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**The Role of Organisational Culture on Cognitive
Learning Styles in Libyan Universities**

Ibrahim Mohamed Omar Saad

PhD

**A thesis submitted to the University of Huddersfield in
partial fulfilment of the requirements for the Degree of
Philosophy**

**University of Huddersfield
The Business School**

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Abstract

The main aim of the study is to explore the potential role of organisational culture on learning styles in Libyan Universities. In so doing the research has embarked on a search for a suitable literature relating to both the learning styles and organisational culture. The study has learnt that cognitive learning styles should be treated as the process of mental activities, learning and problem solving and being independent of subject content; and are perceptual, intellectual, personality and social domains; and tend to remain unchanged over a long period of time. Nevertheless, as reported, recently, in the area of neuropsychology the assumption of fixed personality has been relaxed, so that individual's personality would be changed over time and under different environments or situations. This has led the research to focus, *inter alia*, more profoundly on two main constructs: personal learning environment (PLE) and personal learning styles pedagogy (PLSP). The relevant methodology has been found to be a mixed approach based on a survey, consisting of a structured questionnaire and semi-structured interviews. In order to satisfy the statistical properties, the sample size for each and every university was set at 300 students, for which the response rates varied between 66% and 70%. On the whole, as argued earlier, the final sample for each university turned out to be sufficient for consistency and reliability of the inferred statistics. Interviews of teaching staff in each and every university were conducted in support of the findings from the student questionnaire. On the whole, the results appeared to be conclusive in terms of satisfying our initial aims and questions of the study. Following a series of statistical testing and analysis, primarily using Structural Equations Models, the findings suggest that the verbaliser-imager tends to be a more common style of learning amongst students in these universities. The findings from teaching staff interviews revealed universities lack of support through provision of resources and funds for any new and innovative teaching developments. It has appeared that the universities, on the whole, have miserably failed to promote any innovative teaching and have denied their students of quality teaching and learning styles. In short, the findings from the interviews suggest that the entire Higher Education system in Libya has under-performed for many years in the two most important aspects of education quality: innovative teaching and promotion of cognitive learning styles.

List of Abbreviations

AMOS	Analysis of Moment Structure
CFI	Comparative Fit Index
CFA	Confirmatory Factor Analysis
ELT	Experiential Learning Method
FDM	Fundamental Dimension Method
GDP	Gross Domestic Product
IDV	Individualism versus Collectivism Index
LTO	Long Term Orientation Index
LS	Learning Styles
MAS	Masculinity versus Feminity Index
PDI	Power Distance Index
PLE	Personal Learning Environment
PLS	Personal Learning Styles
PLSP	Personal Learning Styles Pedagogy
RMSE	Root Mean Square Error
SEM	Structural Equation Model
SPSS	Statistical Package for Social Science
TLI	Tucker Lewis Index
UAI	Uncertainty Avoidance Index
VA	Verbaliser-Imager
VARK	Visual Auditory Read-Write Kinaesthetic
WA	Wholist-Analytic

List of Contents

Abstract	2
List of Abbreviations	3
List of contents	4
List of Tables	9
List of Figures	10
Dedication	11
Acknowledgement	12

CHAPTER ONE INTRODUCTION

1.1	Research Background: Learning Styles and Organisation	13
1.2	Libyan Cultural Values, Attitudes and Sensitivity	18
1.3	Aims, Objectives and the Research Questions	20
1.4	The Case Study: Libyan Universities	21
1.5	Research Strategy and Design	23
1.6	The Significance and Potential Contributions of Research	24
1.7	Organisation of the Thesis	25

CHAPTER TWO HIGHER EDUCATION IN LIBYA

2.1	Introduction	27
2.2	An Overview of Geo-Politics and History of Libya	27
2.3	Libyan Society: Cultural Values and Attitudes	31
2.4	Economy at the Glance	34

2.5	Education in Libya: Systems and Policies	38
	2.3.1 Pre-University Education	38
	2.3.2 Higher Education in Libya	40
2.6	Evaluation and Conclusions	45

CHAPTER THREE LEARNING STYLES: A REVIEW OF LITERATURE

3.1	Introduction	47
3.2	Defining Style	48
3.3	Models of Learning Styles	51
	3.3.1 Experiential Learning Approach	51
	3.3.2 Neurolinguistic Theory: VAK and VARK	57
	3.3.3 Model of Fundamental Dimensions	61
	3.3.4 Personality, Cognitive and Learning Centred Models	64
	3.3.5 Neuropsychological Theory	68
3.4	Characterising Learning Styles	69
3.5.	PLE and PLSP	75
3.6	Summary and Conclusions	86

CHAPTER FOUR ORGANISATIONAL CULTURE AND LEARNING STYLES

4.1	Introduction	90
4.2	National Culture: Dimensions, Determinants and Values	91
	4.2.1 Power Distance Index	93
	4.2.2 Individualism versus Collectivism Index	95
	4.2.3 Masculinity versus Femininity Index	97

4.2.4	Uncertainty Avoidance Index	100
4.2.5	Long Term Orientation Index	102
4.3	Organisational Culture	108
4.4	Culture and Learning Styles: an empirical overview	115
4.5	Summary and Conclusions	124

CHAPTER FIVE METHODOLOGY FRAMEWORK

5.1	Introduction	131
5.2	Research Objective and Research Questions	131
5.3	Methodological Issues and Procedures	132
	5.3.1 Validity and Reliability	133
5.4	Data Presentation and Statistical Procedures	135
	5.4.1 Basic Statistical Inferences	136
	5.4.2 Correlation and Regression Analysis	137
5.5	Research Strategy, Design and Research Map	142
	5.5.1 Research Design	142
	5.5.2 Research Literature Map	144
5.6	Pilot Study	145
5.7	Summary and Conclusions	147

CHAPTER SIX ANALYSIS OF RESEARCH FINDINGS

PART 1: Student Questionnaire

6.1	Introduction	150
6.2	Organisational Analysis: University Characteristics	152
6.3	Analysis of Cognitive Learning Styles	157
6.4	Analysis of Learning Preferences	162
6.5	Linking Cognitive Learning with Learning Preferences	165
6.6	Linking Organisational Culture with Learning Styles	167
6.6.1	Linkage Through Pairwise Correlation	169
6.6.2	Multivariate Regression Models	171

PART 2: Analysis of Interviews

6.7	Introduction	173
6.8.	Interview: Findings and Analysis	175
6.8.1	Detailed Analysis – Tripoli University	177
6.8.2	Detailed Analysis – Sabha University	183
6.8.3	Detailed Analysis – Gharyan University	188
6.8.4	An Overall analysis of Interviews	193
6.9	Summary and Conclusions	194

CHAPTER SEVEN DISCUSSIONS, ANALYSIS AND CONCLUSIONS

7.1	Introduction	197
7.2	Discussions: Findings and Questions of Thesis	199
7.2.1	Research Question One	202

7.2.2	Research Question Two	205
7.2.3	Other Considerations – Interview Findings	209
7.3	Summary and Conclusions of the Research	211
7.4	Limitations of the Study	221
7.5	Contributions of the Study	222
7.6	Policy Implications and Recommendations	223
7.7	Personal Reflection: My Research Journey	224

APPENDICES

Appendix A	Student Questionnaire	226
Appendix B	Student Invitation Letter	245
Appendix C	Staff Invitation Letter	247
Appendix D	Analysis of Pilot study	249
List of References		257

List of Tables

Table 2.1	Libya's Macroeconomic Indicators	35
Table 2.2	Libya's Public Service Provisions – 2002 and 2008	36
Table 2.3	Workforce and Budget Allocations in Libya, 2008	37
Table 2.4	Top Ten Universities in Libya, 2010	43
Table 5.1	CFA Testing Criteria	141
Table 6.1	Main characteristics of Participating Students	152
Table 6.2	CFA Initial and Revised Models - Organisation Culture	152
Table 6.3	Scores of Organisations Characteristics	156
Table 6.4	Pairwise Comparison of Organisational Characteristics using t-test	156
Table 6.5	CFA Initial and Revised Models – Cognitive Learning styles	158
Table 6.6	Cognitive Learning characteristics	160
Table 6.7	Pairwise comparison of Cognitive Learning Styles using t-test	161
Table 6.8	CFA Initial and Revised Models – Learning Preferences	163
Table 6.9	Learning Preferences characteristics	164
Table 6.10	Pairwise Comparison of Preferred Learning Styles using t-test	165
Table 6.11	Pearson correlation – Cognitive and Preferred Learning Styles	166
Table 6.12	Scores of PLE and PLSP using general & specific characteristics	168
Table 6.13	Pairwise Correlation between Organisation & Cognitive learning	169
Table 6.14	Pairwise correlation between Organisation & Learning Preference	170
Table 6.15	VI and WA Models Estimates – Tripoli University	172
Table 6.16	VI and WA Models Estimates – Sabha University	173
Table 6.17	VI and WA Models Estimates – Gharyan University	173
Table 6.18	Main Characteristics of Interviewees	174
Table 6.19	Summary Response to Questions	176

List of Figures

Figure 4.1	Hofstede Cultural Dimensions	107
Figure 6.1	CFA – Revised Organisation Constructs	154
Figure 6.2	Cognitive Learning styles: Revised CFA	159
Figure 6.3	Learning Preferences: Revised CFA	163
Figure 6.4	Multivariate Pre-estimation: Learning styles and Organisation	172

Dedication

*To my parents, may their souls rest in peace
and*

To my wife, kamla Omran and my son, Mohammed

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CHAPTER ONE

INTRODUCTION

1.1 Research Background: Learning Styles and Organisation

The concept of 'style' is believed to provide a major vehicle for innovation, originality and creation of individuality (Cools et al, 2009). In understanding the concept of individual or personal style, holistic analysis offers a deeper study of human uniqueness through a descriptive idiographic profiling of an individual in relation to others. It is not the style per se that one is interested to study but the process in which that style manages to tackle a task successfully (Cassidy, 2004). In other words, observing the process in which a certain style tackles a task and the performance achieved are usually the matter of concern to individuals. What factors determine and shape styles and variations found in different styles have been a matter of interest to psychologists for many years now. The concept of style and its link with human nature and human psychology has been highlighted, amongst many, in Boyatzis and Kolb (1995), Cools et al (2009) and Sternberg (2003).

By the same token, argued in Kolb (1976), as the experiential learning theory (ELT) postulates, the way individuals approach learning is varied, but the process of learning from experience goes through four phases: concrete experience; reflective observation; abstract conceptualisation; active experimentation (Boyatzis and Kolb, 1995). In effect, individual learning styles are defined by, and based upon a person's reliance on these four learning modes. ELT, therefore, attempts to identify those factors which give rise to differences in individual learning styles and hence measure the extent of their contribution to learning styles. Although learning styles relate to

individual rather than the organisation, ELT describes that factors such as educational specialisation, career choice and job role tend to some extent, to shape the individual's learning styles. The academic research conducted by Roe (1956) on career structure, Quinn (1988) of organisational value and role, and Fine (1974) on functional job analysis, all tend to support the importance of organisational environment in development of learning styles.

Research in the area of learning styles has been particularly growing momentum in recent years as new methods and approaches have been discovered and analysed. A critical summary analysis of such methods and approaches has been the matter of concern in Coffield et al (2004). Recently the assumption that students will learn in similar way has been seriously questioned (Cassidy, 2004). The relaxation of this assumption, however, has led to the development of the concept of individual learning styles and effectively the broad concept of the so-called cognitive learning style, which refers to a rational and consistent method of learning based on a set of defined strategies (Riding, 1997). In the words of Riding (1991: 4), this style of learning is “an approach to organising and processing information during thinking”.

As man being a social animal, it may be argued that the learning environment is expected to be heavily influenced by social environment. Hofstede (1991) regards culture as a social environment (living and working) where there exists a collective programming of the mind which distinguishes the members of one group from another. Moreover, as culture is derived from one's social environment, it cannot be inherited but learned substantially (Hofstede, 1991). On the basis of this observation, notwithstanding human nature, it is fair to argue that cognitive learning styles tend to

be influenced by both national and organisational cultures. Therefore, one can clearly observe that there appears to be a direct link between aspects of culture and cognitive learning styles, varying from one nation to another and one organisation to another. Although this argument may appear to be of an idiographic nature, it helps develop a nomothetic or general theory. As has been discussed in Robinson (2011: 33), individual particulars and general theory should not be treated as opposing forces but as complementing sides of all science.

Organisational culture can be defined as the collection of knowledge, experience, beliefs, values, attitudes and all habitual characteristics which distinguish one organisation from another (Hofstede, 1991: 12). Organisation culture can be seen as a sub-culture, either offering new set of values and beliefs or aims to coexist within the national cultural framework. This culture can be influenced by both internal and external factors (Lok and Crawford, 2003). The external factors are primarily determined by the national/regional or even international cultural characteristics; whereas the internal factors may be classed as managerial, and working environment. Changes in culture or counter cultural developments tend to occur but at rather slow rates. According to Hofstede et al (2010: 453-5) changes in culture have been historically associated with wars, migration and technological developments.

Research in organisational culture has considered different angles and applied to several activities and interests. Brown (1998) considers the elements of organisational culture in helping and shaping technology transfer from one organisation to another in enhancing efficiency and effectiveness of all organisations involved. Davies et al (2000) have used a simple model of organisational culture in the health care sector in

the UK, aiming to enhance net benefits to patients and carers. Whilst Martins and Terblanche (2003) have examined the nature and characteristics of certain organisations in helping innovation and creativity, Lok and Crawford (2003) have considered a practical model of leadership which can assist management to maximise job satisfaction and commitment. Ramachandran and Chong (2011), on the other hand, examine the role of organisational culture in shaping the faculties perspectives in public and private universities in Malaysia and have come up with some recommendations to improve the interrelationships between staff and management. Finally, Stensaker and Vabo (2013) have used an organisational culture setting in examining the effectiveness of a number of Nordic universities' governance.

As has been demonstrated in a highly reputable work of Hofstede et al (2010), multinational corporations operating in different countries are expected to be less influenced by national cultures than do the national companies. This is because such corporations bring with them a set of new cultural values which can be treated as sub-culture, aiming to either integrate or coexist with the existing culture. Equally, in a given country, one expects to see significant organisational culture differences between a privately owned business and a public sector organisation (Hofstede et al, 2010: 320-2). This is because private businesses tend to care more about technological advancement in pursuit of profit maximisation than do the public sector businesses.

It is therefore fair to argue that there appears to be a direct relationship between the individual's learning style and the organisation to which he/she affiliates to. However, the strength of such relationship tends to vary from time to time and from organisation

to organisation. A large number of research papers have been produced in relation to the extent of the role that organisational culture plays on the determination of learning style (among many see: White, 1992; Mumford, 1993; Boyatzis and Kolb, 1995; Chaston et al. 2001; Twati and Gammack, 2004; Biggs, 2007; Charlesworth, 2008; Cools et al, 2009; Hardaker et al, 2011; Dorca et al, 2013). Broadly speaking, these studies have aimed to investigate into the extent of potential contributions in learning styles through changes in organisational environment and management.

More specifically, a considerable number of studies on the role of organisational culture in higher education have been conducted. In a higher education setting, Among many, McKenna (1984) concludes that the role played by universities in pursuit of enhancing cognitive learning styles have led to significantly higher levels of performance by students. Riding and Wigley (1997) have carefully examined the performance of over 300 college students and reported that cognitive learning styles have been promoted and encouraged in the organisation as a whole. Evans and Waring (2009) also confirm that in their research enhancement of cognitive learning coupled with innovative teaching has enabled instructors and students to understand and evaluate their continual performance. Finally, Entwistle and McCune (2009) have exhibited that in a higher education setting, the learning problems among many students are linked to organisational construct and culture of the university in failing to promote innovative means of teaching.

One of the most recent developments in the area of learning styles and organisations are associated with the concepts of personalized learning environment (PLE), personal learning style pedagogy (PLSP), digital equity, collaborative approach,

online learning, virtual world classroom, and variable personality models which all aim to identify and measure the extent of organisation culture and environment in learning, training and teaching. Primarily, in the area of teaching and learning styles differentials at both national and international levels, significant differences have been reported, mainly stemming from differences in national culture. Moreover, such studies have demonstrated that there appears to be a direct relationship between the individual's learning style and the group, unit, organisation to which he/she affiliates to. A large number of research papers have also been produced in relation to the extent of the role that organisational/corporate culture plays on the determination of learning style. Although a majority of such research works have been in relation to teaching/learning strategies in schools, colleges or universities, aspects of training and learning in business organisations – as a part and parcel of modern management approach – has also attracted a number of prominent researchers.

1.2 Libyan Cultural Values, Attitudes and Sensitivity

Since 97% of Libyans are being of Arab origin and all are Muslims then Islam is assumed to have a strong bearing on the shaping of the national culture and how the Libyans conduct their lives (Jones, 2008: 59). It is therefore fair to say that Islamic values in Libya have been deeply rooted since the early Ottoman occupation and during the royal era, when religious leaders were regarded as spiritual leaders and had the upper hand, dominating all aspects of life until 1970 (El-Fathaly 1980). Arab nationalism promoted by President Nasser of Egypt back in the 1950s and 1960s is seemingly another uniting factor in the country. On the whole, the Libyan population can be described as traditional and conservative vis-à-vis behaviour and attitudes.

However, slight differences in attitudes and sensitivity may be found among different clans, tribes and villages. As has been highlighted in Abdulla (1999: 124-5), the idea of extended family is primarily derived from tribal values and represents the social units that contribute most to strong social belonging. All in all, individuals are expected to show allegiance and respect to family values and must avoid any behaviour or attitudes that could lead to shame on or tarnish the image of their family or tribe. It can therefore be said that individual behaviour and attitudes are always inspired and stimulated by family values (Jones, 2008: 58).

Another cultural issue which has been raised by Amin (2013) refers to the so-called “culture of fear”. As has been defined in Tudor (2003), fear is a general situation occurs under different circumstances and as a state of uncomfortable feeling that varies according to the surrounding environment, and hence represents as a part of a fabric of our everyday life. Hence, fear must be regarded as a decelerating factor in individual’s development and progress in life. According to Amin (2013: 17-18), young individuals in Libya are expected to experience fear at different layers and times: fear of parents, fear of clans/tribes, fear of employers, fear of educators and fear of political system and political leaders.

In relation to the theme of the research, the relationship between teachers/lecturers and students is of prime interest here, as this represents a natural link between the organisation culture and learning styles. According to Amin (2013: 17) this relationship is mainly shaped by the education system referred to as the “school banking”, where students are expected to have to memorise the contents of pre-set subjects studied enabling them to pass exams. Most of the time there is lack of

practical understanding of the content and students usually forget a lot of what they learned immediately after taking the exam. Accordingly, this system of education makes teachers and students like employers and workers; hence it fails to give any room for interactive relationship, but only makes the subject material central to the educational process. Moreover, as has been mainly practiced in Libyan schools, teachers rarely give chances to pupils to express their feelings or opinions on their performance, or be critical of their teaching material. As has been concluded in Myers (2006) any system of education based on fear places an extremely costly burden and obstacles in the way of growing any positive relationships between students and their educators; hence preventing students to learn effectively and be creative.

1.3 Aims, Objectives and the Research Questions

In the light of this established theory, this research attempts to examine the role that organisational culture, cultural sensitivity and cultural context in relation to University environments can play on learning styles amongst the Libyan HE students. The case of Libyan HE sector is particularly interesting for social scientists for two main reasons. First, there has been very little research conducted in the area of learning styles in Libya. Second, as the country has recently opened up, there appears to be a large number of obstacles in the process of introducing new technology in organisations, making this research rather interesting and challenging. Therefore, in the light of these reasons, one can argue against any grounded theory in so far as the role of university culture and its impact on learning styles in Libya is concerned.

The higher education sector in Libya and the universities in particular are highly influenced by the national culture. This is because they are fully funded, controlled

and politically influenced by the Ministry of Higher Education. However, there are some certain differences and managerial attributes that tend to distinguish one university from another. The current research does not attempt to identify the direction of causality between national culture and organisation culture, but it is understood that the national culture tends to have much greater influence on organisation than the other way around. Therefore, on the basis of the national Libyan culture, the main aim of the research is to investigate the role of organisational culture on the structure of learning styles amongst students in three selected universities. In so doing, the research also aims to analyse and examine the previous and the current learning styles in existence in the HE sector. Moreover, the research aims to explore the possibility of enhancing the quality of learning styles in the Libyan HE sector by introducing new technical and cultural frameworks in existence in other countries.

In the light of what said above, the research, therefore, attempts to find answers to the following two main questions:

- 1) What are the main characteristics of learning styles amongst Libyan students in the HE sector?
- 2) To what extent does the organisational culture affect the learning styles amongst the Libyan students in the HE sector?

1.4 The Case Study: Libyan Universities

The research aims to investigate the role that the university sector, as an organisation, can play in influencing the cognitive learning styles exhibited by Libyan students. In addition to the examination of individuals learning differences, the study also explores whether there are any significant differences in learning styles between the selected universities. Such differences in learning styles amongst universities may give rise to

the existence of differences in organisational cultures. For the purpose of the case study, three large state-owned universities have been selected which are located in different geographical locations in Libya: Tripoli University; Gharyan University; and Sabha University. Of the total 19 universities in Libya across different parts of the country, the researcher had an initial plan to select up to six universities including the Benghazi university in the north east of Libya. However, at the time of data collection it became evident that due to political turmoil and instability in different eastern regions it would be impossible to conduct such massive investigation. Nevertheless, the three universities selected here do, to greater extent, represent the population of universities and higher education colleges in Libya.

