	75.0	**Matching level between the different dimensions and final scores**	Match Group 0	Match Group 1	-0.53	.96
	Reflective	153	49.4		Reflective	1	25.0			Match Group 2	-1.31	.30
										Match Group 3	-3.32	.00*
	Sensing	236	76.1		Sensing	3	75.0			Match Group 4	-4.10	.00*
	Intuitive	74	23.9		Intuitive	1	25.0					
									Match Group 1	Match Group 2	-0.78	.66
										Match Group 3	-2.79	.00*
										Match Group 4	-3.57	.00*
	Visual	210	67.7		Visual	3	75.0					
	Verbal	100	32.3		Verbal	1	25.0		Match Group 2	Match Group 3	-2.01	.00*
										Match Group 4	-2.79	.00*
	Sequential	150	48.4		Sequential	2	50.0		Match Group 3	Match Group 4	-0.78	.23
	Global	160	51.6		Global	2	50.0					

significant at $p < .05$

The Impact of the Independent Variables on Dependent Variable in Relation to Learner Achievement

In order to answer research question 4 on the impact of the independent variables on the dependent variable in relation to learner achievement, the logistics regression analysis is applied to identify the impact of the factors that are predicted to influence the final scores. On the whole, as shown in Table 4.33 the results of the logistics analysis showed that independent variables have an impact on achievement.

Logistic Regression Analysis (LRA) Result as a Whole

In order to examine the impact of the independent variables on dependent variables with respect to learner achievement the logistics regression analysis was used**.**

Dependent variable: Final Exam Score (scale: 1= low achievement, 2=high achievement)

Independent (Factors): Learning experience, parental education background, age, gender.

Tables 4.33 to 4.36 showed the results of the analysis for the logistics regression analysis related to four dimensions of the learning styles.

Table 4.33
Dependent Variable Encoding

Original Value	Internal Value
1.00	0
2.00	1

Table 4.34
Categorical Variables coding of the Logistics Regression Analysis

			Parameter coding	
		Frequency	(1)	(2)
LRNGYRGP	2 years and less	133	1.000	.000
	between 2 -5	130	.000	1.000
	more than 5 years	47	.000	.000
GENDER	FEMALE	157	1.000	
	MALE	153	.000	
AGER	20-30	180	1.000	
	30- above	130	.000	
FLYEDR	diploma and below	147	1.000	
	bachelor and above	163	.000	

Table 4.35
Results of the Logistics Regression Analysis on Achievement Scores

		B	S.E.	Wald	df	Sig.	Exp(B)
Step 0	Constant	.116	.114	1.044	1	.307	1.123

Table 4.36
Variables Not in the Equation of the Logistics Regression Analysis

			Score	df	Sig.
Step 0	Variables	LRNGYRGP	.356	2	.837
		LRNGYRGP(1)	.022	1	.883
		LRNGYRGP(2)	.080	1	.777
		FLYEDR(1)	.259	1	.611
		AGER(1)	.757	1	.384
		GENDER(1)	1.829	1	.176
	Overall Statistics		3.454	5	.630

By using a Forward LR procedure, the findings in Table 4.35 and Table 4.36 displayed that among the four independent variables in the Logistic Equation (Learning experience, Parental Education background, Age, Gender) none of them was included in the Logistic Regression equation, and the result was not significant ($p > .05$) or $p = .307$;

this means the four independent variables are not the factors which have a impact on learner achievement.

Component Analysis: ACT/REF Learning Styles Dimension

In order to examine the impact of the independent variables on dependent variable (Act/Ref) on learner achievement the following logistics regression analysis was used.

Dependent variable: ACT/REF (scale: 1= active, 2=reflective)

Independent (Factors): Learning experience, Parental Education background, Age, Gender.

Tables 4.37 to 4.39 display the results of the analysis for the Logistics Analysis regression related to ACT/REF dimension of the learning styles.

Table 4.37
Dependent Variable Encoding of the LRA

Original Value	Internal Value
ACTIVE	0
REFLECTIVE	1

Table 4.38
Variables in the Equation of Logistics Regression Analysis

		B	S.E.	Wald	df	Sig.	Exp(B)
Step 0	Constant	-.026	.114	.052	1	.820	.975

Table 4.39
Variables Not Available in Equation of the Active/Reflective Logistics Regression Analysis

			Score	df	Sig.
Step 0	Variables	LRNGYRGP	.945	2	.623
		LRNGYRGP(1)	.142	1	.706
		LRNGYRGP(2)	.781	1	.377
		FLYEDR(1)	.125	1	.724
		AGER(1)	.530	1	.467
		GENDER(1)	.628	1	.428
	Overall Statistics		1.954	5	.855

Table 4.38 displayed that no independent variable among variables in the Equation (among the four Learning experience, Family Education background, Age, Gender) was included in the Logistic Regression equation, and the result was not significant ($p > .05$) or $p = .82$); this means that none of the four independent variables influenced the Act/Ref dimension.

Component Analysis: Sensing /Intuitive Dimension

In order to examine the impact of the independent variables on dependent variable (Sen/Int) on learners' achievements the following logistics regression analysis was used.

Dependent variable: Sensing /Intuitive Learning styles

Independent (Factors): Learning experience, Parental Education background, Age, Gender.

Tables 4.40-4.45 indicated the results of the analysis for the Logistics Analysis regression related to Sen /Int dimension of the learning styles

Table 4.40
Dependent Variable Encoding

Original Value	Internal Value
Sensing	0
Intuitive	1

Table 4.41
Categorical Variables coding of the Logistics Regression Analysis

			Parameter coding	
		Frequency	(1)	(2)
LRNGYRGP	2 years and less	133	1.000	.000
	between 2 -5	130	.000	1.000
	more than 5 years	47	.000	.000
GENDER	FEMALE	157	1.000	
	MALE	153	.000	
AGER	20-30	180	1.000	
	30- above	130	.000	
FLYEDR	diploma and below	147	1.000	
	bachelor and above	163	.000	

Table 4.42
Variables in the Equation of Logistics Regression Analysis

		B	S.E.	Wald	df	Sig.	Exp(B)
Step 0	Constant	-1.160	.133	75.775	1	.000	.314

Table 4.43
Omnibus Tests of Model Coefficients Assignments

		Chi-Squared	df	Sig.
Step 1	Step	7.013	1	.008
	Block	7.013	1	.008
	Model	7.013	1	.008
Step 2	Step	8.825	2	.012
	Block	15.838	3	.001
	Model	15.838	3	.001
Step 3	Step	5.731	1	.017
	Block	21.569	4	.000
	Model	21.569	4	.000

Table 4.44
Model Summary

Step	-2 Log likelihood	Cox & Snell R Square	Nagelkerke R Square
1	333.731	.022	.034
2	324.906	.050	.075
3	319.175	.067	.101

Table 4.45
Model if Term Removed

Variable		Model Log Likelihood	Change in -2 Log Likelihood	df	Sig. of the Change
Step 1	FLYEDR	-170.372	7.013	1	.008
Step 2	LRNGYRGP	-166.866	8.825	2	.012
	FLYEDR	-166.511	8.117	1	.004
Step 3	LRNGYRGP	-164.819	10.463	2	.005
	FLYEDR	-164.021	8.867	1	.003
	AGER	-162.453	5.731	1	.017

For these components, the results in Table 4.41, Table 4.42 and Table 4.43 indicated that there are 3 factors that significantly influenced the dependent variables (Sensing/Intuitive) (Wald = 75.76, df = 1, p = .000). Table 4.43 indicated that there are three steps (3 variables) included in the Logistics Equation. Table 4.42 indicated that the results of the Logistics Regression Analysis are significant ($p < .05$). Table 4.43 indicated that 3 variables have been significantly included in the Logistics Regression. The Logistics Regression Analysis model as shown in Table 4.43 indicated that significantly there are 3 factors (3 steps have been included into the equation) of the dependent variables (Act/Ref) that contribute to the variant of the dependent variables significantly ($X^2 = 7.01$, p = .008). Parental education background (FLYEDR) contributes 3.4%, while FLYEDR and previous Language Learning experiences (LRNGYRGP) together contribute 7.5% of the independent variables and as a total the three variables in the regression equation contribute 10.1% to the dependent variable.

This means the main factor FLYER contributes only less than 5% of the variables in the dependent variable and the three variables only contribute 10% of the total.

By using a Forward LR procedure, the data in Table 4.42 indicated that the Logistic Regression was significant ($p <$ .05) or p = .000. The Omnibus Tests of Model Coefficients Table 4.43 indicated that there were 3 variables included in the regression equation (indicated by three steps). The first variable FLYEDR contributed 3.40% (see Nagelkerke R Square value in the Model Summary Table 4.44) of the variation of the dependent variable Sensing/intuitive. The combination of FLYEDR and LRNGYRGP contributed 7.50% of the variation of the dependent variable, while FLYEDR, LRNGYRGP and AGER contributed 10.10% of the variation of the dependent variable. Of the other factors examined (parental educational background, age, years of learning English and gender) only parental educational background, age and years of learning English) were found to significantly impact the use of Sensing/Intuitive learning styles.

It means that FLYEDR, LRNGYRGP and AGER were three factors that influence the choice of the Sensing/Intuitive learning styles dimension. Since three of them only contribute 10% of the variation of the Sensing /Intuitive variable, the 90% of other factors which affect the Sensing/Intuitive preference are most likely other factors which are involved but are not investigated in this study. Factors like the learner's personality (self confidence level, risk taking level, anxiety, individual), setting factors (learning environment, teacher) social context, parents, learner's major, may be influential.

It also can be concluded that, among the main factors, parents' educational background contribute less than 5% of the variables to the dependent variables (Sensing/Intuition), but the combination of the experience in learning English and family background together contribute less than 8% but the combination of the three factors – namely parents' educational background, experience in learning English and age – together contribute only 10 % to dependent variables.

Component Analysis: Visual/Verbal Dimension

In order to examine the impact of the independent variables on dependent variable (Vis/Ver) on learners' achievements the following logistics regression analysis was used**.**

Dependent variable: Visual /Verbal Learning styles

Independent (Factors): Learning experience, Parents' Education background, Age, Gender.

Tables 4.46-4.48 indicated the results of the analysis for the Logistics Analysis regression related to Vis/Ver dimension of the learning styles.

Table 4.46
Dependent Variable Encoding

Original Value	Internal Value
visual	0
verbal	1

Table 4.47
Variables in the Equation of Logistics Regression Analysis

		B	S.E.	Wald	df	Sig.	Exp(B)
Step 0	Constant	-.742	.121	37.290	1	.000	.476

Table 4.48
Variables Not in the Equation of the Logistics Regression Analysis

			Score	df	Sig.
Step 0	Variables	LRNGYRGP	2.835	2	.242
		LRNGYRGP(1)	.918	1	.338
		LRNGYRGP(2)	.053	1	.818
		FLYEDR(1)	.759	1	.384
		AGER(1)	.053	1	.818
		GENDER(1)	1.120	1	.290
	Overall Statistics		5.059	5	.409

Although the Wald value was significant (p = .000) as shown in Table 4.47 no variable was included in the equation. Therefore dependent variables (Visual /Verbal Learning styles) were not dependent on four independent variables (Learning experience, Parents' Education background, Age, Gender).

Component Analysis: Sequential/Global Dimension

In order to examine the impact of the independent variables on dependent variable (Seq /Glo) on learners' achievements the following logistics regression analysis was used.

Dependent variable: Sequential /Global Learning styles

Independent (Factors): Learning experience, Family Education background, Age, Gender.

Tables 4.49-4.52 indicated the results of the analysis for the Logistics Analysis regression related to Seq/Glo dimension of the learning styles.

Table 4.49
Dependent Variable Encoding

Original Value	Internal Value
Sequential	0
Global	1

Table 4.50
Categorical Variables Coding

			Parameter coding	
		Frequency	(1)	(2)
LRNGYRGP	2 years and less	133	1.000	.000
	between 2 -5	130	.000	1.000
	more than 5 years	47	.000	.000
GENDER	FEMALE	157	1.000	
	MALE	153	.000	
AGER	20-30	180	1.000	
	30- above	130	.000	
FLYEDR	diploma and below	147	1.000	
	bachelor and above	163	.000	

Table 4.51
Variables in the Equation

		B	S.E.	Wald	df	Sig.	Exp(B)
Step 0	Constant	.065	.114	.322	1	.570	1.067

Table 4.52
Variables not in the Equation

			Score	df	Sig.
Step 0	Variables	LRNGYRGP	.308	2	.857
		LRNGYRGP(1)	.022	1	.882
		LRNGYRGP(2)	.064	1	.801
		FLYEDR(1)	1.946	1	.163
		AGER(1)	.447	1	.504
		GENDER(1)	1.840	1	.175
	Overall Statistics		4.182	5	.524

Using a forward LR procedure, the data in Table 4.51 and Table 4.52 indicated the variables in the equation and the four independent variables (learning experience, parental education background, age, gender), the results showed none of them was included in the Logistic regression equation and the results was not significant ($p > .05$) or $p=.57$.

Brief Summary

As a whole, achievement is not significantly affected by the independent variables that are Age, Gender, English learning experience and parental educational background. The four components of learning styles ACT/REF, SEN/INT, VIS/VER and GLO/SEQ, are not influenced by any one of the independent variables that are Age, Gender, English learning and parental educational background. The sensing/intuitive dimensions among the learning styles dimensions were found to contribute only 10% of the total value.

Accommodating Learner Preference in the Classroom Environment

In this section, in order to answer the research question 5 which concerns the accommodation of EMSs lecturers toward students' learning styles in a university classroom setting in Iran, the data obtained from observation and interview were analyzed to investigate how the lecturers address and accommodate the student's learning needs in the university classroom in Iran. In this section, firstly, the researcher used some of the background.

Background

After obtaining the findings, one can claim that in order to accommodate the learning style preferences of EMS learners, lecturers would need to use more than the traditional lecture method. The traditional lecture method is considered as the style in which instructors continuously speak on a given topic and stand in front of the students without interacting with them; therefore, it would cater to the verbal learners only. The instructors should add the written notes to what they are saying so that both the visual and verbal may have their learning styles attended to.