Assuming similarities in technology adoption and teaching styles in all the selected three universities, the researcher aims to investigate differences in individuals learning styles by the means of a questionnaire and follow-up interviews. In line with the methodological issues discussed earlier, the students' feedback will be based on random selection of individuals in a pre-determined department(s). For the purpose of statistical consistency and conducting basic statistical inferences, the research aims to go for a sample size of 300 students per university. The final structure of the questionnaire (number and types of questions) will be determined following a pilot study. Moreover, in support of our major data derived from the questionnaire, the study conducts a series of semi-structured interviews of the teaching staff and management teams of these universities. In short, our methodology is based on a mix of qualitative (use of questionnaire and interviews) and quantitative approaches (examination of the data gathered from questionnaire for the testing of our hypothesis).

1.5 Research Strategy and Design

On the basis of what has been discussed above, this research is primarily a deductive one constructed to be triangulation based on both theoretical and empirical stances. It is deductive as the research is based on a set of established theory on learning styles; hence it tests the research hypotheses using the collected data. It is a theoretical triangulation approach as it uses more than one method of data collection. It is also an empirical triangulation approach as it employs different quantitative approaches in answering the research questions.

Research in learning styles are primarily based on some form of inventories which have mainly been produced by other researchers built around different environments and situations. In this study, however, a questionnaire, rather than an inventory, is used for the purpose of data collection. Moreover, as a means of second source of data collection and cross-checks, we have conducted a set of semi-structured interviews. So, the strategy for data collection in this research is primarily based on the questionnaire and interviews, but published governmental or organisational reports have also been considered. Prior to final submission of questionnaire to the participants, a pilot study of a small subset of respondents is carried out. The aim of the pilot study is to test the applicability and workability of the data collection, and incorporation of any feedback arising from this process.

As discussed earlier, whilst the interviews are on a semi-structurally approach, the questionnaire is designed well in advance. The respondents are two groups of higher education students and teaching staff of the three public-owned universities in Libya. Two types of questionnaire is designed, one for the students and the other for the

teaching staff. The student's questionnaire is composed of three parts: (1) university environment, (2) cognitive learning styles, and (3) learning preferences. The staff questionnaire is composed of two parts: (1) personal backgrounds, and (2) teaching and faculty culture. Whilst the student questionnaire is aimed to address questions in relation to learning style, the staff questionnaire is designed to consider the teaching and the organisational cultural aspects of the higher education in Libyan universities.

In satisfying the statistical properties of the derived results, the research has taken a sample of up to 300 of students from each and every university. In addition, 10 members of staff of each university have been interviewed.

The statistical approach used here is one of the so-called Structural Equations Model (SEM), primarily derived from the application of factor analysis. In short, SEM attempts to find a tailored model with acceptable indexes and significant associations between its constructs. These constructs consist of organisational (environmental) and learning styles factors.

1.6 The Significance and Potential Contributions of Research

Since its 1969 popular revolution, Libya has been regarded as a closed economy, primarily dependent on oil revenues. However, following the early 2011 revolution, the country has now opened its door for economic, political and cultural cooperation with the West. Libya is a young society, rich with historical and cultural wealth and eager to adopt new technologies in enhancing its quality of life.

To date, very little research has been conducted in the area of learning styles in Libyan organisations. In particular, to the author's knowledge, no research work has yet been exercised in the area of learning styles in the Libyan HE sector. As cognitive learning styles and improvement in quality of learning are becoming particularly important in the overall development process of the economy, the findings of the current research will be of great asset to several agents in the economy. First and foremost, the university students will be able to identify the effectiveness of their learning styles in a given university. Secondly, the findings will be of assistance to the academics and the managers in the selected universities in guiding them through processes which would help improve student learning. Finally, our general findings will help the government decision-makers to identify the effective learning styles; hence allocating funds in promoting the quality of learning at the national level.

1.7 Organisation of the Thesis

In the light of what has been stated so far, the thesis attempts to investigate the role of organisational culture, namely the universities, on the structure of learning styles amongst students in three selected Libyan universities. For this purpose, the research aims to analyse and examine the previous and the current learning styles in existence in the HE sector, and hence explore the possibility of enhancing the quality of learning styles in the Libyan HE sector by introducing new technical and cultural frameworks exercised in other countries.

The thesis is structured in seven chapters, covering the literature, methodology, findings and discussions. More specifically, the chapter outlines are as follows:

Chapter Two: This chapter offers a general background about the economy, politics, culture, and social indicators of Libya. In addition, the chapter presents a specific account of education sector, paying a special reference to the higher education funding, enrolment and teaching/learning environment.

Chapter Three: A detailed literature review of learning styles is offered in this chapter, covering a wide variety of models, methods and approaches in identifying and developing the types of cognitive learning styles.

Chapter Four: In linking the cognitive learning styles with cultural constructs, this chapter presents an overview of the existing literature on national and organisational culture, paying special attention to higher education culture in shaping teaching/learning styles.

Chapter Five: All aspects of the methodology relating to the study is examined in this chapter, paying a special attention to the use of mixed or triangulation approach in collecting and compiling data from questionnaire and information from interviews.

Chapter Six: The findings from the questionnaire and interviews alongside the statistical inferences are examined critically in this chapter. The findings from the analysis will enable the study to find answers to the questions of the thesis.

Chapter Seven: Following the statistical findings from the previous chapter, along with the information from interviews, this chapter attempts to offer discussions relating to policy implications arising from the findings. The chapter ends with the final summary, conclusions and recommendations arising from the research.

CHAPTER TWO HIGHER EDUCATION IN LIBYA

2.1 Introduction

Over the past fifty years Libya has undergone several significant social, economic and political changes. From the era of King Idris in the 1950s and 1960s to the so-called Al-Fatah revolution in 1969 and finally to the 2011 revolution led to the removal of the Gaddafi regime.

This chapter deals with some general social, political and economic issues of Libya, by paying special attention to cultural backgrounds and educational characteristics and potential problems. In part 2.2 the overview of geo-political features and a review of historical events are examined. Social characteristics and cultural values and attitudes are offered in part 2.3. Part 2.4 is devoted to an economic examination of the macro indicators of Libya since the early 1970s. Analysis of education systems and performance are presented in part 2.5. Finally, in part 2.6 the chapter closes with some evaluation and final discussions.

2.2 An Overview of Geo-Politics and History of Libya

Libya has an area of approximately 1.8 million square kilometres, making it the fourth largest country in Africa. With the total population of nearly six million, it is highly under-populated (www.cia.gov/library/publications/the-world-factbook/geos/ly.html).

Most of Libyans live in the narrow coastal strip next to the Mediterranean Sea, with more than half of the population living in the two major cities of Tripoli in the far west of the country, and Benghazi in the east. It shares common borders with Algeria, and Tunisia in the east, Chad, Sudan and Niger in the south, and Egypt in the east.

The Libyan coastline measures nearly 2000 km from the Tunisian border to Egypt. Geologically speaking, the bay of Sirte extends onshore in a south-easterly line for at least 300 km, comprising the Sirte Basin for which it has been historically known as the centre of Libya's oil production (Otman and Bunter, 2005).

Going back to nearly 5000 years ago, Libya has never been completely independent, mainly because of its extremely strategic location. It has been colonised several times throughout its history, by the Phoenicians, Carthaginians, Greeks, Romans, Spaniards, Vandals, Byzantines, the Ottomans and the Italians. In more recent history, Libya was under Ottoman rule over the period 1551-1911; and the Italians over the period 1912-43. Following the Italians defeat by the allied forces in 1945, the country was left to be administered by the British and the French armies. Finally, in the late 1951, Libya was declared an independent monarchy.

The upheavals experienced in the late 1950s echoed the end of the King's legitimacy. As has been highlighted in Healey (1989), given the potential wealth of the country, an unstable kingdom proved not to be an option. The military coup of September 1969 led by Colonel Muammar Ghaddafi was welcome in some quarters as a means of securing political and economic stability. The monarchy was abolished on 1st September 1969 and proclaimed the new Libyan Arab Republic by the Revolutionary Command Council (RCC).

In April 1973, the Libyan government declared some fundamental measures to preserve the revolution; including the prosecution and elimination of political groups which represented counter-revolutionary forces (communists, capitalists, and the

Muslim Brotherhood), the distribution of weapons to the revolutionary masses, a bureaucratic and administrative revolution and the declaration of a cultural revolution. Following the speech of Colonel Ghaddafi in June 1973, the 450-member People's Committees were formed, taking control over the national administration of universities, hospitals, schools, factories, and farms. The concept of Jamahiriya (Republic), discussed in length in his Green Book as the "Third Universal Theory", bringing about a Socialist's People's Libyan Arab state, representing an organizational framework within which direct democracy is offered and exercised (*NY Times*, 6 April 1974). Members of the Congress are elected by the people, from which they form the government.

Alongside the formation of the People's Congress, a Revolutionary Committee was established, whose members were selected by the Leader of Libya, Muammar Ghaddafi. This committee grew very rapidly in political power and economic influence on different layers of society during the 1980s and 1990s. By the late 1990s the Revolutionary Committee was believed to have been involved in all political and judicial aspects of life, hence indirectly influencing the Congress (*Guardian*, 2001). Between 2000 and 2006, a series of decentralisation took place in Libya, when much greater political and economic autonomy and responsibilities were offered to regional governments (*Libyan Gazette*, 2006).

In the late 1980s and the early 1990s Libyan government was accused, by USA, of being involved in terrorist and anti-US activities, particularly that of the Lockerbie incident of 1988. This led to imposition of severe economic and political sanctions on Libya by the USA and the UN, which crippled the country for nearly 15 years.

However, in 2003, Colonel Ghaddafi accepted the terms of an agreement between Libya and the west and agreed to compensate all the families of the Lockerbie bombing. The year 2003 therefore is regarded as the year when Libya finally opened up to the west. Over the past ten years, the two independent agencies, Freedom House and Transparency International, have monitored Libya's scale of human rights and corruption. The 2010 separate reports of Transparency International and Freedom House demonstrated Libya as one of the most corrupt nations in the world, and with relatively poor governance and severe records of human rights violation (TI, 2010; Freedom House, 2010).

Following the so-called the "Arab Spring", which spread across the Middle East and North Africa, brought a wave of demonstrations and military uprising, supported by international community which led to the downfall of Ghaddafi in October 2011. Despite the imposition of a new interim government, since then the country has struggled to achieve peace and tranquillity that it once fought for (Guardian, 2012). Recently the newly elected Prime Minister has stated that many remnants of the old regime are still working inside the government and only after they have been removed will the country fulfil the promises of the uprising (Associated Press, 2012). In short, the brief examination and exploration of an overview of Geo-politics and history of Libya, offered in the previous two sections help understand the shape of Geo-politics and history of Libya, hence assisting readers to identify the potentials of the cultural backgrounds in learning and pedagogical styles and approaches.

2.3 Libyan Society: Cultural Values and Attitudes

On Libya's ethnic background, Arabs and Berbers represent nearly 97% of total population of Libya. Arabic is the official language of the country but Italian and English is widely understood in major cities. According to the CIA 2012 estimate of population, with the median age of around 25 years and 63% of population in working age (16-64), Libya must be regarded potentially as one of the richest countries in the world in terms of manpower resource (*op. cit.*). Tribal life still tends to influence the social relationships of the people of the region. Tribal conflicts are rare, as the recent years has seen, more of tribal interaction and cooperation have been taking place where social changes and modernisation processes have brought many of the new generations preferring to get married from outside the family or tribal domain (Tarhoni, 1999).

Nevertheless, tribal influence is still felt strongly in almost all aspects of life in Libya, and that has made the society as one of a traditional and conservative by nature. The society is primarily composed of several seemingly separate but interdependent units from as small as the family to the larger units such as clans and tribes (Jones, 2008: 64). As highlighted in Abdulla (1999: 123-25) in Libya loyalty to one's region and tribe appears to be much stronger than any other allegiances. It is therefore expected that in such a society one would come across a significant degree of favourism or nepotism which is commonly termed by the locals as *wasta*, meaning family contact.

Islam plays an important and pivotal role in everyday life in Libya. Indeed, Libyans appear to be closely following Islamic values and principles at home and at work (Jones, 2008: 58). It is therefore fair to argue that Islam is being responsible for

forming almost all cultural values, attitudes and sensitivities. Arabic language and culture is deeply rooted in the society as a whole and that many of the younger generation tend to be attracted to the very ideal of a unified Arab state, as an alternative to the Western approach to life (Obeidi, 2013: 15). This view has also been fuelled by the traditional and conservative family and tribal attitude towards western way of life. On the other hand, despite the tribal recommendation of inter-tribal marriages, many Libyans have been found to marry other Arab nationals or even the European and American citizens (Jones, 2008: 67).

Despite their rather traditional tribal values and the dominant role of father in the family, in the eyes of the law women tend to enjoy equal status with men in modern Libya (Obeidi, 2013: 169). During the early 1970s the government took positive steps toward the cause of female emancipation. Unlike in some other Arab states, Libyan women do enjoy equal rights to pay, work and education (Obeidi, 2013: 170).

The authoritarian regime of Gaddafi which ruled Libya for well over 40 years has scarred the society with the so-called the “fear culture”. As has been defined in Tudor (2003), fear is a general situation occurs under different circumstances and as a state of uncomfortable feeling that varies according to the surrounding environment, and hence represents as a part of a fabric of our everyday life. Hence, fear must be regarded as a decelerating factor in individual’s development and progress in life. According to Amin (2013: 17-18), young individuals in Libya have been experiencing fear at different layers and times: fear of parents, fear of clans/tribes, fear of employers, fear of educators and fear of political system and political leaders.

In particular, the fear culture has been seen to have caused serious and devastating effect in growth and development of creativity and innovation in education. According to Amin (2013: 17) this relationship is mainly shaped by the education system referred to as the “school banking”, where students are expected to have to memorise the contents of pre-set subjects studied enabling them to pass exams. Most of the time there is lack of practical understanding of the content and students usually forget a lot of what they learned immediately after taking the exam. Accordingly, this system of education makes teachers and students like employers and workers; hence it fails to give any room for interactive relationship, but only makes the subject material central to the educational process. Moreover, as has been mainly practiced in Libyan schools, teachers rarely give chances to pupils to express their feelings or opinions on their performance, or be critical of their teaching material. As has been concluded in Amin (2013: 18) this system of education based on fear places an extremely costly burden and obstacles in the way of growing any positive relationships between students and their educators; hence preventing students to learn effectively and be creative.

In short, the brief examination and exploration of the Libyan society, culture and political structure, offered in the previous two sections help understand the shape and functioning of HE organisations within the country, hence assisting readers to identify the potentials of the cultural backgrounds in learning and pedagogical styles and approaches.

2.4 The Economy at a glance

The post 1969 revolution had realised the importance of oil production and exportation in the overall economy of the country. However, as elaborated in El-Fathaly (1986), from the very outset, the regime made a serious attempt to contemplate away from oil to industry and agriculture. On the other hand, the regime had realised that without substantial oil revenues it could not precede with national economic development and infrastructural investment. Al-Hajaji (1970) has referred to a number of highly successful publically-owned industrial and mechanised agricultural projects which emerged from the early 1970s, primarily through oil revenues stream. Nevertheless, in addition to oil, the government proceeded with nationalisation of major industrial and agricultural activities. By the early 21st century, the extent of such nationalisation was still highly significant despite attempts made by the People's Committee and the Congress in liberalising some medium size industry and banking sector.

The period 1970-2000 represents the era when the government annually spent nearly an average of 10% of GDP on agriculture and farming. Considering the significant size of rural population of Libya, agriculture has proven to have been one of the most unproductive activities, accruing a massive opportunity cost amounting billions of dollars over the thirty-year period (Gwazie, 2005). On the whole, as the sectoral contribution of agriculture decline over time, it became evident that massive investment in this sector had seriously failed. Table 2.1 presents historical data relating to some macroeconomic indicators. In addition to agriculture, the industry is shown to have suffered over time, whilst the real contribution to the economy has been made mainly through oil production and exportation.

Table 2.1: Libya's Macroeconomic Indicators

Indicator	1980	1990	2000	2010
Agriculture share as % GDP	7.5	6.8	4.6	3.2
Industry share as % GDP	12.2	12.0	10.5	7.8
Oil share as % GDP	65.5	66.0	69.2	74.0
Financial Services as % GDP	14.8	15.2	15.7	15.0
Exports as % GDP	48.0	40.0	36.0	67.0
Imports as % GDP	25.0	31.0	15.0	28.0
Real GDP Growth Rate (%)	12.0	9.5	4.0	2.5
Inflation Rate (%)	1.1	1.5	2.2	2.3
Government Revenues as % oil revenues	70.2	71.4	74.5	78.9
Surplus/Deficit as %GDP	-2.2	-1.2	3.0	4.4

Sources: Central Bank of Libya; World Bank; IMF.

Over the past thirty years, the economy, thanks to the oil sector, has managed to generate a substantial stock of foreign reserves through international trade. As table 2.1 shows, the balance of payments have been generating significant surplus over the period. The earlier high rates of growth of GDP are shown to have slowed down to around 3-5% per annum since the mid-1990s. The government has been able to contain inflation at low levels for many years; primarily done through heavy food subsidies on flour, sugar, rice and vegetable oils (CBL, 2008). Finally, oil revenues which historically represent around 75% of total government revenues have been responsible for keeping government accounts in healthy position.

All in all, as the table shows, against the initial wish of the post-1969 revolutionary government, the country failed to achieve its objective of reducing its dependence on oil. Nevertheless, the oil revenues have been effectively used to finance several infrastructural project and massive capital investment in health and education (CIA, 2012). The Human Development Index published by the United Nations shows that Libya is amongst the second top groups of nations (after the developed economies) with high scores of HDI, indicating the significance of massive investment allocated

over the last thirty years by the government in areas of health and education (UN, 2012).

As was repeatedly claimed by the previous regime of Muammar Gaddafi, the country had focused more seriously on promotion of health and education. In testing the validity of such claims, table 2.2 offers a summary of the contributions to health, housing and education through public service budgets, over 2002-2008. As these statistics suggest, in 2002, of the total GDP of 30 billion Libyan Dinars (£20 billion), a total sum of LYD 7.6 billion (25%) was allocated to all public service provisions; of which the share of education, being the smallest, is around 17% of total public spending, and just over 4% of GDP. By the end of 2008, however, when the real value of GDP was estimated at just over LYD 97 billion, the public services share of GDP dropped by 10 point percentage compared to that of 2002.

The education spending, though increased in nominal term to LYD3.3 billion, it only represented 3.4% of GDP – a real 1 point percentage drop compared to 2002. Thus, the education sector in real term has experienced a significant decline in its budget despite the fact that GDP has trebled in 2008 compared with that of 2002 (WB, 2010). Similar picture is demonstrated in this table regarding housing and health sectors. On the whole, the relatively much higher decline in public spending may raise the issue that the regime may well have squandered the national wealth.

Table 2.2: Libya's Public service Provisions - 2002 and 2008
(Billion LYD)

	2002	(%GDP)	2008	(%GDP)
GDP	30.3		97.1	
Public Services	7.6	(25.2)	14.4	(14.8)
Housing	3.8	(12.6)	5.5	(5.6)
Health	2.3	(7.6)	5.6	(5.7)
Education	1.3	(4.3)	3.3	(3.4)

Sources: World Bank (2010); Central Bank of Libya (2010); IMF(2008)

It can also be said that over the same period, literally no or very little privatisation in education took place, having raised the issue that how the government fabricated and massaged their data, claiming high spending and investment in education and other public services. On the whole, as reported by IMF (2008), throughout the period of 2000-08, the real fixed capital formation in education was substantially lower than one billion Libyan Dinars per annum, representing only around 1% of GDP, and that being significantly lower than the average MENA of 2.5%.

Table 2.3, on the other hand, presents the latest (2008) data on total workforce in the economy and in different activities of the public sector. Including the non-Libyan nationals, the total employees stand at 1.8 million, with nearly 1 million working in the public services (55% of total workforce). The largest employment is in the education department with nearly half million workers, sharing between them LYD 3.3 billion, making a per capita of only LYD 6,800 – nearly one-third of that of housing; one-quarter of the health sector and less than half of the overall public services employees.

	Workforce (000)	Allocation per capita (LYD)
Economy	1,490	54,200
Public Services	985	14,600
Housing	290	18,900
Health	210	26,700
Education	485	6,800

In short, as table 2.3 shows, the education sector has, for years, been offered significantly lower pay or allocated much smaller capital investment than the rest of

the public services. Indeed, it must be borne in mind that such differences in budget per head, in part, may be due to differences in unit costs of the service provision. For example, provision of health care per unit is significantly higher than schooling. Although unit cost differences are critical, the extent of it bound not to be as high as shown in table 23. The findings in table 2.3 may be regarded as one of the reasons why the education sector in Libya has been lacking incentive, innovation and development.

On the whole, as the overview of the economy of Libya suggests, political factors have been dominant in economic decision-making and hence had left the society worse-off. The findings from this section would serve as a foundation in understanding of the severe efficiency and equity aspects of the economy and hence a justification for poor educational (teaching and learning) performance.