In the case of foreign language faculties, however, it was observed that often the typical lecturer using the traditional method was unable to deliver a comprehensible lesson to visual and verbal learners. Through classroom observation, questionnaires and interview, the researcher noticed that both senior and new lecturers used to read and transfer whatever they have learned to the blackboard. These two styles are the most common styles used in the classrooms observed. Only one of the senior lecturers was an exception. She used a combination of all methods to cope with the variety of student learning styles in the class.

Classes that were conducted in this way were reduced even more in the quality of delivery by the fact that reading was unclear, of monotonous pitch, not all the students were able to hear and in cases like this the use of blackboard was not considered a practical solution even for those sitting in the front rows.

Teachers seldom questioned the students, and when they did, the duration of the waiting time for their responses was insufficient; in this situation, there is no chance for the learners to practice critical thinking or synthesizing of the information.

The focus of this study is not to evaluate whether the level of teaching is satisfactory, medium or poor, but to investigate the existence of the match/mismatch between the learners' learning styles and teachers' teaching styles.

It is not the intention of this study to criticize the teaching styles of the teacher participants, because they teach based on the style they were taught; they have never been introduced to any different teaching styles. However, the teachers are aware that their teaching styles could be more effective in promoting student learning, but they have never been exposed to any teaching styles conducted in other ways. Following is a quote from one of the lecturers who participated in this study:

> *I am using more of the chalk and talk approach, but I still interact with my students; however, we don't really encourage a discussion approach, because sometimes it is difficult to control the situation. In fact, I have heard of other teaching styles such as teaching based on students' learning style preferences, but so far I have never thought of using it.*

It is believed that teaching based on learning style preferences is an impossible task due to the variety of styles. However, this idea is not right based on the researcher's observations of some of the young lecturers who successfully tailored their teaching styles that would indeed cover most of the learners' learning styles preferences.

Based on the above findings, teachers are able and should teach in a way that accommodates the learning styles of their students. The following part presents the four mini-case studies on the teachers' experiences of instructors who became alert about their student's learning styles variety which should be addressed during their teaching.

Accommodating to Students Learning Styles? Why Not? Sharing Some Experiences

This research aimed, in part, to help the lecturers at a foreign language faculty become more aware of learning style importance in the EFL context, especially in the classroom setting. As the first step, the researcher looked briefly at the students' learning style patterns and whether students have different preferences considering their age, gender, family educational background and duration of their approach to English language.

In the second step, the researcher tries to identify whether there is a match or mismatch between the learning style of the students and the teaching styles of their lecturers. Finally, based on the finding, there are a) classification of the student's learning styles and teacher's teaching style preferences based on Felder and Soloman (2006), b) investigation of the effectiveness of the match and mismatch on student achievement and c) the experience and behavior of the four teachers regarding their teaching style preferences and their efforts to tailor their teaching styles based on student learning style preferences. It is hoped that teachers all over the world will benefit form this experience of sharing success and failure, triumphs

and pitfalls; however, this may become the starting point for the teachers to think twice about teaching to students' learning styles and improving the quality of EFL educational content in Iran.

How Practical is Tailoring of Teaching Styles to Learners' Learning Styles

When I started interviewing the teachers about accommodating the students' learning style preferences in the class, I asked them about what were the new or different practices they have conducted in order to cover students' learning style preferences. The majority of them started with wording such as "impossible to please all," "impractical." However, they believed they were "burdened" or "not really appreciated by the students" regardless of their experiences in EFL. These are some of the statements in their own words

1. *Honestly speaking, I was thinking whether an effort to teach based on their learning styles preferences will be practical while the students attending the course are not from the same level and also whether congruency between the teaching styles and learning styles will help EFL situation to be improved in Iran or not?*

2. *This suggestion sounds fantastic if I only have one or two classes to teach; surely I would be concerned about it, I would rather say it is not really practical to do.*

3. *What amazes me is how can I balance between tailoring my teaching based on the students' preferences and covering the entire syllabus that I am supposed to teach in class? Currently, I am overloaded, I can't think about more loads.*

4. *I am quite positive that it is practical in my class. Most of the time I tried to use different approaches to teach because I am aware that students sitting in a class have different styles. I was suffering myself when I was doing my bachelor's, so in that time I promised I will never teach with one style even if it is going to be troublesome for me.*

The issue of "practicality" was mentioned as the first issue highlighted by teachers as well as students. I probed the lecturers regarding their reasons for using the concepts of "impossible," "impractical," which are negative words for describing the shift from traditional methods to those in which the students are more active participants in their learning environment. One of the first reasons given was the broad task range expected from the EFL lecturers in the faculty of foreign languages.

They explained that if they were only expected to consider learning style preferences, it might not be so "impractical" indeed; yet they have to incorporate continuous assessments and also become a reflective teacher and active researcher at the same time, so expecting them to consider learning style preferences begin to look overwhelming and therefore "impractical." As one of the lecturers mentioned:

> *I am really overloaded, teaching more than 13 credit hours and have to do assessments and begin our action research at the same time, plus I have to mark the assignments and their homework every week. I should have applied active learning (teaching based on student learning preferences), i think it is too much, it makes me really busy and to believe it may affect the quality of my performance.*

In this quote, we see a specific example of how overwhelmed lecturers express themselves by all that is required from them. Aryana (pseudonym), a 37-year-old lecturer coming from an English language background, mentioned that she felt overwhelmed by the intensity of the program where she was studying. She said:

> *I remember all the work I was given when I was a candidate, I kept on asking myself why they ask us to do so many activity in such a short time, why they do not give us more time to really comprehend the concept at the same time. I knew and know the answers to my questions; I think that is the only way to try new and drastic changes into system. However, it is difficult to ask from loaded lecturers to add to their burden by tailoring their teaching based on students learning styles preferences.*

It is a lot to ask the "loaded lecturers," especially the inexperienced (junior) ones to focus solely on one area of their professional development such as addressing learning style preferences, while they are burdened with a heavy workload. Each of these concepts can be addressed in a separate module over a few terms.

After describing how they are devastated about addressing the learning styles of their students being impractical, lecturers talk positively when they start describing what they will do in the classroom in an attempt to teach to the learning styles of their students.

Thus, when the discussion begins to shift from impracticality to importance/necessity, the negative tone in relation to impracticality fades away and is replaced with a positive tone. However, it is interesting to quote the lecturers who share their opinions about the necessity of catering to teaching styles based on student learning style preferences.

1. *When learning styles preferences are highlighted in class, the understandability of the subject matter increases. Learners have chosen varied approach in learning; to address these needs, lecturers should incorporate the different teaching styles in the lesson, which is important because if we approach students as individuals we will guide them to learn properly.*

2. *Considering the differences between the individual, we must create an environment that can answer students' need in terms of their learning styles. This is considered very important. When the student learning styles needs met in class they are more motivated to learn.*

Case Study 1

Learning Styles Background

Aryana is a 37-year- old lecturer with a BA in English language; she has over 18 years of experience teaching English in different institutes and universities. She was introduced to the concept of learning styles during her bachelor's program. From the first interview and observation, she showed interest in the concept that lecturers should consider students' learning style preferences in their teaching. As she mentioned, she has been taught (as a student) with only one style, which was the traditional teaching method. During her primary, secondary and high school, the majority of the teachers used the traditional lecture method. She has never gotten the chance to attend the group discussion/ group work with any classmates or do any activity with the material being presented via lectures in the class. During the interview, I asked her how she is planning to address the different learning styles; she responded that she rarely used any different methods in her teaching, and also that she never thought of teaching to the students' learning style preferences. The following quote explains why:

> *When I don't have enough knowledge about the learning styles and I have never used different teaching styles than traditional method, how can I teach in a way that my students like based on their learning styles?*

The results of the ILS revealed that her preferences of learning styles ranged from reflective to intuitive to visual followed by global; when asked what she had learned about herself as a teacher during the years she was teaching, she responded:

> *I learnt that I like to conceptualize and have an insight on topic, I like to arrange the group discussion and activity, in fact I like practical tasks very much rather than step-by-step gradual development of the task items. I love the activities that activate my thinking.*

After the first session of interview, I conducted the class observation sessions. I asked Aryana what she learned about her teaching style in relation to student learning style preferences. She answered:

> *I have noticed that I waste many chances that could have been turned active learning chances that help learners with different learning styles preferences to be more eager towards the new lesson.*

When she was asked how was her students' perception on learning styles related to her teaching styles, she replied:

> *In fact, they did not show the awareness clearly, but now after using the active learning methods they will relate because many of them are engaged in the lessons.*

While she was asked how she looks at the idea "to teach students based on their learning styles preferences" she commented:

> *It is another method of teaching which facilitates the learning task through engaging the learners in activities which aimed to make them responsible for their own learning. These types of activities develop learner's critical thinking abilities through sharing their ideas. When learners are able to do more than sitting and listening while they are given task …. Then I feel I am teaching based on their learning preferences.*

She also explained the techniques that she used to make her teaching style more student-centered and active in order to cover a wider range of learning styles during the duration of this research study. She categorized the efforts she has made to align her teaching styles with students' learning styles.

> *I asked the students to evaluate and modify the learning-teaching process. This can only help the reflective styles; however, students got tensioned because the situation was not familiar for them.*
>
> *I have used the interactive style while I was lecturing, even through presentation, which is considered as familiar styles for all learning styles.*
>
> *I have tried to use the simple English and somehow I have observed the speed tone of my speech.*

Aryana's Current and Actual Practice

In the second interview, Aryana declared that she uses the traditional method. The observation sessions were scheduled between the first, second and the third interview. After the first interview when I observed Aryana; she was using one of the active learning methods. She did use the discussion and interaction methods; at the beginning of the class she wrote the topic on the blackboard and asked the students "what does this word remind you of?" and "have you ever heard of this?"; she then asked them to generate as many ideas related to the topic as they could within 5 minutes; to make this exercise more practical, she asked them to work in groups of 5 or 6 persons. After that, she started identifying the word using a simple example so the students in every level could understand it. Then she

started writing on the board and explaining it on the board and writing some example and asking the students to share their writing on the blackboard. Aryana shared her experience as:

> *This is the first time to see my students eagerly engaged in the activity I assigned them in such a high level of interest. I believe with this brainstorming I can create the chances for all the learning styles to benefit. I used to think that if I didn't lecture the whole time I am not using the class time properly …. Now I think that my students are getting better input from my lecture when I am trying to use their own styles.*

Aryana planned her lessons with different methods compared to the time when she did not consider the students' learning styles. She managed to maintain a high level of enthusiasm and excitement about what she was doing, and exclaimed about the learning that she could not only see but also feel that is happening in her class. When asked to describe one of the methods she was using (after she was aware about the variety of learning styles in her class) she thinks it made a difference in students' enthusiasm towards learning in classroom, as Aryana observed:

> *One of the methods that I like is the one who keep the students physically active, those who share the same ideas go to one side, they discuss, they write something, they present it, and they come back to their original group with a mind that they learned something. I attempt to use this style by asking the students to read few articles related to class discussion through which they can get enough information about the class topic for each session, make them present it one by one actively and also opening the session for questions to be posed by students.*

When I asked Aryana to share a reflection of her lesson taught through the traditional lecture method compared to her lesson planned explicitly to address the learning styles preferences of her students, she reflected:

> *I learned something from my lesson, student's attention level may change due to many reason in the class, so it will be necessary sometimes to engage them and make them active so it increase their attention. Even though all learning methods are not always applicable in my context, but I think it is not fair for my students when I take class time period for myself. When the whole class time is spent for lecture I can't keep their interest because I am not teaching based on my students' preferences.*

I also asked Aryana about suggestions for styles that she could use, but had not practiced yet in order to cater for different types of learners; her comments are related to a section that she was teaching on "set objectives" as a good teaching style:

> *I am aware that there were many possibilities that I could use to deliver this subject matter. I could have used the group discussion for this topic and listened to their explanation and modify them all.*

The Importance of Learning Styles Preferences Consideration in an EFLContext

Aryana demonstrates a positive attitude toward taking the challenge to align her teaching styles with students' learning styles. At the beginning of this research, she believed that creating an environment in which the students' learning preferences are addressed through teaching styles is a most relevant, wanted and practical environment. However, she was persistent in her efforts in each class that I observed to evaluate, investigate, change her teaching style with the aim of continuously coming closer to address effectively the learning styles of her

students. At the end of the data collection, when I asked her to explain how her teaching styles started to change over the course of a few months, she explained:

> *Even though the initiative of this change started few months back and it challenged me about what I do as a lecturer in foreign language faculty. It resembles for me that we are moving from the teacher- centered to student-centered and it will assist us to respond to the learning styles of our students. Now, I feel I am lesson planners, my teaching styles now reflecting the positive attitude towards the learner's learning styles needs. I used to use the chalk and blackboard but now I am using my students and their idea.*

She also mentioned:

> *I found it really interesting to involve the students learning styles preferences. I am really fascinated that I can apply that in my teaching styles. As a teacher, I thought the best way to teach is to follow one teaching method but now I am trying different teaching styles and perfect point is I am using my students more. However, I suggest all the teachers try to do self assessment about their styles and look deeply to their shortcoming. Self assessment will open our eyes to the needs of the target audience of our teaching.*

Aryana's remarks on the learning styles importance identified that she has truly comprehended an apprehension for implying this kind of preferences of her students. In the beginning of this research, she does not really think of the learning style concept and its key role in student learning but in the final stage of this research, she was committing herself to adapt her teaching style in order to reduce the mismatch between teaching styles and student learning style preferences in the faculty of foreign languages. Regarding this change, she mentioned that:

> *Learning styles preferences is one of the only key for teaching which addresses all the students in the class. What makes the teaching as a successful experience is considering the learning styles preferences of the learners. Learners will learn according to their own pace and according to their own preferences: we (teachers) must assist learners to understand things and handle the obstacle they faced. Learning styles not only keeps the interest of the students, It also increases the students' confidence for independent learning, it also help the time management and productivity level among the students.*

Case Study 2

Learning Styles Background

Nilo is a 45- year- old with an MA in English literature; she has more than 20 years of experience in teaching English in different majors such as literature, translation and general English. She learned about the learning styles concept when she was studying for her bachelor's degree. She was aware about learning style preferences, but she has never made an attempt to cater to her students' learning style in her teaching plan.