2.5 Education in Libya: Systems and Policies

As stated earlier, offering free basic literacy has been one of the pillars of the Libyan government since the late 1960s. Of the total population of approximately 6 million in Libya, nearly 1.7 million are students. The latest figures suggest that of the total number of students, around 16% study at tertiary level, including those in the higher technical and vocational sector. The number of such students has been growing at a phenomenal average rate of 2.5% per annum since 1975 (Eljarh, 2012).

2.5.1 Pre-University Education

Currently pre-university schooling is divided into three sections of primary, preparatory and secondary; for which the first nine years of education are compulsory

and are referred to as basic education. The primary school is for six years, followed by the two-three year cycles of secondary school. Thus, the basic education consists of 6 years of primary and 3 years of secondary schooling. The basic level then allows students who drop out before completing the full nine years of the opportunity to enrol in vocational programmes of one to three years in length. Intermediate vocational training centres train students for various skills-based professions. Vocational schools offer programmes for 44 different vocations in seven major fields (British Council, 2013).

The current system of pre-university education goes back to the late 1950s following the educational reforms introduced by the then King Idris. Although since 1915 there has been efforts made by the Italian occupiers and other foreign educators to introduce the modern system of primary and secondary education in Libya, very little had appeared to have happened (Deeb & Deeb, 1982). Following a crackdown on mosque schools, by the end of the World War I, the Italians invested a significant amount of funds to develop some primary and secondary schools in major cities, primarily promoting a bilingual teaching/learning style (Habib, 1975: 280).

During the British Administration (1943-51) all those Italian schools were re-opened and a number of teacher training courses designed for women, aiming to enhance the teacher quality at primary and secondary levels (Deeb and Deeb, 1982: 27). In evaluation of the contribution of the British in primary and vocational education, Attir (1992: 285) states that despite a small number of such training centres, the diversion from religious schools to conventional schools was highly evident.

Following the independence in 1951, the educational ordinance which came into effect in 1952 clearly stated that primary education was free and compulsory to all

Libyans (Attir, 1992: 277). The first four years of free and compulsory primary and secondary education led to hundreds of high school graduates, hence demanding for higher education.

The post 1969 Green Revolution saw a series of educational policies and programmes aiming to improve the pre-university standards through teacher training programmes, new vocational and technical centres, and building more schools in remote areas of the country (Deeb & Deeb, 1982: 30-33). By the end of 1975, five years after the revolution, there were 1900 primary schools, 420 intermediate schools and 68 high schools in the country, entertaining nearly half million students. In addition, the total of 13 technical schools had attracted up to 2900 students (op. cit). At the same time, the total number of teachers in primary, intermediate and high schools reached the staggering 25000, giving a students/teacher ratio of 21 (Fergiani, 1983: 38).

The 1970s trend tends to have continued all the way to the early 2000, where the total number of school teachers had reached nearly 100,000, entertaining nearly 750,000 students at different levels.

2.5.2 Higher Education in Libya

The first ever university – University of Libya - was established by the order of the King Idris in 1955 in the city of Benghazi. The academic year 1955-56 only saw 20 students registered in the one and only Arts & Education faculty of the university. From the very outset, it was realised that there was a severe shortage of qualified people to fill the key administrative and executive positions of the university (Al-Hajjajy 1970: 162-3). The second faculty of University of Libya, Faculty of Science, was established in Tripoli in 1957, primarily with the purpose of training teachers for

the intermediate and secondary levels, as well as training staff to fill the various government administrative jobs (Hawat 2003).

As has been illustrated in Al-Hajajy (1970: 147), by the end of the 1960s the university had been expanded to include faculty of Economics and Politics, Humanities, Law and Agriculture. In addition, it had incorporated institutions, such as the Higher Institute for Technical Studies and the Higher Teachers' Training College. Moreover, by the late 1970 the Faculty of Medicine and the Islamic University College in Albeidah were founded. Following the expansion of the oil and gas sector, in 1972 the Faculty of Oil and Mining Engineering was founded at the Berga oil terminal complex (Fergiani, 1983: 39).

In 1975 the government decided to allocate a total sum of LD80 million to proceed with the breaking up of the university into two separate entities: Al-Fatah university in Tripoli, and Garyunis university in Benghazi (Fergiani 1983: 45). It is believed that the breaking-up of the university paved the way for other universities to emerge through the public fund.

Currently, higher education in Libya is provided by universities (both general and specialised) and higher technical and vocational institutions. The higher education system is financed by, and under the authority of, the state. Policymakers have in recent years allowed the establishment of private institutions of higher education through what are known as educational cooperation. Since the late 1990s, there has also been considerable research into the possibility of developing partnerships between the public and private sectors to finance higher education, which resulted in the establishment of more than five private university colleges and higher education

institutes by the early 2000s. Education is free up to end of Bachelor's Degree, but post-graduate studies are up to 75% subsidised. Supply of free or subsidised higher education has led to massive rise in number of students in both universities and higher technical colleges. Between 2000 and 2010, the total number of higher education students rose from 256,000 to 330,000, representing an average increase of 3% per annum (General Education Committee, 2010).

The main reason behind this staggering rise in university enrolment in Libya is to do with the inclusive feature of higher education, wherein it is free and indiscriminately available to everyone. Additionally, as has been pointed out in Khaled (2013: 38), other factors such as higher degrees of mobility, improved technology and technical awareness, better chances of job security and higher ambition among young population have been responsible for such magnificent rise in the number of students seeking places in universities.

In addition to the 10 listed public universities and several colleges in Libya, there are also a number of private universities which have been operating since the early 2000. The top ten public universities - in terms of student number – recruit nearly 70% of total students in the country (British Council, 2013). According to the Libyan Ministry of Higher Education, Tripoli university is by far the largest with 2495 teaching staff across six faculties serving over 60,000 students. The top three universities alone, as shown in table 2.4, recruit nearly 40% of total students in the country.

Another issue worth mentioning is the female participation in higher education in Libya. According to this table, of the total 226,249 students in the top ten universities, there are 93,361 female students representing 41% of total university students in the

country. This figure is significantly higher than those reported in other Arab Middle East and North African countries.

Table 2.4: Top ten universities in Libya, 2010

University	Number of Teaching Staff			Number of Students		
	Libyan	Foreign	Total	Male	Female	Total
Tripoli	2495	54	2495	25795	35117	60912
Benghazi	1119	355	1474	18737	31318	50055
Omar Mukhtar	550	566	1116	9063	14772	23835
Sirte	516	166	418	12412	9544	21956
Zawiya	444	284	728	7768	13865	21633
Gharyan	426	231	657	5157	9102	14195
Misrata	481	228	709	5624	8571	14195
Sabha	468	273	714	3605	6760	10365
Asmarya	18	37	55	1065	368	1433
Khums	189	229	418	4135	3471	7606
TOTAL	6,238	2,423	8,661	93,361	132,888	226,249

Source: General Education Committee, 2010

Another interesting point here is that of the total 8,661 teaching staff in these ten universities, only 2,423 (28%) come from outside Libya, leaving a significant 72% of all the teaching staff being of Libyan origin. Compared to other Arab Middle East countries, particularly those of the Gulf region, with high presence of foreign university teachers, Libya appears to have performed well by breeding its own university teachers. This has been primarily due to the fact that the country has been investing in training graduates in becoming teachers. Over the past 30 years or so, there have been up to 4000 state scholarships per annum offered to graduates to go abroad to obtain their postgraduate qualifications, most of whom have found jobs in the higher education sector.

As has been so far presented, the Libyan higher education sector appears to have been performing well in terms of attracting students and developing qualified Libyan teachers to deliver the university courses and programmes. However, the reality seems to be different. Since the opening up of Libya back in the early 2002 and the subsequent fall of the old regime in 2011, the validity and quality of such educational claims have been seriously doubted. Since then, due to availability of more channels of information and general transparency, a large number of schools and colleges have been identified as having delivered extremely poor quality of teaching and management of their resources.

Following a thorough investigation, it has recently been reported that between the two poles of primary school and postgraduate education, the system is “corroded by corruption, lack of teachers’ motivation and poor management” (Linvil, 2013). This issue was also highlighted in Porter (2006) report on Libyan economy, stating that education policy “has failed to provide a job ready workforce, since the education system is disconnected from market demand”. It is further argued that education policy decisions have “negatively affected education in important areas for business such as IT and foreign languages” (Porter, 2006: 72). Teaching innovation and pedagogical development has been almost absent, even at the higher education level. This problem has been severely worsened since the early-1980s when the then regime ordered schools to stop teaching foreign languages, hence denying the nation of any progressive methods of teaching adopted by the Westerners (Suwaed, 2011: 23). In short, closeness to the regime rather than merits has been the main criterion for job security and promotion in public sector; and that had led to general demise of incentives and innovative efforts by teaching staff across the country.

In examination of the causes of poor quality teaching and research in Libyan universities, Taghavi (2013) has conducted a comprehensive quantitative investigation of five top universities. His findings suggest that low wages and lack of structured promotion mechanism have been the main reasons behind delivery of poor teaching across board. The policy recommendations arising from his research are interesting in that he proposes that wages to be index-linked and that an independent advisory board to be established to monitor quality teaching and research as the only means of promotion and rewards.

To date, the university leadership has been very much influenced by the national government in both funding and policies. Despite this constraint on leadership, a number of public universities and higher education institutes have managed to create a relatively more liberal and pro-active environment for promotion of research in innovative teaching and learning processes (Taghavi, 2013).

This section has been presented to particularly provide information and understanding of educational structure and functioning in Libya, with special reference to learning and teaching styles and approaches in the HE organisations in the country. This section helps follow the impending analysis to be offered in the forthcoming chapters.

2.6 Evaluation and Conclusions

This chapter has been devoted to examination and analysis of a certain number of cultural, political, economic and educational issues, aiming to provide, in briefest form, the real essence of life in Libya. On the political economic side it is fair to argue that the country has been heavily relying on oil and gas as the main sources of

earnings since the early 1960s. In directly controlling the political economy environment, the previous regime of Muammar Ghaddafi acted as a rentier state, where all the revenues from oil and gas were directly received by the government. The process of distribution of funds into different sectors of the economy appeared to have proven to be problematic and shrouded with corruption and inefficiency.

For over 40 years up to 2011, the country was run as a closed militarised economy, with the grand ambition of self sufficiency in food and technology. Education sector was of no exception. As far as the numbers are concerned, the previous regime claimed that it had built hundreds of schools, technical colleges and several universities, all fully financed by the state. As discussed earlier, once the doors were open in 2011, it was realised that a large number of such schools and universities were either under-staffed or run with highly unqualified and unmotivated teachers and instructors. For decades, school and university teachers, alongside almost all public servants, were denied their rightful rewards, as their wages had been kept unchanged since the early 1980s (Taghavi, 2013).

Under this unfair and unjust environment, it would not be surprising to observe that the quality of teaching and research were diminished and that was clearly echoed in the recent research papers referred to earlier (op.cit). In short, what was supposed to be delivered as a ray of hope in all aspects of life for Libya – especially in education - during the late 1950s and early 1960s was dashed by corruption, inefficiency and total mismanagement of the previous regime.

CHAPTER THREE

LEARNING STYLES: A REVIEW OF LITERATURE

3.1 Introduction

This chapter primarily and exclusively deals with the matters relating to learning styles. The theoretical foundations of learning styles and measurement tools can be traced as far back as the mid 1930s, but major developments seem to have emerged from the early 1970s. In particular, the concept of individualised learning style was developed in the early 1970s. The recent findings by Coffield et al. (2004) claim well over 70 different theories/measurement tools relating to learning styles have been identified. Indeed, here in this chapter references have been made only to major or pioneering research work. However, in understanding of the subject, the chapter is concerned with the theoretical foundations and the empirical aspects of learning styles arising from a large number of studies in this area. In so doing, we have made an attempt here at placing such methods under different groups/categories which have appeared to be distinctly different from one another.

The concepts of learning styles and cognitive learning styles have been used here inter-changeably to refer to a construct that is intrinsic to the learner in both formal and informal settings (Messick, 1984). One of the main areas of controversy and complexity in this concept is associated with variations in definition of learning styles. How significant is the role of personality and intrinsic characteristics in defining cognitive learning styles? To what extent do the social-cultural constructs help shaping the way an individual learns? Is there a mix of psychological and physiological factors which determine and form our different ways of learning

approaches? These are some of the teasing questions which have been engaging researchers in the area of learning styles for decades.

In part 2 a brief background on the concept of 'style' is offered. The theoretical analysis and fundamental models of learning style is given in part 3. Finally, in evaluating our theories/models, in part 4 a review of some empirical research arising from investigations in relation to applications of learning styles models are presented.

3.2 Defining Style

The concept of 'style' is believed to provide a major vehicle for innovation, originality and creation of individuality. In understanding the concept of individual or personal style, holistic analysis offers a deeper study of human uniqueness through a descriptive idiographic (personal characteristics) profiling of an individual in relation to others. This approach has been a matter of concern for many years amongst researchers in the areas of anthropology, psychology and sociology.

It is not the style per se that one is interested to study but the process in which that style manages to tackle a task successfully (Cassidy, 2004). In other words, observing the process in which a certain style tackles a task and the performance achieved are usually the matter of concern to individuals. What factors determine and shape styles and variations found in different styles have been a matter of interest to psychologists for many years now.

The concept of style and its link with human nature and human psychology has been highlighted, amongst many, in Boyatzis and Kolb (1995), Cools et al (2009) and

Sternberg (2003). Moreover, amongst much scholarly research, the early works by Kluckholm and Murray (1948), Shutz (1958), Roe (1956), and Gregorc (1982) offer a vast quantity of knowledge about the emergence, the importance, and the impact that style can play on both personal and social development. The methods of investigation and the findings derived from such studies have helped researchers in the area of education and learning to develop several theories and approaches in analysing differences in learning styles. In particular, the model style delineator developed by Gregorc (1982) describes four distinctive and observable characteristics of the individual's style: abstract, concrete, random, and sequential. These characteristics will be explained in the later parts. According to Gregorc, a combination of these tendencies is representative of individual's style, but individual needs to be able to function outside the natural style.

Style has been identified as being determined by individual's 'multiple intelligence' abilities. In arriving at his pioneering concept of multiple intelligence and linking it with style, Gardner (1983) has introduced and elaborated on the significance of interpersonal and intra personal intelligence. By interpersonal intelligence, he refers to the individual's capacity to understand the intentions, motivations and desires of other people. Intra personal intelligence, on the other hand, relates to the individual's capacity to understand oneself, to appreciate one's feeling, fears and motivations. In effect, individual's style is a reflection of one's blend of the multiple intelligence. In Gardner's view, therefore, the traditional types of intelligence tests such as IQ would fail to fully explain the individual's cognitive abilities derived from their personal intelligence styles.

The enhancement and the consequential evolutionary process of multiple intelligence has led to development of the so-called 'emotional intelligence'. In Boyatzis et al (2002: 152) emotional intelligence (EI) has been defined as "the ability to perceive emotion, integrate emotion to facilitate thought, understand emotions and to regulate emotions to develop personal style and promote personal growth".

Further studies, amongst many, conducted by Goleman et al (2004), Boyatzis et al (2002), Boyatzis (2006), and Goleman and Boyatzis (2008) have related EI and personal style to occupational excellence and leadership competencies. In relating style to leadership qualities, Goleman et al (2004) have identified six leadership styles associating with good leadership: commanding, price-setting, democratic, affiliative, coaching, and visionary. The concept of EI has also been traced back to Darwin's interpretation of emotional expression, as part of personal characteristics for survival and adaptation. As has been argued in Guillen et al (2007), a combination of EI and Darwin's approach will give rise to the emergence of varying intelligence and hence varying personal styles.

In summary and in the light of these varying definitions, it is therefore evident that since individuals understand and process emotions differently, one expects to observe the very emergence of an infinite number of personal styles, under different environments. This can play an important role in the current study as it heavily relies on information on students learning styles in different higher education establishments.

3.3 Models of Learning Styles

In arriving at a concrete form of characterising learning styles, this section reviews the most appropriate and relevant models or approaches developed and applied over the past 40 years or so. Out of nearly 70 models and approaches which have been examined by different researchers, here this study only concentrates on four major ones. The main reason behind this choice is that these models are the most referenced ones, and that together, they manage to encapsulate most of the relevant characterising factors which are to be considered in the current study. Moreover, as has been highlighted in Cassidy (2004), the most popular models of learning styles are the ones which incorporate a considerable bulk of characteristics, defining learning styles, processes and structures. Furthermore, concentrating on least applied models may prove insignificant and time consuming, hence outside this research framework. Finally, this research does not intend to raise an expectation that one could arrive at an ideal model, rather it intends to critically examine an optimal number of relevant models, suitable for the purpose of testing our hypotheses.

3.3.1 Experiential Learning Approach

The experiential learning method (ELT) developed by Kolb postulates that the way individuals approach learning is varied, but the process of learning from experience goes through four phases: concrete experience; reflective observation; abstract conceptualisation; active experimentation. In effect, individual learning styles are defined by, and based upon a person's reliance on these four learning modes. ELT, therefore, attempts to identify those factors which give rise to differences in individual learning styles and hence measure the extent of their contribution. Under the ELT, for a given individual, personality is assumed fixed over time, so that the

individual's learning style is expected not to change from time to time or from circumstance to circumstance.

Based on ELT, in their pioneering paper, Kolb and Fry (1975) and Kolb (1976) argue that in order for learning to be effective, all four of these approaches must be incorporated. As individuals attempt to use all four approaches, however, they tend to develop strengths in one experience-grasping approach and one experience-transforming approach. The resulting learning styles are combinations of the individual's preferred approaches: converger; diverger; assimilator; accommodator. Convergents are characterized by abstract conceptualization and active experimentation. This means that they are usually good at making practical applications of ideas and using deductive reasoning to solve problems. Divergers, on the other hand, tend toward concrete experience and reflective observation, meaning that they are imaginative and are good at coming up with ideas and seeing things from different perspectives. Assimilators are characterized as following abstract conceptualization and reflective observation, indicating that they are capable of creating theoretical models by means of inductive reasoning. Accommodators use concrete experience and active experimentation, and they are usually good at actively engaging with the real world issues and doing things instead of merely reading about and studying them.

In applying his approach, Kolb (1976) has come up with a tool of analysis, referred to as Learning Style Inventory (LSI), a questionnaire relating to all characteristics of learners in association with his four approaches. The LSI assesses an individual's preferences and needs regarding the learning process. It offers students/learners six steps. First, it allows students to indicate the way they wish to learn and then find out

about the extent of consistency of their responses. Secondly, it provides computerized results which show the student's preferred learning style. Thirdly, it offers a foundation upon which teachers can interact with students. Fourthly, it provides possible strategies for accommodating learning styles. Fifthly, it provides for student involvement in the learning process. Finally, it offers a class summary so students with similar learning styles may be grouped together.

It should be borne in mind that the types of learners identified here in Kolb's model are analogous to those of Witkin's field-dependent/field-independent learners. In effect, a field-dependent learner can be found to be an assimilator following active conceptualization approach in learning. A field-independent learner, on the other hand, is similar to accommodator where he/she is expected to follow active experimentation approach in their learning process.

Honey and Mumford (1982) adapted the model in their research, but they made a major modification to Kolb's original experiential model. This modification is related to the styles being directly aligned to the stages in the cycle and were renamed as: **Activist, Reflector, Theorist** and **Pragmatist**. These are assumed to be acquired preferences that are adaptable, either willingly or through change of circumstances, rather than being fixed personality characteristics. In effect, this approach tends to deviate from personality-centered and move closer to cognitive-centered aspects.

Undoubtedly, being one of the early methods of learning styles, the ELT has entertained a very large number of researchers in all aspects of learning psychology. Over the past four decades this approach has been heavily used by researchers in both the UK and the USA. The early research work by Dickstein (1968), Neblekopf and Dreyer (1973), Goodenough (1976), Witkin et. al (1977) all tend to suggest that

concept attainment is much more closely related to field-dependent (FD) dimension than to general intelligence. FD represent dependency on a perceptual field or part of the field when analysing a structure; where FI learner is characterised as being able to operate with an internal frame of reference, and motivated with self-directed goals and clear study strategies. According to these research findings based on different education and workplace settings, field-independent (FI) learners tend to obtain information more efficiently, avoid guessing and are more ready to identify the irrelevant issues. Furthermore, Elkind et. al (1963) findings support the view that FI students on the whole score significantly higher than FD students on a test requiring perceptual concept information.

One of the major empirical contributions conducted in the area of ELT is associated with Honey and Mumford (1982, 1983) who adapted Kolb's model for use with a population of middle/senior managers in business. At the outset, two adaptations were made to Kolb's experiential model. Firstly, the stages in the cycle are renamed in line with managerial experiences of decision making/problem solving. Secondly, the styles are made to be directly aligned to the stages in the cycle and named as Activist, Reflector, Theorist and Pragmatist. Unlike those of Kolb's, these characteristics are assumed to be acquired preferences that are adaptable, and changeable, rather than being fixed personality characteristics. Using their own learning style questionnaire, a self-development tool differing from Kolb's LSI, they invite managers to complete a checklist of work-related behaviours. Having completed the self-assessment, managers are encouraged to focus on strengthening under-utilized styles in order to become better equipped to learn from a wide range of everyday experiences. Honey and Mumford's approach though is based on a significant modification of Kolb's

model, it has made ELT a highly respectable and popular methodology amongst researchers in the area of psychology and learning styles.