However, she is in total agreement with the notion that learning style preferences must be considered while teaching. She found this idea relevant and said she hoped she can find the confidence that eventually led her to believe that such efforts can be practical in the Iranian EFL context.

In her time, most of the teachers were using traditional teaching methods. Local teachers and some foreign teachers, however, taught her English classes (while she was studying in a private language institute). She recalls that two of her foreign lecturers used a style which was fun and lively. She still remembers that these two lecturers were calling their students by their first name, something that never happened in her educational experience and she was encouraged by the lecturer to speak in these classes and participate in discussions.

She was not aware of learning style concepts at that young age, and she thinks that one of the reasons that she still remembers those two classes was that she

was allowed to "move around" during some group activity, and students were allowed to narrate one short story once a week in class if they felt ready. When she looks back she believes that was most likely a fascinating experience to her because her learning style preferences were partially met. During the first interview, I asked her to clarify the teaching styles that she uses that might assist the different types of learners in her class. In other words, how is she planning to address the different learning styles in her class?

She mentioned that besides giving the chance to the students to practice English usage in pairs, she had generally considered teaching to the learning styles of her students as a mixed approach.

In her own words:

> *I understand the key value of accommodating teaching styles based on learners' learning style preferences, but sometimes, it seems quite different. Even though it is inconvenient to do that due to many reasons such as class size and time limit, but still I try to address some of them, especially visual types. My class includes students that practice the lesson they have learned together and try to draw a map or write a summary for that. I felt that they are learning more when they attending my classes; I am aware that there is a lot more that I could be doing to make my class better for my students individual learning styles if the condition were more ideal.*

She admitted that she never did really use the styles that her teachers were utilizing in class while teaching her in those days. She reluctantly stated that she likes these classes and enjoys them, but that she did not envision herself to become an English teacher. She commented that use of the lecture method by a majority of

the teachers who trained her made her think that the lecture method is the most practical and best style to teach.

The Felder and Soloman questionnaire revealed that Nilo's strongest style preference is active, followed by sensory, visual and sequential. When she was asked what she learned about herself as a teacher during her first year when she was teaching, she commented that:

> *I have experienced that conducting a mixed teaching method will facilitate classroom activities more efficiently. When one method is used day in and day out I lose interest and I will not be interested as I was. I will lose interest, I was a visual learner so I can learn subject like vocabulary just by seeing them and picturing them in my mind.*

After the first interview session, I conducted the class observation sessions. I asked Nilo what she learned about her teaching in relation to her students' learning styles preferences; she answered**:**

> *As I mentioned, I used the traditional method for teaching because I was thinking that is the best method. But after what we discussed, I tried to use different teaching methods such as group discussion more, to provide more chances to students, but I feel still there are styles which cannot be covered under group discussion umbrella in my classroom.*

When she was asked how she thought her students' preferred learning styles related to her teaching styles, she responded:

> *I have to accept the fact that my teaching style does not reach all my students' learning style preferences. In my opinion, students are quite active in my class, even though my teaching styles may not cover all their learning styles. They discuss, express their idea and debate over the subject matter in class. There is a chance for students to speak in my class that considered as a*

drastic change. However, I need to improve my teaching styles anyway.

She was then asked how her students' perception on learning styles related to her teaching styles. She responded:

Actually, my knowledge about learning styles is enough to understand that my teaching style does not cover students' learning styles preferences and in a simple word they are not matching. However, my classes are performing better compared to other classes in terms of relating to my student learning styles preferences. My students get to speak during class, they are active, can have group discussion and some other activities. In the class, they can pose questions any time when they feel they cannot comprehend the lesson or show their experiences and come up with examples.

When she was asked how she looked at the idea to teach students based on their learning style preferences, she commented that:

After my first interview with you, I evaluate my students' learning styles through a questionnaire. Then I designed my teaching plan in a way to address students' learning styles preferences. My intentions were to answer their needs as much as possible; however there are parts which are left unattained. I have eight classes with roughly 40 students in each class. It would be quite impossible for me to teach in a way to cover 320 students' styles, but I have used the information based on their preferences, select the styles, which is the preferences of the majority of the class. However, I will cover some of other styles.

I did explain to Nilo that teachers should adopt their teaching styles in a way that accommodates the learning styles of their students; thus, the students' achievement will be affected. If lecturers mix traditional styles and active learning to accommodate the students who have different types of preferences other than auditory, this would also benefit the class. Later, we discussed ways that she has

tried to align her teaching in order to reach a wider variety of her students' learning styles during the academic year. She shared the experiences she had while attempting to change her teaching style and mentioned:

> *I did investigate and research my own students' learning styles similar to what you did in my class; however, my results were more or less the same as yours. I think that my classes already address active, sensing, visual and sequential learners.*

Nilo's Current and Actual Practice

The observation sessions were scheduled between the first, second and third interviews. In the second interview, Nilo mentioned that most of her time in class is still spent lecturing to the students; however, there are times allocated for activities such as:

1. Group/pairs activity and discussion. The classes were 3 credit hours (twice a week and each lasts 1 hour and a half).
2. Rehearsing scripted group/pair work
3. Listening to conversation or short stories via cassette player
4. Listening to filling in the blank exercises

After the first observation, I observed her teaching in her class. She was using the interaction method; she asked one of the students to read a short story. After it was finished, she started explaining and repeating the story, and she asked some questions and again continued the story. Students tried to help her to explain the story; when she asked questions related to the story, they tried to answer; when the answer given was wrong, she corrected it with patience.

When they finished, Nilo mentioned that there were a few new words in that text, then she started highlighting the words and asked students to volunteer to answer the questions.

They worked in groups of five; students were answering the questions voluntarily, and for some of the questions that no one could answer, she called their names and asked them to read their responses. Finally, Nilo led a whole class discussion and corrected a few errors that had been made. She showed her enthusiasm for the activity at the end of class. This class was fun for the students as well as the teacher. Nilo commented:

> *Comparing the previous lectures, this one was really fun, engaging session for students. I know by giving them this kind of activity I am giving them a chance to see how pleasant it is to teach based on their learning styles.*

After observing that Nilo successfully merged "new" styles into her teaching in a few following weeks, she mentioned that she had realized:

> *I understand that I can better communicate with my students' styles in following ways by giving roles, assigning task in-group activities and displaying the relevant strategies they can use to their styles. I am trying my best to adapt the different teaching styles that will cover current learning style preferences in the class and getting the help from resources and documents.*

I also asked Nilo to highlight one of the methods which she incorporates to new styles from her previous styles, and she thinks it really made a difference in whether or not her students' learning style preferences were being attended to. She shared the following:

> *A fruitful result is that students can express themselves and they worked and tried to express with their ability. They have never found or given a chance to show their ability. I have experienced within these weeks that when I assign students a task, it helped them grow and experience something new and different that they have never experienced before.*

Considering the fact that in the near future they all would be teachers, these types of practices would be a good experience and a foundation for their future teaching experience. They learn about different approaches and styles in teaching and learning by practicality in class; besides, they need to develop their skills. She also added:

> *I did gain a lot after I did interview my students about their learning styles (she smiles to researcher and continued: you initiate this in my class). I discovered my students' interest, needs and preferences. However, it motivated me to investigate and solve the barriers of common action between my students' understanding and my lecturing delivering styles. I felt satisfied that by trying this change to my styles I did bring a bigger chance to my class.*

Importance of Learning Styles Preferences Consideration in an EFL Context

I asked Nilo as a last question to express how her teaching had changed over the course of the past weeks as a result of her experience in the foreign language faculty. Her answer was:

> *I consider myself as a beginner in a world of trying new teaching styles like "Alice in Wonderland" but my journey was fantastic one. I used all the tactics to make students aware about their learning styles and encourage learning in different situation such as pairs or groups. I used diary and I note all my teaching experiences and outcome in that diary, I used writing small notes here and there in diary to remember my new approaches, behaviors and sometimes students' reaction towards a new styles I conduct in class. In a way, this diary meant for new experiences in terms of students attitude towards new approach (direction) that I am taking. I am planning my syllabus for the next term, and I am using my experiences to design a proper teaching plan for my future teaching.*

According to Nilo, when asked about the importance of learning styles preferences in teaching styles design, her initial opinion based on impracticality has been replaced by a new idea which is the impact of this match on improving the quality of education. This was seen in the following quotation:

> *Designing teaching based on students' needs will make them motivated for new lesson; however, it will help to expand their level of understanding and ability to speak in English. When we are providing our students with these teaching styles/learning styles match package. We offer them equal chances to show their capabilities in class. In my belief students learn more and they would be more satisfied if I organize my lessons based on their different learning styles.*

Case Study 3

Learning Styles Background

Flora is a 44-year-old female language lecturer with 20 years of teaching experience. She holds a master's in English translation from Tehran University. The first time she was introduced to learning styles and their importance was during her bachelor's degree studies. She mentioned that:

> *I took research method class, I attend all the lectures, took note of every word in class, I was attentive in class but I could not get the lesson. Most of the students in my class were facing this problem; we (students) have to take the class again for the following term because we did not pass. In following term, under the same syllabus but different lecturer and different approach. He tried the discussion styles and asking us to do assignment based on the components we had discussed in the class. In that time, I did not know the cause of this problem but now I can see that clearly.*

However, she was reluctant to change her teaching style to one which matches her students' learning style preferences. According to her, students are fine with her style, she said:

> *I have been teaching for 20 years, I see no reason to think that my students are not happy with my teaching styles.*

In her first interview, she drew attention to the fact that when she was doing her studies, none of the lecturers was concerned about learning style preferences and she passed her course with high marks; and she asked, why should she bother herself with the learning style preferences of her students?

In her time, lecturers were using traditional lecture methods; students attended some lab sessions but only at a very basic level. Therefore, she never felt challenged or competed. She used to listen and sometimes take some notes. She did remember what was said in a class, and that was how she learned during the other sessions. I asked her to describe the methods she used and how they might help different types of learners.

She mentioned that besides lab sections, she only lectures. However, she makes it clear that she did not really think it is necessary to try to accommodate the learning styles of her students in the following quote:

> *When I was lecturer, strong students succeed; the weak learners fail. It is simple. From my point of view, I have enough duty and I do not want to add to it. It is not my job to help students, but my job is to give them necessary information, but how to chew this information is student job. They have to adapt, adjust and find their own weaknesses.*

The Felder and Soloman (1988) questionnaire reveals her preferred style to be active, sensing, visual and global, unlike the other three case studies presented in this study. When asked to describe herself as a learner during her university days, Flora said:

> *I consider myself as an auditory learner; therefore, I do not like reflective activities mentioned in the textbook. They are tedious work for me; I like to have information, which is tangible for me (printed in paper, black and white).*

After the first interview, sessions of observation were arranged between each interview and the next one. I asked Flora what she had learned about her teaching style in relation to the learning styles of her students; she mentioned:

> *It seems if my students have visual preferences, then I am meeting my student's needs.*

During the same interview, I asked her how she thought her students preferred learning styles related to her teaching styles, and she responded:

> *It is really time- consuming activity for me and considering the fact that here (in this university) we have roughly between 50- 70 students in each class, it is not possible to know your students' names, let alone knowing their learning style. The problem that I faced is with kinesthetic preferences, which they need to measure here and there.*

When she was asked to teach to the learning style preferences of her students, she suggested:

> *I am open to the idea that language teacher, as you say, teach to the styles of the students, I am a bit surprised, I have seen some of the lecturers are quite closed to this, may be they don't trust the impact of this kind of tailoring to students needs. After considering the benefit of the idea, I see no problem to teach based on my student's preferences.*

Although Flora showed her disagreement from the beginning of this study, when I talked about the idea of altering her teaching style in ways that might meet students' learning style preferences, it motivated her enough to continue as a participant in this study. I did not ask her but it was observed that she tried to modify her teaching style in order to cover her students' learning style preferences. Once, she emphasized that she was expecting students to raise the questions in the class. She mentioned:

> *My teaching is moving towards students centered and my students participate in this study. I normally lecture and then I will ask "do you have any questions?" if you have please share with class, if not …OK, I would leave the class. In fact, nowadays they are probing the question which is good sign.*

Flora's Current and Actual Practice

Flora mentioned that she is using the traditional lecture method. In the first observation, Flora tried to change her teaching style a bit. She used the brainstorming style in class, and asked one of the students to come to the blackboard and write students' input on the board. She asked the students to read the story and then she started asking them about the main theme of the story.

Students worked in pairs and a came up with their answers; any new word or answer was discussed in the class, but at the end of each discussion, she was mentioning the right answer. However, Flora designed her lesson plan in a way that covered all learners' learning style preferences. Unfortunately, at first the lesson was not clear for the students. They had never been exposed to this kind of teaching, but gradually after a few sessions they start to show positive attitude toward it. She said:

> *Unfortunately, in first few attempts, the lesson was not clear for students, simply they did not used to this teaching styles, or may be the lack of prefacing the activity (e.g., "today we are going to do things differently").*

The first few lessons were what she has predicted; she felt frustrated and said:

I was sure that students will not get the class seriously, they are not used to it.

She tried these teaching styles for few times and when I observed her; it looked unsuccessful. After three interviews /coaching sessions, she decided to try again. This time, she used crossover styles; she divided students into groups and asked them to write as many examples as they could for the topic. When they finished, one person from each group merged to another group and shared his or her idea with the new group. She asked students to repeat this style again. It seemed student have fun with this kind of style. However, she mentioned that:

I admit that this kind of teaching styles was not attractive for me before, but after this experience, I can see the classroom as well as allowing students to use their own favorite learning styles. These days, they change their location, they interact with their classmates.

I asked her to explain about the experiences that she has gained from the time she was a student which help her in her teaching and it really made a difference in whether or not her students' learning style preferences were being attended to. As I mentioned before in my time there were some basic lab facilities and most of the time the lecturer come to the class and lecture and cover the syllabus. However, it differs according to subject and the teacher's personality. I also asked Flora to highlight some of the methods which she incorporates to new styles from her previous styles, and she thinks it really made a difference in whether or not her students' learning style preferences were being attended to. She shared the following:

> *I used some visual teaching aids to try to satisfy the visual learners and methods such as crossover and small group discussion aiming the kinesthetic auditory learners. I also feel it is good to assess learners using assignments, group work, exercise reports of fieldwork and laboratory sessions, unlike before.*

She added:

> *As a teacher educator, I will try to highlight students' learning styles in my classroom; I will try to design my teaching plan in a way to cater to the students' demands in terms of learning styles, then I will implement it accordingly. As a teacher, I used kind of independent learning, discussion, interaction among the students; I let them talk more than me in class. For me it is considered as a new game but I start to see the results… My students are encouraged, full of energy, motivated and show higher level of enthusiasm during my lecture.*

Importance of Learning Styles Preferences Consideration in an EFL Context

Flora was the least receptive of the four participant lecturers at the beginning of this study to the assignments of adapting her teaching style in way that allowed her to consider the learners' learning styles preferences. Other lecturers participated readily and willingly made great efforts to adjust their teaching style by implementing methods in their department. Flora took a longer time to become convinced that these kinds of efforts were practiced and important in her context.

Toward the end of the research, I asked her to comment on how her teaching style had changed over the past few weeks as the result of her experience and her efforts thereafter. She commented:

Beginning I thought that the idea of accommodating the learning style of students, it is not practical. But I changed my perception; I used to give not much thought on teaching styles, I was just preparing the necessary notes and lectures every time. This research made me think twice in fact more than that even I used to express everything through my lecture. I used to think what I taught in class is what they need, the students never showed their interest to express themselves. In other words, I ignore their capabilities, thoughts and creativity. I was the only person, who was talking in a class; it looks like a riddle. I was confusing these and ask them to figure things out themselves and I never check their understanding. Currently, I have a good relationship with them. They can show their interest on a lesson and share their ideas. I noticed that for successful teaching, we do not need expensive teaching aid. This study provide me a chance to look deeply to my students' learning style preferences and considering the fact that teaching based on students' learning is more fruitful and successful.

It appears to me that we [teachers] must create a fertile environment for our students that address their learning style preferences. This is of paramount importance when students' learning preferences are met; students are willing to learn more. They will be active in teaching learning process.

Case Study 4

Learning Styles Background

Mina is a 31-year-old female; she is also an English lecturer with 10 years of experience, her highest degree is a master's in Teaching English. She was introduced to the concept of learning styles and the importance of considering the learning styles of her students in the teacher-training program she underwent before joining the university. When I talked to her about learning style preferences and considering it with teaching or designing the study plan, she was interested and encouraged to try it. She mentioned:

> *I remember when I was student most of the time the lecturers used monotone lecture method to teach during the class. I was bored; in fact my mind was only active to perceive the lesson for the first hour, after that I was very bored and sleepy. Normally, I used to go home and read the lesson myself and if I have problem in anything I will discuss it with my friends.*

I asked her about techniques that she used that might help different types of learning styles apart from giving the chance to students to talk in the class; she teaches how she was taught. She uncomfortably admitted that she never thought of teaching to the learning styles of her students in the following quote:

> *After I found out how important is the learning styles for my students, I will try to consider that in my teaching. I was never introduced to this point before; I can clearly confess that I have not done anything regarding my students' learning styles before."*

The Felder Soloman learning style inventory revealed that Mina's strongest style preferences are active, sensing, verbal and sequential. When asked what she learned about herself as a learner while she was doing her studies, she expressed:

> *I like to be made to interact with lecturers/classmates and I preferred when there is a class activity that I do not just get bored from lecturers' monotone lecture."*

After the first interview, sessions of observation were arranged between each interview and the next one. I asked Mina what she had learned about teaching styles in relation to her students' learning styles; she replied:

> *I consciously noticed that my students in different class have different learning styles. I asked myself, did I even consider these differences in terms of learning styles before? I tried to consider my students' learning styles preferences and try to accommodate them in my class. I came to this conclusion that it is good for me as well as my students, if I address all the learning styles in order to achieve my target.*

I asked her to explain what it implies for her "to teach to the learning styles preferences of students." She added:

> *In my opinion, it involves processes to treat an environment where learners are active participants with full responsibility for the learning. Where different active learning are designed in way to achieve the objective of the lesson by highlighting different learning styles for learners doing more than just standing in front of classroom and explaining the lesson to student via lectures.*

We also discussed about the possible way she tried to make the classroom setting more student-centered and active in order to cover the variety of

learning style preferences of the students during this academic term. She described her effort and focus to change the teaching styles in class as:

> *I have tired to use the different activity in my class to make the students participate and activate within class setting. Sharing, taking responsibility, encouraging them to share their idea, tell them why their preferences are important in my teaching design and why I am trying to teach different than I did before now.*

Mina's Current and Actual Practice

Mina initially mentioned that she was using the traditional lecture method; however, in the first observation she tried some of the active styles. In her first attempt, she arranged the students into groups of 6, and then she wrote the topic of the lesson on the board besides a few related questions and asked the students to discuss it within their own group. After a while, she asked them to describe their answers on the board while their seated classmates were supposed to check their own answers. Mina was quite satisfied at the end of her lesson. She said:

> *Finally, I see a way to let my students participate during my class without wasting time. Even though few groups managed to write their answers on the board, I can use these styles to give the chance to different group each time.*

Later, I asked Mina to explain one of the methods that she had incorporated from her study time and whether she made a difference in her students' learning style preferences. She shared her idea:

> *In the current course that I am teaching, I have tired to utilize group discussion. I did assign each group one topic to discuss in the class and I gave them related questions. Then after, the group will prepare the answers and try to conduct ways to make the topic understandable for every one in class. Hence, I have*

concluded that it is best when I mix group discussion and presentation on the board.

Mina also mentioned about some of the methods that she was using which she feels will help different kinds of learners. I asked Mina to compare one lesson that she taught using the traditional method and in comparison to her lesson planned explicitly to address the learning style preferences of Mina's students. She reflected:

In fact, it is difficult to compare; I used to avoid the eye contact with my students when I was teaching because I could see the boredom in their eyes. I know that they were bored sitting in my class, I do remember when I was sitting in their place as a student. I asked them to evaluate their learning by presenting what they have learned in our class. Each group was presenting differently, but the common point was that majority used the discussion. Both the teacher and students involved the activity during the period.

Later, when Mina was asked about the methods that she is planning to use to help different types of learners more, she commented:

For visual people I prepare notes to read and/or I prepare a handout, for active learners I use explanation of things discussed or presented; for intuitive learners, I used group discussion and presentation of the points. I did manage to use many methods and available resources to let my students feel comfortable for the way they learn.