In a comprehensive PhD research on education calculus and student learning in Higher Education, Alamolhodaei (1996) has used a psychological calculus test using both Witkin's field-dependent/field-independent (FD/FI) and Kolb's convergent/divergent (C/D). Using a sample of 572 students from three universities (2 Iranian and 1 Scottish), the study shows that the most effective combination of learning styles which emerged were FI+D amongst Iranian students and FD+D in Scotland. Moreover, where the former group of students were found to be good at translation processes between mathematical abstraction and visual forms of calculus, the latter group showed to be good at multi-skilled transferable and procedural skills. Furthermore, the study finds that the combination of FD+C could perform poorly in calculus amongst mathematics/physics students, and FD+D would lessen attainment in calculus amongst engineering students. On the whole, Alamolhodaei (1996) concludes that his study has fully supported the use of ELT in education.

The concepts of FD/FI and C/D have been associated to several personal and environmental factors. Whilst several studies (for instance, Coates, 1989; Boyatzis and Kolb, 1995; Drago and Wagner, 2004; Littrell, 2005; Mumford, 2007; Charlesworth, 2008; Syed-Khuzzan et al. 2008; and Alshawi, 2009) and many more tend to examine environmental, cultural and organisational aspects of learning styles, other research work have concentrated on more micro issues in relation to learning styles. For example, Ziane (1990) has found that on a basis of a large sample of Physics students, for a given working space, FI generally performed better than FD students in most cases of problem-solving. Johnstone et al (1993) have also found that

FD learners need more working space in consideration of their characteristic. However, they report that there appears to be an insignificant variation in performance between large working space and FD/FI students.

On general disagreement with the mainstream researchers, Eldersveld (1980) states that his findings indicate that cognition style of FI/FD should not be treated as a discriminator between success and failure. In fact, his research suggests that there exists a strong tendency for students to become field-dependent. Moreover, Webb (1981) recognises that cognitive style do not account for any significant course of grade variance in mathematics. On a survey of high school students, Field and Poole (1970) conclude that success tends not to relate to their C/D learning styles. Finally, in a survey relating to problem solving and success in Chemistry projects, Al-Naeme (1991) has found that FI/FD tends to be better predictors than C/D.

In their evaluation of cognitive-centred approaches, Sternberg and Grigorenko (2001) have highlighted three main problems relating to their theoretical and empirical aspects. Firstly, to them, under this theory, styles seem to be too close to abilities, hence making one style be regarded as better than another and that is not the notion of what a style is supposed to be about. Secondly, the classification of individual learners into exclusive categories seem to be arbitrary and not clearly dichotomous, as people may be found to be impulsive or reflective or field dependent or field independent to some degrees. Thirdly, as has also been argued by others, there is a clear absence of any proper theory or model for understanding the styles in relation to one another. This is to say that each set of styles is regarded under this approach to be a separate entity without any unifying framework.

On the whole, since this model is being based on and composed of several fundamental theoretical (Kolb & Fry, 1975; Kolb, 1976; Witkin et al 1954; Witkin, 1971), and practical platform (amongst many, Honey and Mumford, 1982, 1983; Dunn and Dunn, 1987; Coates, 1989; Boyatzis and Kolb, 1995; Drago and Wagner, 2004), it provides a foundation for building the characterising factors.

3.3.2 Neurolinguistic Theory: VAK and VARK

Neurolinguistic theory has been primarily used in the development of learning styles in relation to learning languages. However, the methods deployed by this theory have been recently applied to other areas of learning. Within the class of neurolinguistic theory, Dunn and Dunn (1987) developed a model known as VAK (Visual, Auditory, Kinaesthetic) claiming that it can work effectively in teaching and training environments. Based on Dunn and Dunn (1987) model, Fleming and Mills (1992), on the other hand, extended and developed their learning model referred to as VARK (Visual, Auditory, Read/write, Kinaesthetic).

Visual learning is a teaching and learning style in which ideas, concepts, data and other information are associated with images and techniques. Visual learners' abilities tend to enhance when shown graphs, maps, plots, and other illustrations, are some of the techniques used in visual learning to enhance thinking and learning skills.

Auditory learning is a style in which the individual learns through listening. Auditory learners may possess the ability for ascertaining the true meaning of someone's words by listening to audible signals such like changes in one's tone. Auditory Learners are also good at oral exams, effectively by listening to information delivered orally, in

lectures, speeches, and oral sessions. **Read/write** learners are those individuals who can only learn effectively through extensive reading/writing process. This group of learners are usually less technically able and generally poor in auditory ability. Finally, **Kinaesthetic** learning style is when learning takes place by the student actually carrying out a physical activity, rather than listening to a lecture or merely watching a demonstration. This group of learners are generally those who relate to the world through their feelings. Theoretically speaking, individuals who can make effective collaborative use of these approaches are expected to perform better in their learning process.

This method is now regarded as one of the most common and widely-used categorizations of the various types of learning style. Prior to this development, the concept of VAK, developed by Dunn and Dunn (1987), was already in use in several activities. According to Sternberg (1997), VAK and VARK are primarily based on the early work of neurolinguistic school of thought covering the so-called Myers Briggs Type Indicator (MBTI) and the DISC assessment designed to explore individual styles.

Fleming claims that the use of VARK in pedagogy allows teachers to prepare classes that address each of these areas. Students can also use the model to identify their learning style and maximize their educational experience by focusing on what benefits them the most.

Using an extended version of their VAK model, Dunn, Dunn and Price (1989) developed a 100 item self report LSI questionnaire asking individual learners in a classroom to respond to items relating to the following factors:

- i) Environmental: light, sound, temperature and design of classroom
- ii) Emotional: persistence, motivation, structure and responsibility
- iii) Sociological: peers, pairs, adults, self and group
- iv) Perceptual strengths: auditory, visual, tactile, kinaesthetic, mobility, intake
- v) Psychological: (global-analytic, impulsive-reflective, and dominance.

In proceeding with their research, factors have been reported independently in order to produce profiles which can be used to guide and develop the building of the learning situation, teaching material and teaching method. Based on their comprehensive research, their findings are supportive of the use of LSI questionnaire, within the class of VAK methodology.

On the basis of VARK, Schmeck et al (1991) review the performance of ILS in a historical setting. Their findings are generally supportive of the effectiveness of VARK in several education and training environments. On a search for an appropriate learning strategy for online course in macroeconomics, Zapalska and Brozik (2006) recognise that students should be exposed to a variety of learning experience to become more versatile online learners. They argue that the VARK instrument has allowed them to overcome mismatching with teaching/learning styles. Zapalska and Brozik (2006) conclude that effective use of VARK and proper online course design would significantly improve learning experience.

In another experiment using self-directed online learning resources, Byrne (2002) uses a VARK questionnaire and an ILS questionnaire. Using a sample of 31 apprentice electricians, the research finds that there exists a significant relationship between learning style and multimedia preferences when those learning styles are

identified through VARK questionnaire. However, as the research reports such a relationship has proven to be unstable using ILS questionnaire. According to this research, nearly 36% of learners are identified as kinaesthetic, 16% as strong aural, and a mere 3% as read/write. In a similar line of research, Becker et al (2007) aim to explore the extent to which learning styles influencing tertiary students performances for flexible delivery and assessment methods in Higher Education. Based on a sample of 891 students, using a VARK self-administered questionnaire, they report that styles do not appear to influence students' level of performance for flexible delivery methods and assessment. Moreover, in contrast with Becker et al (2007), they report 29% of learners as kinaesthetic, 21% as strong aural, and a staggering 34% as read/write. The only way such difference in percentage of read/write learner between the two studies may be interpreted is that whilst the former study deals with a group of non-academic professionals, the latter's findings are derived from university students.

Based on an on-line undergraduate business courses, Hallock et al. (2007) have reported that students with an auditory learning style tend to have a higher overall grades than those with other learning styles. Coates (1989) has reported the way people learn on management courses by arguing that the more one persuades the people to work within groups the more effective the learning process becomes. Based on a US university undergraduate online education, Drago and Wagner (2004) have found that online students are more likely to have stronger visual and read-write learning styles. Surprisingly, they further report that read-write learners and students strong across all four styles are likely to evaluate course effectiveness lower than other students.

Finally, in providing help for trainers and learners in the business environment, Vincent and Ross (2001) have approached PLE and multiple intelligences. Using a VARK questionnaire, they state that trainers need to be aware of learning styles of their trainees so that they can establish new ways of teaching and identical information to learners with varying learning styles. On the whole as has been documented in Riding and Rayner (1998), in a majority of studies conducted in different countries, Kolb/Honey and Mumford approach and their LSQ questionnaire have been proven to be more preferable and fruitful than that of VARK.

In a study based on a postgraduate programme, Gudmundsson and Nijhuis (2001) have identified that a collaborative method of learning tends to cultivate evaluation, communication and decision-making skills; hence making class discussion more fluent and highly constructive.

As has been demonstrated earlier, the VARK approach has produced several useful applications and findings over the past decades or so. In short, different aspects of VARK and associated factors can form a foundation upon which the current study's characterising factors are to be based upon.

3.3.3 Model of Fundamental Dimensions

In an examination of the nature of problems in relation to cognitive styles in education, Messick (1984) has identified 19 models of cognitive style, but arguing that a distinction between style and abilities need to be established. This kind of approach is based on the so-called "cognition-centred" tradition, and forms the basis of the model of fundamental dimensions.

On the basis of these construct and experimentation, Riding and Cheema (1991) have extended the categories of style based on two fundamental dimensions: wholist-analytic and verbaliser-imager. The wholist-analytic dimension relates to the way in which individuals process information; either as a whole (wholist) or in small components (analytic). The verbaliser-imager dimension, on the other hand, describes the way and the extent to which individuals represent information either as words (verbaliser) or as images (imager). The model developed in Riding and Cheema (1991) is built on the basis of the use of more than 30 labels in describing a variety of cognitive and learning styles; hence being more appropriate for application purposes. Under this method, individuals are mapped on a two-axis diagram representing a mix of the two learning characteristics. Three groups of labels are as follows:

- i) the wholist-analytic style dimension relates principally to cognitive organisation;
- ii) the verbal-imagery style dimension relates principally to mental representation;
- iii) reflecting a deliberate attempt to integrate both the wholist-analytic and verbal-imagery dimensions of cognitive styles.

Each of the above three categories may include several methods on which individuals process new information. For example under the wholist-analytic dimension, individuals are assumed to use one of the following approaches when processing new information:

- a) “Field-dependency-independency”: referring to dependency on a perceptual field or part of the field when analysing a structure; field-independent learner is characterised as being able to operate with an internal frame of reference, and motivated with self-directed goals and clear study strategies;
- b) “levelling-sharpening”: referring to a tendency to absorb details rapidly or emphasise details and changes in new information;
- c) “impulsivity-reflectivity”: referring to a tendency for rapid as against a deliberate response;
- d) “convergent-divergent thinking”: referring to narrow, focused, logical and deductive way of thinking rather than broad open-ended approach in problem solving;

- e) “holist-serialist thinking”: referring to a tendency to absorb details through learning or problem solving incrementally or globally;
- f) “assimilator-explorer”: referring to individuals preferences for seeking familiarity or novelty in the process of problem solving and creativity;
- g) “adaptors-innovators”: referring to the conventional procedures against new perspectives in problem solving;
- h) “reasoning-intuitive active-contemplative”: referring to individual’s preference for developing understanding through reasoning or impulsiveness or insight and learning process which enables active participation or passive reflection.

Once the list is prepared, this model devises a learning style questionnaire, similar to that developed in Honey and Mumford (1992). The data collected from the questionnaire will be then assessed accordingly. In integrating and assessing both ends of the wholist-analytic and verbal-imagery dimensions, Riding (1991) have come up with the development of a tool or an instrument referred to as “cognitive style analysis” (CSA). CSA is a useful and practical computerised assessment instrument which identifies an individual’s position in a two-dimensional space of learning style which incorporates the two fundamental dimensions of style. However, this approach tends to ignore the fact that there is a greater interest in the potential impact of style on learning in an educational setting. As has been highlighted in Cassidy (2004: 424), what this approach tends to miss out is the development of new learning-relevant constructs and concepts which are often borne out of the utilisation of assessment instruments.

On the whole, models of fundamental dimensions have truly brought about some new dimensions based on the existing literature in examination and characterisation of learners under different environments. Moreover, the development and application of the so-called CSA has shown to be a useful tool in identification of learners’ cognitive styles within a bipolar system.

3.3.4 Personality, Cognitive and Learning Centred Models

Rayner & Riding (1997) have introduced a new way of considering learning style by constructing a framework based on three approaches: personality-centred, cognitive-centred, and learning-centred. These approaches may be linked to Riding and Cheema (1991) model by identifying whether each of the three approaches will fall within the general category of wholist-analytic or verbaliser-imager. According to Rayner & Riding (1997), the personality-centred approach has a rather limited influence on learning; whereas cognitive-centred approach focuses upon the identification of styles on individual difference in cognitive and perceptive setting. Finally, the learning-centred approach is based on the potential impact of style on learning in an educational/training setting, and that is usually borne out of the use of assessment instruments.

The cognitive-centred and learning-centred elements of this theory, in effect, represent a generalised version of several models of learning style. Although this model is primarily centred on the theory developed by Riding and Cheema (1991), it also heavily lends itself towards Witkin (1954), Kolb (1976) and Gregorc (1982). In particular, as has been stated by Rayner and Riding (1997), the wholist-analytic dimension of cognitive style is derived from and within Gregorc's model. However, it should be noted that there are overlapping issues in relation to characteristics which define personality and cognition, and hence it is difficult to separate out the effects of one on others. Moreover, this theory does not attempt to identify this difficult task of causal relationships between the characteristics defining these three centres. Furthermore, this theory overcomes the problems relating to previous models as it encompasses the three dimensions together. However, for the purpose of application,

the theory still relies on the use of CSA, requiring a large set of information about learners' characteristics and their learning styles.

In their pioneering work, Riding and Cheema (1991), based on a large sample size and using CSA questionnaire have argued for presence of strong wholist-analytic dimension of cognitive style. As for their second dimension of cognitive styles, Riding and Cheema (1991) argue that they have found a marked tendency for individuals to consistently use verbal rather than imagery, and that signifies in the individual's orientation or style. Jonassen and Grabowski (1993) article tends to strongly support the views expressed in Riding and Cheema (1991).

On the dimension of verbal-imagery, Riding and Taylor (1976) made the assumption that pupils who formed an image of a piece of information during reception would provide the answer quickly through the image; whereas those who did not form a clear image, would normally take longer to respond. Riding and Calvey (1981) have extended the Riding and Taylor's test by posing questions to assess verbal coding as well as imagery coding. The study shows that while the verbal-imagery code test proved to be effective, it was difficult to administer and turned out to be time-consuming to score.

Richardson (1990, 1994) reports that his research has led to support for the existence and significance of the visual mode of representation and its relationship to experiential, behavioural and psychological changes occurring in the individual. In explaining its features and in admiring its potentials, Riding (1991) and Riding and Rayner (1998) report that the development of CSA has brought a marked attempt to

integrate theory of cognitive style into a single construct. In short, the CSA is a computerised measure which merges an individual's tendency to think visually or verbally with information processing either wholistically or analytically (Riding, 1991).

A major paper in the area of education, based on the use of fundamental dimensions is offered by Riding and Pearson (1994). In their research they support the case for the independence of the two dimensions from each other; as well as low correlations found between each dimension and intelligence score. Riding and Wigley (1997) have also observed low correlations between both cognitive dimensions and the scales of intelligence, using a comprehensive personality questionnaire. Similar observations, under different environments, have been reported by several other studies (Riding and Douglas, 1993; Riding et al 1995; Riding, 2000; Sadler-Smith, 2001).

Another comprehensive research has been conducted by Sadler-Smith (2001), based on a large sample business management undergraduate programme in a UK university. The research is based on the four scales of concrete experience (CE), reflective observation (RO), abstract conceptualisation (AC), and active experimentation (AE), and uses the CSA framework. In consideration of Wholist-Analytical/Verbaliser-Imager construct, he arrives at four separate psychological functions: comprehension (AC minus CE), transformation (AE minus RO), representation (Verbaliser-Imager), and organisation (Wholist-Analytical). These construct in effect represent the style related behaviours. The data has been subjected to application of a principal component analysis, representing two factors being responsible for nearly 55% of variation in these constructs.

On learning and teaching challenges in relation to HE in the Gulf region, Sabry and Alshawi (2009) have reported that the sequential-global learning styles profiles of undergraduate students in relation to information system design and interactive learning systems have been proven to be successful. Cassidy (2006) has referred to the process of independent learning and non-technical skills in education and employment. His findings are indicative of the existence of a strong positive correlation between deep approach to learning and self-assessment skills. Similar verdict has been reported by Allinson and Hayes (1996) in their study of learning styles at Higher Education level.

Finally, using a wholist-analytic framework, Bull and McCalla (2002) have developed a cognitive style model in peer help networking. The computerised based help system asserts learners trying to solve problems while learning a subject. Their so-called the I-help provides a matching of helper and helpee based on factors such as helper's knowledge, helpee's question, and the availability and eagerness of helper. Bull and McCalla (2002) conclude that the framework and relevant questionnaire have proved to produce useful findings for decision-makers.

In short, the cognitive-centred and learning-centred elements represent a generalised version of several models of learning style, giving a particular reference to the wholist-analytic dimension of cognitive style. Moreover, this approach identifies that there are overlapping issues in relation to characteristics defining personality and cognition, and hence stating that it is difficult to separate out the effects of one on others. In effect, this model sheds light on the dynamic aspect of learning styles.

3.3.5 Neuropsychological Theory

Neuropsychological theory lends itself partly to physiological mechanism of brain. Simply speaking, brain is crowned by two cerebral cortex hemispheres of the so-called, *cerebrum* which are joined at the surface where they rest on the others by the *corpus callosum*. Electrical activity of brain can be detected using electrodes at various positions on the surface of a person's head while the individual performs specific tasks. Amplifying and recording of the electrical activity of the brain is referred to as EEG. According to Cohen (1982), the differences in left-right electrical activity arising from the two cerebrums may be due to cognitive style differences. This observation has long been associated with the left hemisphere being the location of verbal function, and the right with imagery processing.

Jackson (2005) has used the so-called neuropsychological hybrid model of personality to develop a behavioral model of learning. He has argued that "sensation seeking" provides a core biological drive of curiosity, learning and exploration. He states that a high drive to explore may lead to dysfunctional learning consequences unless cognitions such as clear goals, conscientiousness, deep learning and emotional intelligence in more complex ways to achieve functional outcomes such as high work performance. In other words, Jackson's model proposes that conscientious achievement tends to respond to intervention, whereas sensation seeking, being a biological matter, will not. In effect, Jackson (2005) assumes that individual's personality is dynamic and hence can be developed through self-awareness, preferences and beliefs. This assumption makes the model significantly different from other models which strongly assume learner's fixed personality.

Although Jackson (2005) claims that his model has proven to be fruitful in organisational psychology, education and training, it appears that the assumption of dynamic personality would make teaching/training a rather difficult task to implement. In an attempt to critically evaluate the potential values of different learning models, Revell (2005) warns us of any models which appear to work well in the lab but may not necessarily do so in the classroom.

In one of the most recent research in the area of neuro-educational approach, Pritchard (2013) has made a reference to such applications in classrooms. He identifies a relationship between brain functioning and traits such as memory, concentration and language. This is of interest to us as it argues that our behaviour and the way we react tend to change significantly to changing learning environment.

On the whole, the proponents of this approach argue that learning styles are the by-products of a complex psycho-biological process and hence attach much lower values to the learning/teaching environments and other social factors. Furthermore, having analysed a number of relevant methods and models of learning, the research is of the view that the assumption of rigidity of personality is rather unrealistic and impractical in most circumstances.

3.4 Characterising Learning Styles

The concept of style construct has emerged in a number of academic disciplines, primarily covering areas such as personality, cognition, communication, perception and learning. For example, Riding and Cheema (1991) have identified well over 30 labels used to describe a range of cognitive and learning styles, hence proposing a

broad categorisation of style according to two fundamental characters (dimensions)- wholist-analytic and verbaliser-imager. These two dimensions would provide researchers with the way in which information is processed and presented by learners (Cassidy, 2004).

Style in educational psychology has been identified as a key construct in the area of individual differences in the learning context (Riding and Rayner, 1998). In demonstrating the link between learning style and the fundamental make-up of a person, Riding (1997) argues that it represents a constant aspect of an individual's psychology which tends not to be stable over time.

In a comprehensive manner, Rayner and Riding (1997) have offered a broad picture of learning styles by considering a three-dimensional process in which personality, cognition and learning centres are all evaluated simultaneously. Whilst the cognition centred approach tends to focus on the presence of varying styles based on differences in individuals' backgrounds and perceptions, learning centred approach aims to identify differences in learning styles through variations in learning relevant constructs and assessment instruments. Once again, due to the presence of a large number of factors embedded in each and every dimension, one should expect to observe several permutations of learning styles to emerge.

As has been elaborated in terms of education sector, Ament (1990) states that by the time we reach adulthood, each of us has developed our own unique method of learning. As argued further, trainers have too developed methods of delivering materials, and transferring content to their participants. This is to say that both

learning and teaching can be inflexible; and that the more compatible the style of learning is with the style of training, the more likely it is that there will be a positive learning/training experience. In the same line of argument, Hamblin (1981) advising teachers trying to impose a specific learning style is equivalent of imposing a false self upon someone – an act which proves to be destructive in the long run.

Research in the area of learning styles has been particularly growing momentum in recent years as new methods and approaches have been discovered and analysed. Recently the assumption that students will learn in similar way has been seriously questioned. The relaxation of this assumption, however, has led to the development of the concept of individual learning styles and effectively the broad concept of the so-called cognitive learning style, which refers to a rational and consistent method of learning based on a set of defined strategies. In the words of Riding (1991), this style of learning is “an approach to organising and processing information during thinking”.

For the sake of argument, in this research the terms “learning style”, “cognitive style” or “learning strategy” are all used interchangeably to represent a method of learning based on prior thinking. The concept of prior thinking refers to one being expected to follow a rational approach learning in a strategic and cognitive manner. One of the first attempts at defining such learning style is associated with Allport (1937) who describes it as “habitual mode of problem solving, thinking and perceiving and remembering”. Nearly forty years later, Messick (1976) simplifies cognitive learning as “consistent individual differences in preferred ways of organising and processing information and experiences”. Then, over twenty years later, in their comprehensive

research, Riding and Rayner (1998) define cognitive style as “the usual way” in which an individual assesses, processes and remembers information. Learning styles, on the other hand, has been considered by them as the effect of cognition within a learning context. This kind of distinction has given birth to the so-called personal learning style (PLS) which has been defined by Evans and Cools (2009) as encompassing a range of cognitive and learning styles and strategies. In effect, PLS incorporates both person specific and socialised factors into one type of cognitive learning style, hence uprooting the importance of the learner’s cultural backgrounds.

On the development of the individual learning style, Witkin et al. (1954) must be regarded as the pioneer of the theory of differentiation and cognitive styles based on a single dimension of field dependency–field independency. Field dependent learner is expected to rely on external referents and peer support; whilst field independent learner tends to be more autonomous and isolationist in development of restructuring skills. Though the latter learner appears to be more analytical, he/she is less autonomous in development of interpersonal skills. It is therefore assumed that these characteristics attached to these two groups of individuals do have implications for the preferred learning situation and consequently learning outcomes. As has been highlighted by Witkin et al (1977), one needs to understand that field-dependent/field independent cognitive styles are only process variables, meaning that they are techniques towards a final goal rather than being the individual’s ability in achieving the goal.

Another fundamental approach to differentiation is associated with one of the early models of learning behaviour, presented by Curry (1983) who initially proposes a

three-layer onion metaphor to demonstrate the inner and outer layers of her model, representing differences between different approaches to style. This model, in effect, is built upon the previous contributions by several authors in this area: Learning Preference Inventory by Rezler & Rezmovic (1981); Learning Style Inventory of Kolb (1976); Cognitive Preference Inventory of Tamir & Cohen (1980).

In her later paper, however, Curry (1987) has enhanced her onion model by adding another dimension (layer), namely “social interaction” as a fourth layer. The most outer layer of this model is referred to as “instrumental preference”, indicating the individual’s preferred choice of learning environment; making it the most susceptible to influence and hence the least stable for measurement. The next layer is the social interaction which relates the individual’s learning preference to that of the society. The third and yet the more stable layer is referred to as “information processing”, and it is defined as the individual’s intellectual approach to processing new information. The final layer and yet the core of the onion is called “cognitive processing”, being the most stable component of the model as it relates to the individual’s behaviour across many different learning instances. This final layer is sometimes referred to as the “cognitive personality style”, as it is understood to be interactive with other layers in this model.

In consideration of the Curry’s contribution to understanding of the learning styles structure, it can be argued that her models offer four characterising factors: instructional preference, social interaction, information processing, and cognitive personality. Moreover, the inter-relationships amongst these main factors can be rather complex and hence offer a number of permutations which may form the

individuals' learning styles (Honey and Mumford, 1992; Entwistle and Tait, 1993; Biggs et al 2004).

From the above discussion, the so-called traits-states controversy has emerged, primarily relating to the relative importance of these inner and outer layers in determination of personal learning styles. Although the distinction made by Curry (1983, 1987) between the inner and outer levels of the onion being useful, there appears to be a need for re-examination of the learning approach to style. As has been highlighted in Riding and Rayner (1998: 83), one needs to know more about the likely impact of cognitive style on individual's approach to learning. In effect, within the traits-states argument, they propose that it is the interaction of cognitive style and learning strategy which tends to influence the individual's approach to learning.

According to Jonassen and Grabowski (1993), cognitive style as a process includes several aspects of differential psychology relating to individual differences in the learner and the learning environment. In extending this definition, Greene and Miller (1996) also incorporates some physiological characteristics into his model but with somewhat limited power. It has been argued by Riding and Rayner (1998) that cognitive style is an in-built and automatic way of responding to information and influences a person's general attainment or achievement in learning situations. So, for a given environment, differences in learning cognitive styles amongst individuals may be associated with psychological constructs (perception, cognitive process, mental imagery, and personality) but independent of physical features.

On establishing the main characteristics of cognitive styles, Kempa (1979) regards them as the process of mental activities, learning and problem solving and being

independent of subject content. Witkin et. al (1977, 1981) refer to pervasive feature of cognitive styles by stating that they are perceptual, intellectual, personality and social domains. Furthermore, Witkin (1978) refers to the stability of cognitive styles, meaning that they tend to remain unchanged over a long period of time, arguing that any educational implications of cognitive styles may have long term validity. Of many researchers, Messick (1976) refers to bipolarity characteristic of cognitive styles by stating that the dimensions are value-neutral and that each pole has qualities that are adaptive in particular circumstances. In simple terms, bipolarity means that there is no good or bad cognitive style, and that distinguishes it from intelligence. According to Hartman (1984), cognitive styles are relatively independent of abilities and aptitudes.

Bipolarity comes in different forms and shapes. Following what this study has reviewed, they may come in a form of field-dependence versus field-independence, concrete-experimentation versus reflective-observation, wholist-analytical versus verbaliser-imager. In effect, these bipolarities refer to the way individuals characteristically approach cognitive tasks in their process of learning (Hartley, 1998: 58). The concept of bipolarity will play an important role in this study as it helps determine the extent of learning style differences amongst learners.

3.5. PLE and PLSP

Since the early 2000, there have emerged several new methods and approaches in learning styles research, but they all either extension of the existing theories or they are primarily based on the development of new questionnaires.

Trait-State Debate

As stated earlier, once deviating from the behaviourist approach to learning, one comes across one of the most critical and the longest running debates, known as trait-state. This debate was brought to surface in the area of personality by Mischel (1968), challenging the very core assumption of the personality theory: is the learner consistent in his way of learning or does his learning strategy change under different tasks, contents or environments.

The proponent supporters of the trait-state argue that individual's learning style tends to vary over time as different states (environments or processes) could have a significant impact on one's learning. The observations reported by Loo (1997) is indicative of the fact though some forms of learning styles may remain unchanged over time, learning styles on the whole are far from being stable. Cassidy (2004) refers to trait as being the structure or foundation of one's learning styles, while the state may be viewed as the processes or experiences that one goes through his/her life and that those could have impacts on his/her learning styles. As has been discussed in Watkins (2001), the use of phenomenographic approach determines whether the learning is context specific, and that the relation between the learner and the task is consistent. Biggs (1987) has elaborated that the presage stage in learning includes both personality and situational elements, and that in turn affects the process and product of learning.

A by-product of this debate is 'learning in context', which contends that learning cannot be separated from the context in which it occurs. The contextual influences on learning has been a matter of concern by many researchers, who treat learning process

as essentially a social and cultural activity or experience, placing formal learning into context, with schools being as a social context. In extending this argument to the case of internationally mobile students, Charlesworth (2008) embraces the country-specific pedagogical practices as a source of new world of education. Under this tenet, culture is treated as a context which affects learning styles and hence shaping the individual's behaviour. (Segall et. al. 1999: 2).

In his elaborative theory of mental self-government, Sternberg (1997) has made an explicit argument for the flexibility of thinking styles. Within the framework of trait-state, he refers to seven socialisation factors - age, culture, gender, occupation, parental backgrounds, religious upbringing, and schooling - which are likely to affect the development of one's thinking styles (Zhang and Fan, 2011). Studies have also shown the high degrees of correlation between certain types of learning styles and socio-economic status. Sternberg and Grigorenko (1995), Ho (1998) and Zhang and Sternberg (2006) have found that students from higher socio-economic status are often exposed to much greater intellectually challenging situations, conducive to the development of the so-called type I styles. Type I thinking styles, according to Zhang (2002), includes legislative, judicial, global, hierarchical, and liberal styles, which tend to be more creativity generating, and they denote higher levels of cognitive complexity. As has been summarised in Zhang and Fan (2011: 47), Type II which includes the executive, local, monarchic and conservative styles, indicate a normal tendency and denote lower levels of cognitive complexity. Finally, Type III, including the oligarchic, anarchic, internal and external styles, may present the characteristics of either type I or type II thinking styles. These classifications, primarily derived from trait-state debate, have produced various research methods – questionnaire, survey,

and experiments – and have led to four main inventories for generating a big bulk of literature on thinking styles: Thinking Styles Inventory (TSI), Teaching Styles in Teaching Inventory (TSTI), Preferred Thinking Styles in Teaching Inventory (PTSTI), and Preferred Thinking Styles in Teaching Inventory (PTSTI).

Personal Learning: Environment and Pedagogy

In the light of trait-state debate and the need for inclusion of social/environmental aspects into learning styles, personal learning environment (PLE) has primarily emerged as a need for development of online teaching/learning in both education and business. PLE does not necessarily promote or support any particular theory, but aims to improve learning effectiveness using technology and common sense.

In a number of studies which will be referred to in relation to PLE, we have noticed that a majority tend to use a mix of VARK and wholist-analytic in their analysis of learning styles. Examples of these cases are Jackson's Learning Styles Profiler (LSP), the NLP, and meta-cognition (awareness of one's own thinking) programs based iWAM questionnaire. As for meta-cognition, as argued by Nisbet and Shucksmith (1986), forms a major part of personal development and utilization of style. There are, however, many other tests which have gathered popularity and various levels of credibility among students and instructors. In some other cases these approaches tend to be only a renaming of a particular characteristic of learners in a given questionnaire.

One of the inter-relating factors to PLE is the personal learning styles (PLS) approach that includes a range of cognitive learning styles and strategies which highlight the

importance of socialisation and culture. In contrast to the traditional dependent methods of learning, PLS promotes the idea of collaborative methods which encompass teaching styles/methods as well as learning styles. Within the PLE, all these elements are therefore considered, say, through a virtual world's classroom. Through this approach, cultures are expected to be shifting and generating "fast showing similarities in movement and growth to how spiders spin silk" (Hardaker et. al. 2011:210). Moreover, the so-called Personal Learning Styles Pedagogy (PLSP) emerges here to embrace individual differences in learning styles and teaching methods which may affect learners differently (Evans and Waring, 2009). In effect, PLSP can be seen as providing opportunity for research in the area of types of pedagogy, aimed at bringing about equality, understanding and pluralism in culture, hence shaping the learning involvement and experience.

The understanding and further analysis of the cultural aspects of PLSP is expected to be of significant assistance in formulating and evaluating the types of pedagogy offered to students at Libyan universities.

Another off-spring of PLE is the so-called Teaching-Learning Environments (TLE), primarily established by Entwistle and Ramsden (1983), and further enhanced by Biggs (2007) and Hounsell and Hounsell (2007). According to this approach, if students were subject to repeated experiments that supported a deep approach, then this may encourage a more lasting disposition to understand for oneself. The TLE literature suggests that learners may differ in their degrees of preparedness in taking up opportunities that might allow them to develop a greater disposition to understand. Such differences may be attributed either to their background knowledge of the

subject area or to their capacity to perceive value opportunities (Entwistle and McCune, 2009).

In relating pedagogy to trait-state nature of style, Evans and Waring (2009) have highlighted the ever-increasing need for understanding the flexibility within the concept of state, which is clearly at odds with the conventional behaviourist perspective. On the other hand, cognitive styles represent the individual's relatively stable habitual mode which is considered to be trait-like, whereas learning strategies are more state-driven techniques (Tsianos et. al. 2011: 238)

The potential recognition of cognitive styles is now widely understood amongst researchers in pursuit of greater realisation of our own and each other's learning (Evans and Waring, 2009: 171). The application of PLSP is therefore expected to enhance cognitive styles, enabling both teachers and learners to understand and evaluate why individuals with certain approaches perform better than others under certain educational settings.

Over the past few years several papers have emerged based on the issues relating to flexibility in learning styles and the provision of individual or personal learning environment. On the idea of promoting personal learning environment (PLE), a few number of research work have emerged. For example, on learning styles in training, Poon and Fatt (1995) have demonstrated that by matching the learning environment with the learners' learning style one can achieve effective training process. On development of a personalised learning environment in construction, Syed-Khuzzan et

al. (2008) have reported success in their findings as learning process have been more efficient and applicable.

On situational influences on learning styles, Talbot (1985) has made reference to two main issues arisen from his research. First, he argues that it is possible to devise a measure of an individual's flexibility of learning style based on different situations or environments. Second, he states that learning situations vary according to the diversity of opportunity provided for different modes of learning styles. Talbot (1985) concludes by stating that information about individuals and situations can be effectively used to improve a person's flexibility in learning process.

On examining the relationship between style and ability, Carroll (1993) by considering a number of style measures concludes that many of them in reality were aspects of ability. This finding suggests that for any measure of style to be valid it must not also be a measure of ability. McKenna (1984) also states that style and ability may affect performance on a given task. As highlighted in Riding and Rayner (1998), this basic distinction between style and ability is that performance on a given task will improve as ability increases, but the effect of style on performance depends on the type of task.

On the subject of personality and style, since there are still no clear identification of personality dimensions, one cannot adequately arrive at any concrete conclusions. According to Cattell (1995), there are still debates about how many factors the descriptor of personality resolved into. Nevertheless, on the issue of personality and learning style, Riding and Dyer (1980), on testing 12-year old children, found a strong

negative correlation between a measure of verbal-imagery style and introversion-extraversion personality. Another similar work was conducted by Riding and Wigley (1997) in a study of 340 college students. Their research found a more pronounced effects such that with neuroticism, wholist-verbalisers and analytic-imagers.

On the question of gender and learning style, Skaalvik and Rankin (1994), report that with respect to academic achievement, there seems to be a general pattern in which females out-performing males in most subjects, but less so in sciences and mathematics. Riding and Egelstaff (1983) have also observed that on a given task, males are found to process faster, but to a certain level, than females who are more thorough and deep. Riding and Pearson (1994) used the CSA to assess learning style and found that overall performance on a range of school subjects at bimodal level by 12-13 year olds was highest for boys and lowest for girls.

One of the topical issues in relation to learning styles is in the area of personal development and Personal Style Awareness (PSA). The concept has been analysed by several researchers but is at its infancy stage. Riding and Rayner (1998: 128) have referred to it as reality that people should “see themselves as others see them”. This way, they will be able to work more effectively in a team or a group, as they will be able to understand others and appreciate their strengths. Self-awareness, therefore, must be regarded as both “liberating and empowering” (Riding and Rayner, 1998: 185). It is liberating because once the individual discovered that a particular task may be difficult, then he/she feels more relaxed about not being able to do it easily. Self-awareness is also empowering since one is more aware of his/her strengths and can develop ways of dealing with the areas that are less strong. A full account of personal

and social attributes in relation to personal style development has been set out in Riding and Rayner (1998: 128-138).

In striving for digital equity as a means of enhancing learning and content design, Hardaker et al (2010) have highlighted the importance of embedding the cognitive learning styles into a process which incorporates the behaviourist and cognitive theory perspectives. In what they term as the “middle way”, Hardaker et al (2010) attempt to exhibit their appreciation for promoting the idea of understanding cognitive learning styles and cultural contexts in achieving digital pedagogy equity for all learners.

In relation to PLE and PLSP, several worthy research works have emerged recently (in particular: Sternberg and Zhang, 2001; Zhang and Sternberg, 2009; Rayner and Cools, 2011). In a research relating to a small scale longitudinal study with first-year university students, McCune (2000) demonstrated that students differed markedly in their development toward a disposition to understanding of subjects, responding to opportunities to change their perspectives on learning. Based on a series of semi-structured interviews of a small cohort of first-year university students, Entwistle and McCune (2009) have shown that most of the students exhibited a fairly limited intention to understand the course material presented by their lecturers. Moreover, very few of such students are found to speak of engaging widely with the literature or attempting for more personal perspectives. In understanding teachers’ preferences for their students’ learning styles, Zhang (2008), using the PTSLI, administered the inventory to 175 faculty members in Tibet university and to 144 faculty members in Nanjing university of mainland China. Compared to the latter group, the Tibetan

academics appear to prefer for their students to learn more conservatively – a stronger preference for type I learning styles.

In attaching a much greater weight to PLSP and teaching practices, Evans and Waring (2009) state that teacher should be aware of the fact that some students may be more capable of style flexibility than others, and for others flexibility may not necessarily be regarded as a goal. They conclude that the development of strategies to cope in situations where “style delivery is at odds with style preference is also important to assist in independent learning” (Evans and Waring, 2009: 203). On the same line of analysis, Sharma and Kolb (2011) highlight the importance of learning flexibility in education and training, hence developing a learning flexibility index (LFI), providing a useful tool for measuring the extent of flexibility (success) in a learning environment. Moreover, they argue that LFI can provide a self-development means for individuals (learner and teacher) to understand and measure their flexibility and effectiveness in learning and teaching (Sharma and Kolb, 2011: 74-75).

Peterson et al. (2011) have considered the case for teaching secondary teachers about style. They argue that this is not merely for academic performance and success, but more for the social and emotional benefits such as increased tolerance to diversity and enhanced meta-cognitive awareness. Within the domain of PLSP, Hardaker et al (2011) have considered a case for virtual classroom as a means of supporting personal learning in students’ choice of learning environment using sensory technologies. Their research, based on the reporting of the results of the virtual world courses in New Hope Island and EdTech Island, explores constructs of learning styles in the context of personal pedagogy, which are rooted in some form of sensory applications

in a virtual classroom environment. On the basis of their findings, they argue that diversity in virtual worlds is challenging teaching methods in higher education, requiring intuitively the complexities of learner diversity (Hardaker et al 2011: 220-221).

Finally, in evaluating the relationship between the constructs of cognitive style and personalisation factor in the fields of e-learning and commercial websites, Tsianos et al (2011) have conducted a thorough empirical investigation. They have demonstrated that users' information retention appears to be more accurate and efficient, both in terms of providing correct answers to the online test/task questions, and in task completion time. Based on their overall findings, they recommend that educators and designers of websites should consider employing profiling and personalising techniques in their web environment based on the construct and implications of style. Tsianos et al (2011: 248) conclude that the future research should be focused on improving and extending the methodology of experiments alongside of cognitive factors and the integration of "biometric sensors for real time monitoring of emotional arousal".

Several recent research work in the areas of PLE and PLSP have also emerged which are worth noting here. Cox and Tsai (2013) have managed to disentangle the constructs of student's learning styles preferences in satisfaction of learning. They strongly argue against the one-size-fits-all view of learning or teaching so that the analysis of student's profile provides a useful insight for the instructor to allow for teaching approaches suitable for student, in order to maximise their learning outcomes and satisfaction from learning. On similar topic, Sullivan et al. (2013) point out to the

diversity of learning styles in classroom enhancing students' satisfaction. Their findings confirm the effectiveness of use of student-focused teaching style in a team taught situation. The overall student feedback reveals that higher satisfaction levels experienced by the experimental group were revealed to the team teaching approach for delivery of course material.

The study by Del Moral et al. (2013) promotes the idea of connectivism as an effective means of learning. With reference to Web 2.0 tools, they argue that a large number of connectivist activities can make learning more effective. According to the findings of the research, this process leads to establishment of virtual learning communities which favours interaction and interconnections between users and learning resources.

Finally, the study by Dorca et al (2013) has highlighted adaptive educational systems by making an attempt to consider how to improve a student's performance. The research proposes and tests the workability and viability of a new approach - using computer simulation of students - to automatically and dynamically discover student learning styles, considering its non-deterministic and non-stationary aspects and taking into account that learning styles may change during the learning process in a rather unexpected and unpredictable way.

3.6 Summary and Conclusions

This chapter has focused on theoretical underpinning of learning styles. In particular, the concept of cognitive learning style has become the paramount and focal issue in this chapter. Although it is claimed that well over 70 different theories/models of

learning style do exist, here we have grouped the learning style theories into five distinct types: the experiential learning theory (ELT), VAK and VARK, fundamental dimensions, personality/cognitive/learning centred, and neuropsychological. A thorough examination of these theories has revealed that the three former models appear to have been the most popular ones where together represent nearly 90% of total research work conducted to date. The current research anticipates to make good use of relevant approaches suiting the cultural and organisational values in Libya. However, it should be noted that the two latter models of learning style (personality/cognitive/learning centred, and neuropsychological) are at their early stage of development, and that further research and development required to produce relevant finding in verifying their potential usefulness.