Importance of Learning Styles Preferences Consideration in an EFL Context

Mina was interested in adapting her teaching style in a way to decrease the current gap between her students' learning styles and her teaching style. She positively accepted the idea of matching her teaching style based on her students' learning style preferences, and her reason was, "*if this can facilitate my*

student's learning, I will surely conduct that." Toward the end of term, in each observation I noticed that the usage of traditional lecture method is decreasing in her teaching styles. Toward the end of the research, I asked her to comment on how her teaching style has changed over the past few weeks as a result of her experience and her efforts thereafter. She commented:

> *A teacher is like a candle, they lightening their students' life by helping them to go to their life trip properly. Currently, when I am designing my lesson, I do consider my students' learning style preferences. Your study opened my eyes to see that there are other tactics to use for teaching except traditional method. I was very sure and confident that the traditional lecture method is the one and only method that the students can understand my teaching.*

Mina firmly explained that learning styles preferences are essential to be addressed when teaching in the EFL context because:

> *Attention to learning styles preferences will increase the learning outcomes of students. Learners have different interests towards the learning, incorporating the different teaching styles in lesson is essential step towards the individualization of the lesson; it means we approach the students as individuals we will lead them to learn more. Obtaining the knowledge about the students' learning styles will provide the chance for the lecturers to know the existing learning styles in their class in order to enable them to match their teaching styles to those learning styles for better understanding.*

At the end, I asked her whether she wanted to continue this matching teaching styles method for her future lesson plan. She commented:

> *I am planning to do individual reading regarding different types of learning styles; I want to read about the different types of learning styles and their implication in real setting; however, I believe that there are many types but some of them however are hidden in individual which I believe have never been discovered under different categories.*

Table 4.53
Observation and Interview on Teaching Styles (Case Study 1)

Background of learning styles:

- She was introduced to learning styles through her bachelor program
- Shows interest in tailoring her teaching based on her students' needs in her class (she was taught by the traditional method)
- She was showing confusion over remarks about addressing the learning styles
- After the first primary session for addressing the students' needs in the classroom, the lecturer noticed that there were chances that had been wasted during her class because she had not noticed this point
- First time students have no awareness about what type of change is happening in the class
- To evaluate the teaching and learning process in the class and the points that need improvement
- Using the interactive methods to convey the message to students
- She tries to balance her speed tone when she lectures.

Actual practice:

- Previously she used the traditional method in the majority of her classes
- She started her teaching styles shift with involving more interaction in her 'teaching by using phrases such as "have you ever heard of this …."?
- She also tried all kinds of group activity in the class; to her surprise students responded, even the ones who were quiet in class most of the time
- She managed to maintain a high level of enthusiasm and excitement about what she was doing, and exclaimed about the learning that she could not only see but also feel that is happening in her class.

Importance of considering the learning styles preferences for classroom

- While she was persistent in her efforts in each class that I observed to evaluate, investigate, changes her teaching styles with the aim of continuously coming closer to address effectively the learning styles of her students.
- She was really fascinated that she could apply that in her teaching style.
- In the beginning of this research, she does not really think of the learning style concept and its key role in student learning but by the final stage of this research, she was committing herself to adapt her teaching styles for reducing the mismatch between teaching style and learning style preferences in the faculty of foreign languages.

Table 4.54

Observation and Interview on Teaching Styles (Case Study 2)

Background of learning styles:

- She learned about the learning styles while she was doing her degree
- She also was taught via traditional teaching methods, she recalls that only two of her foreign lecturers used a style which was fun and lively.
- These two persons were very interactive with their students, they normally called their students by their first names
- She remembers that in these two classes she was allowed to move around and have activity….
- She totally agrees with the notion that learning styles preferences most be considered while teaching
- Show concern about the problems while deciding to accommodate the learners styles in her teaching plan
- She believed that mixed teaching methods will make it easier for the students to understand the concept matter.
- She tried to look at her class carefully
- She shows awareness of the students' needs in her class and she tries to cover their needs and preferences even though she believed that it is bothersome.

Actual practice:

- Admitting that most of her class time was spent giving the students lectures but sometimes there were some activities that she used to perform to see how is it going
- After the awareness about the learner's styles, she starts using the interactive styles in the class, besides activities that she used to conduct.
- She also used the documents and other resources to cover the majority of the learning style in class /also use the mix of the methods in her teaching
- The intention of using the mixed teaching mood in the class was two-fold: to fulfill all the students' educational needs and also to train the students for their future when they appear as teachers.

Importance of considering the learning styles preferences for classroom

- The gap between the previous teaching and current teaching was observed
- In the beginning of the study the lecturer believed that it is impractical to address all the learning style preferences in the class but at the end she found it quite interesting and useful
- Regardless of her initial disagreement on considering students' needs in her teaching plan, currently she considers the impact of the match between two styles on student learning improvement quite interesting and practical.

Table 4.55

Observation and Interview on Teaching Styles (Case Study 3)

Background of learning style styles:

- Learning styles concept was introduced to Flora during her bachelor program.
- She was very confident that the students are happy with her styles and she does not see the necessity to change her styles
- She was the only lecturer who showed disagreement clearly from the beginning of the study but towards the end she highlights that she is happy she took the initiative to participate in this study.
- She believed that this kind of activity is kind of "time consuming" for the lecturers, considering their teaching schedule and the number of classes they are teaching.
- Toward the end of the first interview she decided to give it a try and see the results.

Actual practice:

- In her case, the challenge was more difficult, considering the fact that she did not really believe that this kind of accommodation to students needs would really work from the first few sessions till the end
- She provided the students with some pair activities, brainstorming, interacting with the students and cross over styles.
- Regardless of Flora's efforts, at the beginning of her class the students were not quite responsive and they were somewhat confused.
- First few lessons were frustrating and boring for the students.
- Methods used were discussion, crossover and small group discussion.

Importance of considering the learning style preferences for classroom:

-Compared to other lecturers Flora took a longer time to become convinced that these kinds of efforts were practical and important in her context.

Comment on her teaching style during the last few weeks

-At the beginning of her teaching based on the students needs, she found it frustrating

-This idea challenged her to review her teaching methods and also observe her class through the thicker lens.

-First few sessions made her think whether she is doing right things or not

-Flora mentioned "we teachers have to create a fertile environment for the students that addresses their needs." She also mentioned the need for this kind of consideration in teaching.

Table 4.56

Observation and Interview on Teaching Styles (Case Study 4)

Background of learning:

- Introduced to learning styles and its components through the teacher training program before she joined the university.
- Mina got the experience with the lecturers who used only one style (during her study time) so she felt demotivated in that time; she used peer discussion if faced with any problem at that time.
- Techniques she used to help the students in class are providing the chance to students to talk in the class. However, she was using the lecture methods (the way she used to be taught) but with different approach that is giving the chance for students to talk.
- She expressed that she likes to use the lectures that will help her students to achieve higher, however she highlighted that she has never thought of teaching according to her students' preferences.
- Her comments about methods to make the class more student centered was to use the different activities in classroom environment, sharing the knowledge and taking responsibilities, get the students to share their ideas.

Actual practice:

- She used to teach based on the traditional method but during the first observation, she tried some different styles, she grouped the students, she wrote the topic and a few related questions on the board, she asked each group to discuss it among themselves. After that she asked the students to check their answers with their classmate who was explaining the right answer in front of the class.
- She used the group discussion in her class more than other methods.
- She used eye contact with students because she could see that they were inattentive and bored.
- She planned to use the mixture of all styles to address all types of the learning dimensions in her class.

Future plan:

- She showed interest in tailoring her teaching styles based on the students' preferences in order to fill the existing gap
- Decreasing the traditional method in her teaching after knowing the students' preferences in her class
- She strongly agreed with the idea of addressing the students' needs in her class after getting the knowledge on how it will help the students
- She decided to do further reading regarding the different types of learning styles and get the pure idea on that to enable her to teach better and be more purposeful.