In analysing the main characteristics of cognitive styles – being based on the theory of differentiation – we learnt that they are as the process of mental activities, learning and problem solving and being independent of subject content. In addition, cognitive styles are perceptual, intellectual, personality and social domains; and tend to remain unchanged over a long period of time. On bipolarity characteristic of cognitive styles, that the dimensions are value-neutral and that each pole has qualities that are adaptive in particular circumstances. Finally, cognitive styles assumed to be relatively independent of abilities and aptitudes. However, recently, in the area of neuropsychology the assumption of fixed personality has been relaxed, so that individual's personality would be changed over time and under different situations. This model, developed by Jackson (2005) proposes that “sensation seeking” provides a core biological drive of curiosity, learning and exploration. In other words, Jackson

(2005) assumes that individual's personality is dynamic and hence can be developed through self-awareness, preferences and beliefs.

Despite all the positive feedbacks which have been attached to all these theories through different independent research, there have been several serious criticisms of these supposedly popular models. According to Stahl (2002) there has been an "utter failure to find that assessing children's learning styles and matching to instructional methods has any effect on their learning." Claxton (2005) has questioned the extent that learning styles such as VAK/VARK being at all helpful, particularly as they can have a tendency to label children and therefore restrict learning. Perhaps the most serious blow to main learning styles models have come from the comprehensive review of literature conducted by Coffield et al (2004). Having selected 13 of the most influential models for closer study, including VARK and ELT, they report that the theoretical origins and terms of each model, and the instrument that was purported to assess types of learning style defined by the model are weak, dubious or unworkable. Coffield et al (2004) have summed up their findings by stating that most popular learning style theories had been adequately validated through independent research, and the idea of a learning cycle, the consistency of visual, auditory and kinesthetic preferences and the value of matching teaching and learning styles were all "highly questionable." In a short report, Hargreaves (2005) has made a general criticism of most research in learning and cognitive styles by stating that practitioners have not been "by any means frank about the evidence for their work".

Despite all these serious criticisms forwarded to the mainstream theory, it should, however, be noted that there has been a genuine development in the areas of learning

and personality over the past few years. In short, cognitive learning styles, personality and all relevant psychological constructs are still sluggishly going through their evolutionary paths. Nevertheless, developments in the areas of personalized learning environment (PLE), personal learning style pedagogy (PLSP), digital equity, collaborative approach, online learning, virtual world classroom, and variable personality models are all indicative of proactive progress in this area. As has been recommended by Pashler et al (2009), the only way to see genuine changes and developments taking place in learning is for researchers to remain truthful, frank, ethical and “impartial in their research work”; hence reporting the true picture of their findings to the public and to the decision-makers.

The learning styles examined in this chapter provide a foundation upon which the research can apply to universities as an educational organisation. In understanding the characters of organisations as a learning/teaching environment next chapter will consider the notion of organisational culture in details.

CHAPTER FOUR

Organisational Culture and Learning Styles: An Overview of Literature

4.1 Introduction

As has been highlighted in Ehlers (2009), a new era in quality in learning has now moved away from a mechanistic mode to one of holistic and culturally based approach. Moreover, Jonassen and Grabowski (1993) regard cognitive learning style as a process which includes several aspects of differential psychology relating to individual differences in the learner and the learning environment. As man being a social animal, it may be argued that the learning environment is expected to be heavily influenced by social environment.

Hofstede (1991: 5) regards culture as a social environment (living and working) where there exists a “collective programming of the mind which distinguishes the members of one group from another”. Furthermore, as culture is derived from one’s social environment, it cannot be inherited but learned. On the basis of this observation, notwithstanding human nature, it is fair to argue that cognitive learning styles tend to be influenced by both national and organisational cultures. Therefore, one can clearly express that there may exist a direct link between aspects of culture and cognitive learning styles, varying from one nation to another and one organisation to another.

In the light of this argument, this chapter aims to explore the theoretical and empirical aspects of culture and its potential influence on learning styles. In so doing, a comprehensive account of culture and its determinants are discussed in part 4.2. In

helping understand the working of organisations in development of culture, in part 4.3, some aspects of organisational and corporate culture are examined. The link between organisational culture and learning styles is investigated in part 4.4. Finally, summary and concluding remarks of the chapter are presented in part 4.5.

4.2 National Culture: Dimensions, Determinants and Values

The so-called “national culture” is best defined as a collection of knowledge, experience, beliefs, values, attitudes and all habitual characteristics which distinguish the members of one group from another (Hofstede, 2010). The core of any culture is formed by its values, which are defined to be those intangible preferences and tendencies inferred by the way people act under different circumstances. The three layers which protect these values are referred to as rituals, heroes and symbols; all being visible and tangible.

Symbols may come in forms of words, gestures and pictures that carry some meanings that are recognised and understood by those who share the culture. Symbols are placed into the outermost layer of the so-called “onion” manifestation of culture, indicating that they are constantly changing, and regularly copied by others. For example, the symbol ‘V’ for victory which has come originally from Europe is now used almost everywhere in the world. Similarly, the sign ‘thumb up’ for acceptance or verification of an action, originally associated with the Roman Empire, is now used worldwide. Heroes are real or imaginary persons, dead or alive, who carry characteristics that are highly valued in a culture. Heroes are placed in the second outermost layer of Hofstede’s onion of culture, as their number and nature can change over time. Every nation has their heroes: King Arthur of England, Joan of Arc of

France, Elvis Presley of USA, El Cid of Spain, Saladin of Arab Empire, Alexander the Great of Greece, Spartacus, King Cyrus of Persia. Rituals, on the other hand, are a collection of activities that are followed in a culture for their own sake. For example, ways of conducting social and religious ceremonies or paying respect to others may be regarded as a set of rituals of a culture, placed in the third inner layer of the onion. Finally, values are placed into the innermost layer of the onion, representing its highly rigid and inflexible nature. Values are shaped through practices conducted at different stages of our life, but basic values learnt at the early stage of our life remain unchanged (Hofstede and Hofstede, 2005).

In a diagrammatic presentation, Hofstede (2001) demonstrates that with the exception of natural human characteristics which are universal, fixed and inherited, the so-called culture and personality are primarily learnt. He also exhibits that culture can come at different levels and have varying impacts at different times on individual. Culture could present itself at regional, national, gender, social class, organisation, and corporate levels. Evaluation of national or regional cultural levels become relevant, if one attempts to examine underlying differences which may exist in the cross sectional and international levels. Through such examination, one would also be able to identify cultural factors which may help separate or unite nations.

The earlier research in the area of national cultures dimensions is primarily associated with the works of Mead (1962) on masculinity and femininity and Inkeles and Levinson (1969) on four common problems facing all nations. Inkeles and Levinson (1969) have referred to these problems as follows: i) social inequality, including the society's relationship with authority; ii) the role and relationship of the individual and

the group; iii) masculinity versus femininity and the implications of being a man or a woman; and iv) ways of dealing with uncertainty in relation to anger management and expression of feelings. Following the recent contributions in particular from Bond (1983) and Hofstede (1984, 1986), a fifth dimension of differences among national cultures has been identified and elaborated: long-term, short-term orientation.

As these five dimensions represent the very foundation of national cultural differences, some further elaboration, analysis and applications are worth noting here.

4.2.1 Power Distance Index

According to PDI, there is inequality in every society, but how it is handled tends to vary significantly from one nation to another. Inequality may arise from differences in physical and intellectual abilities, or differences in political or monetary power. As has been argued in Hofstede (1991: 24), in some societies increasing inequality may be treated not as a problem but as a natural progression. However, in general, it is found that nations would like to treat inequality as a problem and attempt to find ways of tackling it. Moreover, laws in many countries are made to serve the very ideal of equality by treating everybody as equal regardless of status, wealth or power.

This index has been calculated based on the range of answers found in various countries to the question of how to handle inequality. Based on a Likert scale, data collected from employees of IBM working in different countries have been compiled and presented in an index format. The larger the PDI, the wider is the distance between the society and the state (politicians), and hence the larger the inequality. In short, as has been summed up in Hofstede (1991: 28), PDI represents the “extent to

which the less powerful members within a country expect and accept that power is distributed unequally”.

On the basis of the latest data collected and compiled by IBM for Hofstede’s research, it is revealed that there appear to be significant differences in PDI amongst 50 countries examined. The north European Protestant countries (the Scandinavians, Great Britain, Germany, Austria, Switzerland and Denmark) tend to exhibit an overall average index of 30% as compared to the Latin Catholic Europeans (France, Italy, Spain, Greece, Ireland) which show a significantly higher rate of 56%. Both the USA and Canada tend to have a PDI of around 40%, whilst their neighbouring Latin American states exhibit a staggering PDI of around 77%. As shown in Hofstede (1991: 26), the Arab/Muslim states exhibit an overall average of 76%, significantly higher than the Europeans, but not so much different from the Latin Americans. Finally, the Far East Asians (Japan, Thailand, Singapore, South Korea, Taiwan, Hong Kong, Philippines) possess a relatively high average rate of 67%. Hofstede’s research work has not specifically made any reference to the case of Libya, primarily due to lack of data.

In an attempt to discover the reasons behind such marked differences in PDI, social scientists and historians have explored several ways of explaining this phenomenon. On the basis of several research works, a useful summary of main/fundamental reasons have been offered in Hofstede and Hofstede (2005), relating PDI to three macro factors. According to them, the first and foremost factor is the geographical latitude (the distance from the equator) of the country, stating that the higher latitudes tend to be associated with lower PDI. Secondly, the population plays an important

role here, as larger size population is found to be associated with higher PDI. Finally, the wealth of the nation – including of mode of production, social mobility, education system, and GDP - can play a significant role in determination of PDI, as richer countries are found to exhibit lower PDI. A detailed analysis of the extent of correlation between PDI and a whole host of secondary factors, produced by a number of researchers, has been compiled and presented in Hofstede (2001). In particular, the extent of correlation between PDI and family values in a selected number of countries tend to support the view that conservative families can be found in countries where PDI is relatively high.

4.2.2 Individualism versus Collectivism Index

The role of individual within a group is regarded as the second pole of national culture. It is usually anticipated that in most societies the interests of the groups prevail over the interest of individual. This property of the culture is referred to as collectivism, where individuals within the group – family or any community – owe long life loyalty to one another, forming both practical and psychological interdependence amongst the members of the group. Nevertheless, in a smaller number of cases, individualism has been developed, where individuals are seen to depend less on the group and stand on their own feet. According to Hofstede (1991: 51) this type of individuals tend to reduce their relationships with their parents, or break off altogether, hence develop neither practically nor psychologically any type of normal and healthy personality.

On an almost similar method for calculation of PDI, the so-called individualism index (IDV) has been developed and measured for a range of countries and regions. By

definition, the more collectivist the nation, the lower the IDV; and the more individualist the nation the greater will be the IDV index. According to the final findings presented in Hofstede and Hofstede (2005), the north European Protestant countries appear to exhibit an overall average index of 81% as compared to the Latin Catholic Europeans which show a significantly lower rate of 55%. The USA is ranked first with a massive IDV of 91%, and Canada of 80%. The Latin American states exhibit a very low index of 15%; whilst the Arab/Muslim states possess an overall average of 27%, significantly lower than the Europeans. Being heavily influenced by the Confucianism and collectivism, the Far Eastern nations also exhibit a low rate of IDV of 25%.

The three factors of geography, population and wealth tend to play their roles here in determination of differences in IDV amongst the nations, but at varying degrees. Whilst the size of population tend to offer low level of association with IDV index, the wealth indicator (GDP) appear to exhibit a high, positive and significant degree of association with IDV, indicating that the wealthier the nation the higher is the extent of individualism. Similar observation has been reported in relation to geography (distance from the equator) where there appears to be a relatively large correlation between latitude and IDV.

Moreover, the concept of collectivism versus individualism at workplace has been fully established and reported in Earley (1989). Following a laboratory experiment using managers from USA and China, Earley (1989) has reported that US managers tend to be more efficient at individual tasks, where their Chinese counterparts work better in teamwork. The early work of Lambert and Klineberg (1967), sponsored by

UNESCO, provided an insight into the extent of relationship between individualism and learning attitude and style amongst school children in several countries. Similar findings have been reported by Tobin et al (1989) on their research based on an international study of pre-school children and their learning processes. As has been highlighted in Hofstede (1991: 62-63), collectivism versus individualism can be also seen clearly in schools and teaching approaches. The idea of education under an individualistic society can be summarised as one of positive attitude “towards what is new”. However, under a collectivist society, according to Hofstede (1991: 63), learning is usually seen as a one-off process, reserved for the young people only, who “have to learn how to do things in order to participate in society”.

4.2.3 Masculinity versus Femininity Index

Like nationality, we are given no choice at birth to be a boy or a girl. Moreover, in any given country the number of male and female population is almost identical. Theoretically, apart from some physical and biological differences, men and women are equal in intelligence and abilities. However, in the real world, men and women are not treated equally. In traditional societies, men are supposed to be firm, competitive and tough, whereas women are supposed to be gentle, caring and responsible for raising the children and their welfare. In a masculine society, according to Hofstede (2001), aspects such as earnings, recognition, advancement and challenges are regarded as the roles for men; whereas the feminine pole are considered to be cooperation, security and managing both the home and the family.

Like the IDV, the masculinity index (MAS) is based on factor scores for each country, ranging from zero for the most feminine society to 100 for the most masculine

society. These measures, like PDI and IDV, are derived for 50 countries and represent the relative rather than the absolute positions of countries. According to Hofstede (2001: 286), Japan has exhibited the highest MAS index of 95%, whilst the Scandinavian countries possess the lowest values of around 7%. The USA scores 62%, ranked 16th in the world, whereas both Germany and the UK score 66% each, jointly ranked 9/10. Surprisingly, the southern Europeans exhibit much lower MAS with an overall average of 42%, significantly lower than their northern European counterparts. The Arab/Muslim states also show a relatively lower rate of MAS of around 48%, almost similar to that of the Latin American states.

Amongst many, Adenso-Diaz et al (1999) have made a thorough examination of some interesting cultural practices exercised by the management of the Spanish subsidiaries of Japanese companies. According to them, although these companies tend to promote the idea of recruiting the young university graduates, in practice however, these Japanese companies tend to extend their masculinity characteristic in their European subsidiaries by not being interested to recruit women graduates for technical or managerial positions. Adenso-Diaz et al (1999) also report that according to their findings, this masculinity attitude amongst Japanese executives tends to have remained unchanged over time.

Several studies have made attempts at identifying any association between MAS and other socioeconomic and geographical factors. Although there seems to be an association – but rather weak- between MAS and GDP, geographical and population factors tend to show no clear cut association with MAS. Moreover, in the study by Kashima et al (1995), an attempt has been made to show if there is any association

between MAS and IDV. The general findings of this research tend to give no clear picture of strong association, but a reasonably large number of countries with low MAS tend to be collectivist rather than individualist. Moreover, similar studies have shown that countries with high MAS index tend to exhibit lower PDI, and vice versa.

The concept of masculinity versus femininity in schools and academic environments has also been a matter of concern for several researchers. Cohen (1973) argues that on the masculine side, academic achievements and reputation tend to be the dominant and driving force. Conversely, he reports that failure in school is regarded as relatively a minor incident in a feminine culture. Moreover, the choice of courses tends to be associated with MAS index. Weinreich (1979) has examined the stereotype academic disciplines in the UK and has found sciences and engineering to be seen as masculine and arts courses as feminine. Hofstede (1980: 307) has also found that there is universally a rather strong relationship between science discipline and masculinity, and even much more strongly across top 20 wealthier countries.

MAS has also been examined in association with workplace and nature of business. Modern management is an Anglo-Saxon concept which has been developed in the masculine nations of UK and USA. In addition to all the masculine features, in a masculine society a manager is also aggressive and follows the law of the survival of the fittest (Bendix, 1974: 256). Following the extensive research by Harpez (1990) on seven industrial countries, it is reported that while pay, security and job content are regarded as important in masculine societies, feminine societies tend to assign much greater weights on relationships and physical conditions. Similar findings have also been reported by Gibson (1995) when a survey of male and female managers in

Australia, Norway, Sweden and USA concludes that goal setting was stressed by men, but interaction and cooperation were regarded as vitally important for woman managers.

4.2.4 Uncertainty Avoidance Index

Unlike risk, uncertainty is not measurable and the only way forward is how to deal with it. Usually, extreme cases of uncertainty tend to create unbearable anxiety, leading to panic and chaos. Different societies have adopted different ways of coping with uncertainty, primarily derived from cultural backgrounds and heritages of societies, transferred through family, school, workplace and the state. Nevertheless, uncertainty is a subjective experience, derived from our feelings, which are both acquired and learned. The term uncertainty avoidance, however, has been borrowed following an elaborative research by March and Olsen (1976) in the area of ambiguity and choice in US organisations. Inter alia, they present a series of cases of uncertainty encountered by US organisations and analyse the ways in which such cases have been dealt with under different management.

In developing and measuring an index of uncertainty avoidance (UAI) at national level, three main questions have been presented to participants at different organisations, all based on identifying ways of tolerating uncertainty by individuals, given the rules of organisations and the law of land. Likewise, UAI values calculated by Hofstede (1991: 113) are given for 50 countries and three regions. The highest score of UAI is attached to Greece with 112% and the lowest to Singapore with 8%. On the whole the Latin countries (Latin America, South America and Latin Europe) tend to exhibit high UAI values with an overall average of 86%, compared to that of

the Anglo-Saxons (USA, Germany and UK) at 48%. The Arab/Muslim states score an overall average UAI value of 64%, half-way between the Catholic and the Protestant states, and being significantly different from either.

Anxiety or neuroticism is regarded by many researchers as the very foundation of high UAI. Lynn (1975) has confirmed the fact that he found a very high positive correlation between UAI and anxiety indicators. Hofstede (1980: 108-110) has also considered anxiety as a determinant of UAI and has concluded that “some cultures are more anxious than others”. Moreover, on the basis of the study of employees of IBM in 50 different countries, Hofstede (1980: 165-167) has considered whether age has anything to do with high anxiety and hence higher UAI. His verdict is that although the age of employees tends to be negatively correlated with UAI, the country differences remain very similar even after controlling for the age factor.

Another interesting observation has been reported and analysed in Hofstede (1980: 170-175) in relation to UAI at school in different countries. His findings can be summarised as follows. Students from weak UAI countries tend to accept a teacher who does admit that does not necessarily know everything. Moreover, such students appreciate and show respect for teachers who use simple language and easy methods of teaching. Students from strong UAI countries, on the other hand, expect their teachers to exhibit high expertise and knowledge in what they are teaching. As has been highlighted in Stroebe (1976), German students are brought up with this idea that anything which appears to be easy enough for them to learn is “dubious and probably unscientific”.

Attempts have also been made to estimate any association between UAI and GDP, and in most cases it is proven that there exists a rather weak and inconclusive result. Nevertheless, the ratio of nurses to doctors is considered in World Development Report (1984) as an indicator of wealth and welfare of nations. According to Hofstede (1980), there is a strong negative relationship between this ratio and UAI, indicating that uncertainty avoiding countries tend to spend more money on doctors, whilst uncertainty accepting nations allocate more funds on nurses. This therefore follows the earlier analysis that a nurse is more respected in weak uncertainty avoidance culture, whereas a doctor is an expert who is treated highly in strong uncertainty avoidance culture. To date, no report has been made on any possible relationship between geography and population size with UAI. However, it seems that there is no logical reason why geographical features and population have much to do with UAI.

A detailed account of correlation between PDI and UAI has been demonstrated in Hofstede (2001: 152) where a large cluster of countries with high PDI tend to possess relatively high UAI. On the other hand, only a handful of countries- primarily the Anglo-Saxons - with low PDI tend to exhibit low UAI. Moreover, using Spearman rank correlation, Hofstede (2001: 191) has shown that IDV tends to correlate positively and strongly (between 45% and 67%) with UAI determinants, indicating that individualistic societies tend to be more anxious and uncertainty avoiding.

4.2.5 Long Term Orientation Index

The fifth and the most recent dimension of national culture has come onto the surface following the scholarly work of Bond (1983) when he identified a significant divergence in the way of life between the Western thinking and that of the Far Eastern

based on Confucianism, the teachings of which are based on a set of rules for daily life. The Confucian way of life has had strong influence for more than two thousand years on people living in areas currently known as China, Korea, Japan and Vietnam. (Little and Reed, 1989). The main pillar of this philosophy is based on no religion, but for the establishment of a prolonged stability of family and society; hence long-term orientation being preferred to short-term variations. Self-control, paternalism, and patience are the main virtues which according to Confucian would lead to welfare and prosperity. (Littrell, 2005).

Based on Bond (1983) survey of students from 23 countries and their scores on questions about long term orientation, China is ranked number one with the score of 114%, being the most Confucian state. Hong Kong, Taiwan, South Korea and Japan have also exhibited high score of LTO. Excluding the Netherlands with the score of 44%, the north European states perform poorly by exhibiting an overall average score of 30%. North American countries also show a low average score of LTO of 26%. Amongst Bond (1983) set of countries there were only two Muslim states - Bangladesh and Pakistan – which scored 40% and zero respectively.

Kahn (1979) has formulated the concept of ‘neo-Confucian hypothesis’, demonstrating that the recent emergence of economic success of the so-called ‘Asian Tigers’ has a lot to do with their cultural roots going far back into history. By way of identifying the causal direction, Hofstede (1991: 167), has confirmed that Confucian values have been the cause of recent economic growth and development in Far East Asian states. Due to the very value of long term stability followed in Confucian philosophy, one would expect to observe higher propensity to save in such countries

compared to the rest of the world. Read (1993) has reported that a strong and positive correlation of 73% has been found between LTO index and a measure of marginal propensity to save, supporting the view that Far Eastern states are generally bigger savers than the rest of the world. Population size and geographical features tend not to have any strong and meaningful correlation with LTO. (Hofstede, 2001: 367).

Primarily due to their collectivistic approach, team-work amongst students at schools in China is highly common and promoted. Moreover, as a long tradition in this environment, more able students are expected to assist the weaker students in the class, even during examination. (Littrell, 2005: 9). Auyeung and Sands (1996) study based on selected accounting students from Taiwan and Hong Kong, report that due to the collectivist nature of these countries the preferred learning style is one of the concrete and reflective modes. Biggs (1996) has observed, amongst other things, that Chinese students perform well in mathematics, hence rejecting the argument that these cultures focus on rote learning rather than comprehension. In support of this view, Hofstede (2001: 365) has reported a high and positive correlation between LTO scores and performance of students in mathematics. In a comprehensive approach to learning under different cultures, Joy and Kolb (2007) have estimated the mean scores for abstract conceptualisation – defined in Chapter One as (AC- CE) – and have reported that whilst the north European and north American countries exhibit an overall average of 7.2, the Confucian students show a staggering mean of 10.3, indicating the strongest preference for abstraction.

As a summary to the above discussed five cultural factors, following issues are worth mentioning. First, apart from IDV, UAI, and LTO, the other factors have shown to be

weakly correlated with wealth indicators. As has been demonstrated in Hofstede (2001: 367), there seems to be a one-way causality between IDV and GDP amongst all the 50 countries, suggesting that wealth leads to individualistic values. On the other hand, it is demonstrated that UAI tends to cause wealth, and not the other way around. (Hofsted, 2001: 366). Moreover, the statistical causality test has shown that LTO leads to future wealth generation, and this is a one-way causality. Second, there are rather small and limited relationships amongst these five factors, indicating their independence property. The exception to this rule are the two cases of relationship between PDI and IDV through wealth effect (-77%), and the relationship between LTO and PDI for eleven wealthier countries (-88%). Finally, all these five cultural factors have been analysed within school and workplace in these 50 countries, arriving at an interesting finding that teaching and learning styles can be predicted through these factors. In particular, IDV, PDI and LTO tend to offer much greater insight into identification of learning styles amongst students in different countries.

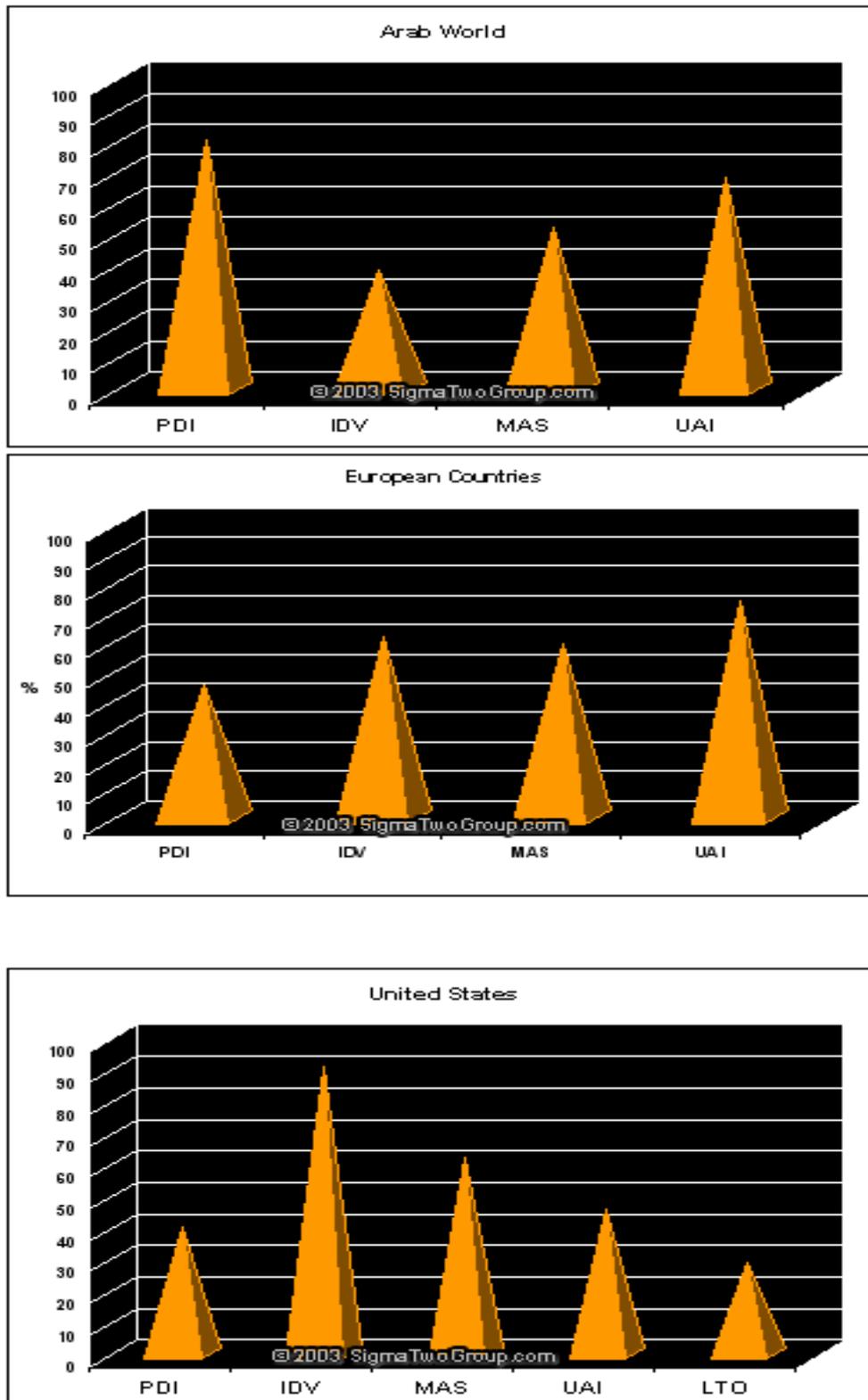
As a summary to this section, presented here is Figure 2.1 offering a summary picture of differences in the cultural dimensions for three distinctly different set of countries. As stated earlier, the Arab world shows a significantly higher score of PDI compared with the Europeans and the USA. On the other hand, both IDV and MAS for the Arab world have turned out to be much lower than those observed in USA and in the European countries. Where the Europeans and the Arabs tend to show similar score for UAI, their US counterpart exhibits a significantly lower rate.

4.2.6 Cultural Constructs in Libya

As for Libya, a north African Arab Muslim country, it is anticipated that both nationally or at organisational level the score of PDI to be at par with the rest of the Arab countries and that being significantly higher than those in USA and Europe. Similarly, one should expect to see high score of MAS in Libya, perhaps a little smaller than the average Middle East, but significantly higher than those of European and American. Finally, like most Arab nations, one would expect to observe, at national level, much smaller score of IDV in Libya than that of USA and Europe.

As it was stated in the previous chapter, Libya, like most Arab states, is still tribally orientated. Tribal life is simple and centred all around family and close relatives. Respect to and fear from family has led the society to be extremely conservative and yet caring. Social constructs in such societies tend to be rather high, and that has been translated in having high scores of PDI and MAS. Nevertheless, the presence of tribal life and community spirit has made Libya as one of the countries with lowest scores of IDV and relatively high score of UAI.

Figure 4.1: Hofstede Cultural Dimension



Source: www.sigmatwogroup.com

4.3 Organisational Culture

The concept 'mental map' developed in Laurent (1983) sets organisations as entities which function in accordance with "implicit models derived from the members' cultural environment". In effect, organisational culture can also be defined as the collection of knowledge, experience, beliefs, values, attitudes and all habitual characteristics which distinguish one organisation from another. Barnard (1960) regards an organisation as an entity which creates "a dual personality" for its members: individual personality and organisation personality. Ouchi and Wilkins (1988) regard organisational culture as being concerned about the "nature of organisation and the appropriate methods of analysing it". Despite variations in the definition of organisation culture – sometimes referred to as 'corporate culture' - offered by different authors, there are six characteristics for which they all tend to agree upon: i) holistic, ii) historically influenced, iii) anthropologically orientated, iv) socially constructed, v) soft, and vi) relatively stable over time. (Hofstede, 2001: 303).

On the basis of these definitions, and in consideration of variation in cultural values, therefore, one should not expect to see a single universally accepted workable model of organisation management. On the question of motivation and leadership qualities, Hofstede (1980) has delicately but seriously questioned the usefulness of exporting the US organisational model as a means of business success to the rest of the world. In support of his argument, Hofstede (1980) has particularly referred to the model of business success in East Asian countries, based on their domestic cultural values, and that being diametrically opposed to those theories developed in the USA.

On a model of business success, Romer (1986) and Porter (1990) have developed the so-called the “endogenous growth” theories which have extended and refined the neoclassical model – based on the so-called rational-choice theory and a series of restrictive assumptions - and have helped focus attention at the micro level on the key role of the innovation activities of firms. However, broad capital accumulation and technological progress are proximate determinants of growth and leave unanswered the question: why are some countries so much better than others at creating an environment conducive to productive entrepreneurial activity, high rates of accumulation of productive investment, and the adoption and production of new ideas and knowledge? In an attempt to find an answer to this fundamental question, Romer (1986) makes a thorough investigation of the African states over the past decades. Despite billions of dollars being invested in some selected sub-Saharan countries, he notes that such massive capital accumulation has still failed to produce genuine growth in these countries. His further investigation suggests that the underlying reasons behind such poor performance are associated with institutional inefficiency, corruption, poor infrastructure, and lack of democracy. This has led to the birth of the so-called institutional economics – primarily based on examination of micro foundations (organisations) – aiming to introduce aspects of quality of life and social/political environments of the given country. On a critical analysis of Porter’s model of development, Hofstede (2001: 375) states that despite the usefulness of this model, it applies a single ethnocentric yardstick – laws of competitive markets – in measuring organisational success, as a universally accepted tool of analysis.

It is now established that organisation culture can be influenced by both internal and external factors. The external factors are primarily determined by the

national/regional or even international cultural characteristics; whereas the internal factors may be classed as managerial, and working environment (Schein, 1985: 9). It is therefore anticipated that a multinational corporation operating in different countries to be less influenced by national cultures than does a national company. Equally, in a given country, one expects to see significant organisational culture differences between a privately owned business and a public sector organisation. Maurice et al (1980) have conducted a thorough examination of technologically similar organisations in three large European countries: France, Germany and Great Britain. They have found that national cultures tend to affect these organisations differently through three blocks of variables: i) *configuration*; ii) *work structure and coordination*, and iii) *training and career progress*. As these variables being inter-correlated with one another, any improvement in one factor may require changes in the others. Another version of organisational culture models is presented in Mintzberg (1983) where he proposes five inter-related blocks: i) workers, ii) top management, iii) the middle line, iv) the techno-structure, and v) the support staff.

In order to construct a model of culturally-based organisation, on the basis of the tests conducted using different cultural factors, a two-dimensional matrix of PDI and UAI has been proven to represent the construct well. Logically, this is because PDI can be taken as a good proxy for organisational democracy and transparency, and UAI can represent the way the organisation deals and manages with uncertainty or shocks. Using the PDI x UAI matrix, Hofstede (2001: 377) has graphically shown that similar organisations in different countries may enjoy different preferred configuration, based on their scores of PDI and UAI. According to this approach, in Great Britain, having low scores of PDI and UAI, a typical organisation would follow adhocracy as its

preferred configuration, mutual adjustment as its coordination mechanism and regards supporting of its staff as the key part of the organisation. In the German organisation, on the other hand, professional bureaucracy, skill standardisation and workers would be respectively regarded as configuration, coordination and key elements of the organisation. The French organisation, under this construct, is expected to follow full bureaucracy, standardisation of work processes, and techno-structure as its preferred configuration, coordination and the motto of organisation. Finally, in China with its high scores of PDI and UAI, a similar organisation is expected to follow a simple structure as its preferred configuration, direct supervision as its coordination mechanism and strategic top management as its key element of organisation.

The pioneering research work by Jaeger (1986), followed by Kreacic and Marsh (1986) and Pheysey (1993) are all concerned with the organisational development concept, aiming to bring into their analysis, *inter alia*, IDV and MAS indices. According to these studies, a medium to high score of IDV, accompanied with a relatively low MAS score would be a good recipe for organisational success. Organisational development, according to Jaeger (1986), has not been successful in Latin America; as such countries tend to score relatively lower on IDV. Moreover, even in a Latin American country where IDV is found to be relatively higher, the organisational success may be limited due to the presence of high PDI.

In relation to the Confucian countries, Silverthorne (2004) has considered the impact of organisational culture on the relationship between members and the organisation in some selected Taiwanese businesses. The concept of person-organisation (PO) – congruence between employee and organisation – and its fit with the organisation

culture has been found to be a key element of job satisfaction, improved productivity and enhanced organisation's performance. Silverthorne (2004) has praised this model as one of the most effective and successful business models which can too be adopted by Western organisations.

It has been demonstrated earlier that national cultural factors can be effectively used to develop constructs for organisational culture. Although a nation is an aggregate of so many units and organisations, nevertheless, it can not be treated as an organisation; hence the two types of culture are of different nature. According to Wilkins and Ouchi (1983: 479), since learning of organisational culture and its impact on individuals is typically occurred in adulthood, then we can rightly argue that organisation culture is "neither as deep nor as immutable" as national culture. In support of Wilkins and Ouchi (1983), Hofstede (2001: 393-395) has used the IBM and IRIS research of organisational data to demonstrate the extent of differences which may exist between national culture and organisational culture values and practices. As has been quoted in Hofstede (2001: 395), IRIS study has used a sample of 1295 employees from 20 different organisations in Denmark and the Netherlands, and collected information in three phases of interviews, paper-and-pencil survey and company data. Questions have been designed so that aspects relating to symbols, heroes, rituals and organisational values have been clearly addressed and covered.

In demonstrating the extent of differences between national and organisational culture, Hofstede (2001: 396) has presented a table of the summary statistics derived from the IRIS research. In measuring the difference, he has used an F-statistic for ANOVA of values and practices across countries and organisations. The organisation

values are based on questions covering the 'desired' against the 'actual' goals. The organisation practices cover questions on symbols, heroes and rituals/events of the organisation. When questions on cultural values across ten countries are examined, the F values reported show a median of 8.0 with a large standard deviation of 38.9. In contrast, when the 20 organisation's values are compiled, the median of 4.0 and standard deviation of 3.4 are reported. Moreover, on organisational practices, the median value of 7.1 accompanied by a standard deviation of 6.3. These interesting findings suggest that there are more marked differences in culture across nations than there is across organisations.

On leadership and other cultural and managerial characteristics, Wallace et al (1999) in their study of Police in the province of Victoria, Australia, have made a comparative analysis of national and organisational cultures. Based on the four dimensions of culture, they report that both IDV and MAS index in Police department were much lower than those of the Australia wide indices. On the other hand, their findings show that whilst there was no significant difference in UAI between that the nation and the Police, PDI was found to be around 50% significantly higher than the national index of 36%. This significant difference in PDI, as they state, may be associated with the hierarchal system present in the Police department, as well as the nature of the activity being on law and order.

The IRIS research based on 20 organisations with a large sample size and comprehensive questions covering cultural values and practices has led to the identification of six dimensions explaining the organisation culture: i) process versus result orientation, ii) employee versus job orientation, iii) parochial versus

professional orientation, iv) open versus closed system, v) loose versus tight control, and vi) normative versus pragmatic orientation. In a process orientated organisation, people are perceived as avoiding risks and spending limited effort at work. On the other hand, the result orientated culture is perceived to put maximum effort at work to get the expected result. In the words of Peters and Waterman (1982), the former is referred to as “weak”, and the latter as “strong” cultures.

Under the employee orientated culture, members perceive organisation as taking care of their welfare and well-being as well as their work effort; whereas in the job orientated culture, people perceive the organisation as not being interested in their welfare but getting the job done. In parochial orientated organisation employees are of the belief that in becoming a member of the organisation, their behaviour at home and in relation to their families has been also considered in addition to their job competence. Conversely, under professional culture, members private lives has nothing to do with the organisation; hence they are recruited only on the basis of their job competence. Open versus closed system refers to whether the organisation is or is not transparent in recruitment and information dissemination. Loose versus tight control refers here to the fact that whether or not the members perceive their organisation as being cost conscious and disciplined. Finally, normative versus pragmatic refers primarily to the amount of structuring in the organisation’s external contacts: pragmatic units are market driven; normative units perceive their tasks beyond the market and towards the outside world.

Regardless of the organisation’s country of origin, dimension of organisation culture can be also activity related. For example, one would expect that a pharmaceutical

organisation to follow a tight process orientation, as risk avoidance is the prime goal of the business. Department stores may be categorised as organisations which tend to be results orientated, as day-to-day sales are crucial for their survival. Construction industry, on the other hand, being predominantly run by small firms, is generally expected to be a job-orientated, open, and pragmatic; and these features being significantly different from those in manufacturing industry (Ankarah et al, 2009). On the whole, public sector organisations are usually regarded as employee orientated, where welfare of employees (pension scheme, training, off-sick policy) is of prime consideration of the organisation.

On the other hand, most private sector organisations tend to be professionally-orientated than parochial, as efficiency maximisation is perceived to be derived from professionalism. Harman (2007) by examining the culture and conflict in academic organisation in Australia refers to the university as a normative, professional, bureaucratic, and employee-orientated establishment. A further analysis of organisational culture within the premise of the six dimensions has been portrayed in case studies of different business organisations in Wilson (2000). In exploring the role of organisational culture as a framework for, particularly, the aspect of openness or closeness (inclusion and exclusion) of organisation, Wilson (2000) has identified some significant differences amongst her three case studies; and this being highly dependent upon the nature of the organisations' activities.

4.4 Culture and Learning Styles: an empirical overview

Theoretically, from the tone of this chapter, we have established that there is a potential link between culture – national or organisational – and learning style. To

explore the means and the extent of such relationship, this part has been dedicated to the empirical analysis of such relationship.

Over the past fifty years or so a large number of articles and books have emerged in the area of teaching and learning styles differentials at both national and international levels, primarily stemming from differences in national culture. Moreover, as has been discussed earlier, there appears to be a direct relationship between the individual's learning style and the group, unit, organisation to which he/she affiliates to. A large number of research papers have also been produced in relation to the extent of the role that organisational/corporate culture plays on the determination of learning style. Although a majority of such research works have been in relation to teaching/learning strategies in schools, colleges or universities, aspects of training and learning in business organisations – as a part and parcel of modern management approach – has also attracted a number of prominent researchers.

In relation to training and learning in work environment, White (1992) has demonstrated an application of experiential learning styles in professional management development. His findings suggest that experimental changing of organisational culture may, in most circumstances, prove to improve the overall learning process; hence enhancing the members' awareness and knowledge. By applying learning styles to work environment, Mumford (1993) has identified several factors emerging from experiments at work. One of his findings refers to the explicit attention to learning to learn, which means that getting the individuals to understand their own learning process, in which they are involved. As a means of training programme in Libyan oil companies and private banking system, Twati and

Gammock (2004) have proposed that the application of a comprehensive and innovative information system would enable to improve know-how and organisational culture enhancement. In their study of 15 government and public organisations in Libya, using a sample of 400 employees, notwithstanding the deep-rooted culture, Twati and Gammock (2004) still argue that the adoption of IS and IT would speed up the process of change in Libyan organisational culture.

Rowley (1998) promotes the idea of establishing the learning organisations based on individuals' skills, approaches and commitment of their own learning strategies. This strategy will lead to improved cultural change in the organisation, according to Rowley (1998), provided the learning style of the organisation approaches that of its members under regular scrutiny. Pettigrew and Whipp (1991) in their study of British small-medium size establishments, also offer an insight into organisational learning, as a means of strategic managerial change for competitive success.

Furthermore, an investigation based on 195 Spanish firms by Lopez et al (2004) have demonstrated that organisation learning tends to improve significantly through collaborative cultural links amongst firms. Using the structural equation modelling, they have also shown that such collaborative cultural links will lead to increased business performance. Goh (2002) has considered knowledge management as an effective source of information sharing and improved learning strategy within any organisation. He has also referred to trust and collaborative culture as tools of effective learning and knowledge transfer. Similar analysis in relation to total quality management integration within a model of organisation development has been presented in Pool (2000), where cooperative strategy has been found to have a strong

positive correlation with organisational learning process. Learning and knowledge management in an intelligent organisation has also been a matter of concern to Stonehouse and Pemberton (1999) in their study of airline industry in the UK. The findings are also supportive of the view that effective learning and knowledge transfer leads to improved performance and brings about the so-called ‘intelligent’ organisation.

Based on the model of ELT, Honey and Mumford (1982) tested the learning and decision-making abilities of a large population of US managers in business organisations, using a self-assessment exercise. According to their findings, a range of activist, reflector, theorist and pragmatist were identified amongst these managers, based on the nature of their business, supporting the case for application of ELT. On the issue of leadership and organisational culture, based primarily on ELT, Chang and Lee (2007) have observed and estimated learning achievement within several business organisations in Taiwan. Their findings show that both leadership and organisational culture – primarily based on Confucianism – can positively and significantly affect the operation of learning organisation, and that will lead to improved employees’ job satisfaction. Similar findings have been reported in Jashapara (2003) when issues relating to cognitive learning, organisational culture and competition have been examined in the Far Eastern businesses.

An extensive research on learning styles and skills in MBA programmes conducted in Boyatzis and Kolb (1995) reveals that corporate culture – based on shared views and values – tends to promote certain skills and learning styles through which individuals are systematically rewarded. Their findings also suggest that the most successful

individuals are those who closely follow and approach the organisation's standard learning styles. In a survey of small UK manufacturing firms, Chaston et al. (2001) have investigated the existence of a relationship between learning styles and the level of competence shown by organisations. They conclude that as firms move from a lower level to a higher level of learning style, the overall level of competence will improve, hence enhancing organisational capabilities.

One of the earliest and most comprehensive research works in the area of learning styles amongst different cultures was conducted by Lambert and Klineberg (1967). Amongst many indicators of cultural values and practices, they report that individualism index and masculinity index tend to be highly correlated with learning styles: the higher the index of MAS and IDV, the higher is the likelihood of learners being active experimentalist. Friedman (2006) has carefully observed the behaviours of foreign students in American universities, and has come up with some interesting findings. For example, students from high PDI cultures are often uncomfortable with lecturers who wish to be addressed by their first names; and also happen to be quiet and reflective compared to other groups. Moreover, individuals from high UAI cultures may appear to be cautious and systematic in the approach to problem solving, whilst those from low UAI seem to be more comfortable with risk and trial-and-error problem solving.

Using the ELT approach, a comprehensive account of learning styles amongst students from different regions of the world has been offered in Joy and Kolb (2007). They have used two dialectically related modes of grasping experience - concrete experimentation (CE), and abstract conceptualisation (AC) – and two dialectically

related modes of transforming experience – reflective observation (RO), and active experimentation (AE). In order to make it possible to assess the relative performance of students among the two dialectic modes, Joy and Kolb (2007) have used the two combinations: (AC – CE) representing the preference for abstract conceptualisation over concrete experience, and (AE – RO) representing the preference for active experimentation over reflective observation.

In consideration of all five cultural dimensions, Joy and Kolb (2007) find that the Confucian Asian cluster of countries score the highest (AC – CE) of 10.2 compared to the lowest score of 6.5 for both Anglo-Saxons and the Latin Europe. The East Europeans on average score 8.7 significantly higher than the other Europeans. Moreover, the study shows that Nordic Europe and Eastern Europe, on the other hand, score the highest mean values for (AE – RO), compared to that of the Germanic Europe with the lowest score. These findings indicate that whilst Confucian countries tend to be abstract learners, the East Europeans and Nordic Europeans prefer action over reflection. On the whole, the findings of this study offer an interesting insight into understanding of and appreciating the culturally differentiated modes of learning

In consideration of cultural dimensions in learning styles amongst Chinese students, Littrell (2005) argues that due to their high PDI, low UAI and very high LTO scores, one should expect to see significant differences in learning styles between Confucian countries and the rest of the world. He concludes that due to their nature of team work as a process of learning, the Chinese students tend to be more field dependent, visual, and concrete-sequential learners. These characteristics have also been found and reported in Dhindsa and Salleh (2009) study of non-government secondary schools in

Brunei. In a university setting, Marigna and Mowlds (2007) have attempted to investigate the learning styles of Chinese students through managed learning environment in a selection of Irish universities. Their research finds that learning styles is the only information available to Western academics so that they can adjust their teaching strategy, enhance students' imagination. They argue that online managed learning environment can bridge the gap between the East and West academic pedagogies. Similar findings have also been reported by Bright (2006) following his interview based research on East Asian students studying in Australian universities. In particular, in this study, learning style differences have been related to high scores of PDI and relatively low scores of UAI for such students' cultural backgrounds.

In his study of cross-cultural learning, Watkins (1996) has used a student approach to learning in relation to the use of memorisation and strategies such as informed group discussion. His findings suggest that these methods are common across South East and Middle East countries, primarily due to their relatively high PDI, low UAI and low IDV scores. In general examination of learning styles amongst students in Saudi universities, Almutairi (2007) also finds that memorising information tend to be more common approach than self-expression, speculation or analytical skills. These findings have been supported and substantiated in Kember and Gow (1991), Volet et al (1994) and Tang (2000). Bright (2006) has recognised the usefulness of these studies, but has highlighted the general failure of such approaches as they have failed to consider the students' explanations in their own words about their understanding of cultural differences and its possible link to their study.

Primarily based on gender issue and MAS index, Hyndman (2007) has considered taking on a challenging and conflicting view about boys' underachievement in schools. Using a qualitative approach applied to a New Zealand primary school, Hyndman (2007) concludes that educational outcomes for boys is seemingly positively affected by the school culture which promotes and fosters gender differences. Gender based learning and achievement has also been a matter of concern for Cohen (1973) who argues that MAS index tends to be highly correlated with academic achievements and reputation. His findings suggest that failure in school is considerably lower in a feminine culture than in a masculine culture. Weinreich (1979) has found that in the UK, sciences and engineering courses are regarded as masculine and arts courses as feminine. It may be argued that one of the main reasons for significantly higher failure rates amongst boys in academic world can be associated with their wrong types of courses taken through social pressure rather than by own choice.

In testing for the validity of the so-called the 'competing values' model in describing and differentiating the culture of educational organisations, Kwan and Walker (2004) have conducted a survey of all teaching staff in seven universities in Hong Kong. Their findings are generally indicative of support for this model as cultural differences in learning styles amongst these universities tend to be based on background and developmental stages of the institutions. These differences have been labelled as 'climate' factors in a study conducted by Wallace et al (1999) on the relationship between organisational culture and managerial values. Based on a survey of a large Australian public sector agency, Wallace et al (1999) have found that there is a strong link between specific organisation climate variables (here taken as: conflict, mutual

trust, job challenges, teamwork, support and facilitation) and a number of managerial value factors, which help improve the learning and information sharing process. This study and others based on use of climatic or sub-cultural factors may give rise to the idea that such factors can be taken as good proxies for cultural dimensions. However, it should be noted that climatic factors are the collection of current issues and feelings of a unit within an organisation (Hart and Shoolbred, 1992); hence they only represent the short run mode of the organisation. On the other hand, cultural factors are more stable and represent the longer run mode of the organisation.

In an attempt to provide a globally accepted e-learning and training program in industry and commerce, Lea (2003) draws her attention to tailor-made programmes designed to suit the recipient's culture, age and other observable measures. On a similar spirit, in a multi-cultural setting, Cools et al. (2009) examine the effectiveness of learning styles in a European wide e-learning environment. Their findings support the view that the differences in individuals' cognitive learning can be seen through the dissemination of international multi disciplinary research and experiments. Finally, in a rather general manner, Ehlers (2009) highlights a need for understanding of a holistic concept of quality culture in higher education, via the use of organisational culture model. This study establishes a platform for comprehensive understanding of quality culture; promoting and focusing on a climate where individuals are seen to be continually improving their educational and learning practices. In achieving this objective, Ehlers (2009: 359) prescribes, amongst many things, that universities should focus on 'change' rather than 'control', 'development' rather than 'assurance', and more on 'innovation' than 'standardisation'.

From the knowledge management and its role in organisations, Ahmed et al (2013) have made a comprehensive analysis of the link between information dissemination and learning styles in a large number of organisations. They argue that in order for knowledge management to become effective, whole host of learning styles are to be employed by organisations. The authors conclude that organisations must make every effort to identify the appropriate learning styles matching the organisational culture should they wish to achieve full potential of knowledge management.

Finally, a recent work by Garmston and Wellman (2013) has offered insights into the role of adaptivity in learning at different organisations. By treating a school as a lively organisation, the authors define adaptivity as a means of changing in harmony and clarity (Garmston and Wellman, 2013: 12). They argue that organisations need to contend with being adapted to existing environments and becoming adaptive to changing conditions. As for the example relating to adaptive schools, they argue that as students and teachers become increasingly computer orientated the librarians may feel being devalued, as funds may be transferred from reference materials to online resources. However, the librarians can be revitalised through filtering and testing the validity of online materials as a means of adaptivity to changing conditions. References are also made by the authors to the case of distance learning courses designed by universities in most Western economies as a means of adaptivity to new method and styles of teaching and learning.

4.5 Summary and Conclusions

The main focus of this chapter has been on the role that both national and organisation culture can play on determination of individual's learning styles. One of the major

contributions made in the area of national and organisational culture must be associated with the pioneering works of Hofstede, when he defines culture as a collection of mind programming, distinguishing the members of one group from another. It has been demonstrated here in this chapter that cultural values are shaped at different stages throughout our lives and are protected by three outer layers of rituals, heroes and symbols. The earlier works by Mead (1962) and Inkeles and Levinson (1969), compiled and refined by Hofstede (1991) have led to development of five dimensions of culture.

Power Distant Index (PDI) is regarded as the first dimension (characteristic) of culture, primarily dealing with the way different cultures treat inequality arising from physical and environmental features. In short, this index can be treated as a proxy for equality and democracy: the higher the PDI the greater will be the chance of inequality and authoritarian politics. Hofstede (2001) has demonstrated that generally North European countries exhibit the lowest PDI, whereas the Latin Americans and Arab/Muslim states show the highest scores. Individualism Index (IDV) is the second dimension of culture, relating to the extent in which individuals are seen to depend less on the group (family, friends, and society as a whole) and stand on their own feet. Collectivism, on the other hand, represents the case where the interests of the groups supersede those of the individuals. The findings suggest, as detailed earlier, that the Anglo-Saxon states (USA ranked as first) tend to exhibit much higher scores of IDV than other nations. Conversely, the Latin Americans, Arab/Muslim and the Confucian states score significantly lower than other countries.

The third dimension is referred to as Masculinity Index (MAS), indicating the aspect of gender and the way sexes are not treated equally. Surprisingly, Japan has scored the highest value of MAS, with USA and Great Britain scoring above the average. However, the Arab/Muslim states and Latin Americans tend to score below average value, but not significantly different from the average figure. Uncertainty Avoidance Index (UAI), referring to the way the different societies cope with the anxiety arisen from uncertainty. In short, the cultures with low score of UAI are said to cope with anxiety more effectively than those with high score. Latin states have shown to possess much larger values of UAI than other countries. In particular, the Confucian countries and the Anglo-Saxons tend to cope better with anxiety than the median country. Finally, the fifth and the most recently developed dimension of national culture is referred to as Long Term Orientation Index (LTO), following the scholarly work of Bond (1983). Due to their high regards and respect for family values and the belief in the prolonged stability of the society, the Confucian countries have scored the highest values of LTO. Pakistan and Bangladesh, representing the Muslim states, have scored around the median figure, relatively higher than North Americans.

In this chapter we have demonstrated that these dimensions tend to be correlated with some demographic, geographic and economic factors. In particular, as highlighted in Hofstede and Hofstede (2005), PDI is found to be highly correlated with geographical latitude, meaning that the countries located at higher latitudes tend to have lower PDI. Moreover, countries with large population have also exhibited higher scores of PDI. Furthermore, economic wealth is shown to be made in countries where lower PDI scores are exhibited. Although not much correlation has been found between other

dimensions of culture and demographic/geographic factors, individualism has been found to be highly correlated with wealth and economic prosperity.

One of the main points in relation to these dimensions is that they are all inter-dependent and correlated with one another. Indeed, the extent to which they are correlated with one another varies substantially from case to case. For example, in a study by Kashima et al (1995), it is shown that there seems to be a rather strong positive association between MAS and IDV: the countries with low score of MAS tend to be less individualistic and more collectivist. Similarly, it is demonstrated that high MAS scores tend to associate with low PDI. Moreover, as has been reported in Hofstede (2001), although a large cluster of countries with high PDI have shown to possess relatively high scores of UAI, no direction of causality has been established.

Organisation culture has also been defined as the collection of knowledge, beliefs, values and attitudes representing one group from another. Despite variations in definition of organisation culture, it has been highlighted that organisations, regardless of size, history, location and activity, possess six common cultural characteristics: i) holistic, ii) historically influenced, iii) anthropologically orientated, iv) socially constructed, v) soft, and vi) relatively stable over time. Moreover, national cultural factors can be effectively used to develop constructs for organisational culture. On the basis of this principle, using product $PDI \times UAI$, Hofstede has managed to depict the nature of typical organisation in different countries. For example, in Great Britain, having low scores of PDI and UAI, a typical organisation would follow adhocracy as its preferred configuration, mutual adjustment as its coordination mechanism and regards supporting of its staff as the key part of the

organisation. In the German organisation, on the other hand, professional bureaucracy, skill standardisation and workers would be respectively regarded as configuration, coordination and key elements of the organisation. Finally, in China with its high scores of PDI and UAI, a similar organisation is expected to follow a simple structure as its preferred configuration, direct supervision as its coordination mechanism and strategic top management as its key element of organisation.

In arriving at the core of our analysis, this chapter has made a comprehensive review of empirical approaches and findings relating to the relationship between culture and learning styles. At the outset we have hypothesised that there is a potentially direct link between culture (national or organisational) and learning styles. In a work environment setting, White (1992), Mumford (1993), Twati and Gammock (2004) and several other researcher have shown that organisations tend to develop different strategies vis-à-vis learning and sharing information depending on the culture of organisation, primarily derived from nationality, activity and other related factors. In particular, Honey and Mumford (1982) has tested the learning and decision-making abilities of several US managers, based on the method of ELT. According to their findings, a range of activist, reflector, theorist and pragmatist learners were identified amongst these managers.

In relation to the role of culture in education sector we have referred to several critical research works. First and foremost is that of Lambert and Klineberg (1967), a comprehensive investigation into the role of cultural values, cultural practices and learning styles amongst school children in several countries. In particular, they report that individualism and masculinity tend to be highly correlated with learning styles:

the higher the index of MAS and IDV, the greater is the likelihood of the learner being active experimentalist. Another interesting finding has been reported by Joy and Kolb (2007) in their survey of learners across different countries and regions of the world. Their comprehensive results suggest that learning styles have a lot to do with LTO, MAS and IDV indices. In short, on the basis of their estimated findings, Joy and Kolb (2007) state that whilst the Confucian countries tend to be abstract learners, most European countries prefer active experimentation style to reflection. It has been demonstrated in this chapter that whilst a large number of studies tend to agree on MAS being a major cultural determinant of learning styles, others (Littrell, 2005; Bright, 2006; Watkins, 1996) have related learning styles to PDI and UAI.

In testing for the validity of inter organisational values and practices within a given country, several attempts have been made. Following a thorough investigation of the findings reported by IRIS, Hofstede (2001) has presented a summary table comparing the extent of differences between organisations' cultural values and practices and those of the countries. His observations indicate that there are more marked differences in national cultures than there is across organisations. In the same line of analysis, Kwan and Walker (2004) have examined the differentials in performance and learning styles across several Hong Kong universities. Their findings support the view that differences in organisational cultures are primarily due to background and developmental stage of the institutions. In the earlier work of Wallace et al (1999), such differences in organisational cultures, have been referred to as 'climate' factors rather than cultural values/practices. In a rather cautious manner, it has been shown that climate factors tend to refer to current issues/problem, relating to a given

unit/department of an organisation, and hence can not possibly replace the well-rooted organisational cultural factors.

In conclusion to this chapter, two main points need to be addressed to. Firstly, in consideration of our extensive critical literature, it is fair to argue that cultural values and practices have been found to significantly affect individuals learning styles. Secondly, in particular, in relation to the theme of our research – the role of organisational culture in the higher education on learning styles – our investigation is indicative of a need for further research, based on the established models and approaches, using new detailed surveys.

CHAPTER FIVE

METHODOLOGY FRAMEWORK

5.1 Introduction

The objective of this chapter is to identify the appropriate research methodology in order to be able to find the answers to our research question(s). In so doing we need to re-visit our research objective(s), and research questions in order that a correct and consistent methodological approach to be deployed. In the field of social sciences it is usually common to go beyond the use of secondary data and collect whatever information available from surveys.

The process of designing the research approach through case studies, questionnaire and interviews are generally defined as the qualitative method. In this chapter, therefore, we also consider the research design, study field, and strategy for collecting information. In particular, in relation to learning styles one is prompted to approach such techniques, as secondary data are either unavailable or inappropriate.

5.2 Research Objective and Research Questions

In the light of examination of the relevant literature and the evaluation of the methods of investigation on learning styles, the main objective of our research here, therefore, may be summarised as follows. The research aims to investigate the role of organisational culture on the structure of learning styles amongst students in selected universities. In so doing, the research also aims to examine the concurrent learning styles in existence in the HE sector. Moreover, the research aims to explore the possibility of enhancing the quality of learning styles in the Libyan HE sector by introducing new technical and cultural frameworks in existence in other countries.

Based on the above discussion, therefore, the following questions form the main research questions:

- 1) What are the main characteristics of learning styles amongst Libyan students in the HE sector?
- 2) To what extent does the organisational culture affect the learning styles amongst the Libyan students in the HE sector?

In chapters one and two references were made to analysing the overall literature review of the existing theories in relation to learning styles within different organisational cultures. However, in an attempt to find the answers for the above research questions one needs to explore, collect and evaluate the relevant information vis-à-vis the learning styles of students within the Libyan HE organisations.

5.3 Methodological Issues and Procedures

Robson (1993: 38) clearly states that the pivotal principle in any research is to take up the strategies and methods or techniques that are appropriate for the questions that one wants to find answers for. The main framework for any study in the area of learning styles within different organisational setting is qualitative by nature. This is to say that the process of examination, evaluation and the drawing of policy implications in relation to learning styles in a given environment require designing, formulating and collecting information from the subjects under investigation. Such data are not readily available and can only be obtained through use of surveys; be they based on observation, interviews or use of questionnaire.

5.3.1 Validity and Reliability

Qualitative data collection brings about two further issues: validity, reliability. On the promotion of the use of triangulation methodology, Edwards and Talbot (1994: 49) argue that in any research "of equal importance is selecting the method of enquiry which is concerned with validity, reliability and feasibility". According to Campbell and Stanley (1963) strengths and weaknesses of the research design can also be examined in terms of the potential threats to internal and external validity of the data collected. As Smith (1991, p. 106) define validity as the degree to which the researcher has measured through different approaches what is to be measured. Validity, according to Hitchcock and Hughes (1995: 105) may be viewed through four different ways: descriptive, explanatory, instrumental, accuracy/criterion. Descriptive validity refers to the extent to which the researcher describes the intention of the study and a description of that intention and whether the description being accurate. Explanatory validity, on the other hand, is referred to the extent to which the researcher offers reasons and explanation in support of the evidence presented. The instrumental or technical validity, according to Hitchcock and Hughes (1995: 106) is concerned with the instruments and techniques which have been adopted to collect data. In the case of learning/teaching styles research, use of different inventories or questionnaire (e.g. LSI, CSA, TSI, LSP) must be regarded as the instruments used for data collection. Finally, the criterion validity is considered when the findings of a study is compared and contrasted with those from other established research outputs.

Reliability, on the other hand, has been defined by Edwards and Talbot (1994: 51) as gathering the best available information, upon which to build up as "rich and complex

a picture". In effect, by reliability we mean that similar responses would be collected should the researcher have used different measures. In a simpler way, Hitchcock and Hughes (1995, p. 107) see reliability as being concerned with the extent to which a particular technique will produce the same kinds of results as others do. They, however, warn that even the most accurate replication of research methods may fail to produce identical results, due to the very nature of qualitative approach. It can therefore be argued that researchers should not be aiming to produce the identical results but to attempt to increase the external reliability of their data.

In support of this argument, LeCompte and Preissle (1993: 332) identify five problems facing qualitative researchers in obtaining similar findings: researcher's position, informant choice, social conditions, analytic constructs, data collection method. The researcher's position and status in relation to the participants and respondents has been highlighted in Wax (1971) as being pivotal in obtaining reliable data. The informant choice relates to the choice facing the researcher in terms of selecting his/her participants. Since different researchers may end up selecting different participants, then this may be regarded as one of the main sources of external reliability. Different social situations and environments have also shown to produce different results. As discussed in Chapter One, learners tend to perform or respond to a set of questions differently once they are positioned in different environments. For example, Ogbu (1974) has shown that individual interviewees tend to give different answers to a given question depending on which social environment they have been confined to. Moreover, in examining the learning styles of medical students, Becker et al (1961) refer to significant differences in collected data from their participants depending on when they were alone or when they participated in groups. Their study,

therefore, shows that what participants say and do varies according to different social situation at the time of their responds.

The fourth source of concern is related to analytic constructs and premises. This is to say that different concepts and definitions used in a research may result in varying data and results, hence being a source of reliability. Finally, methods of data collection and analysis influence the reliability of the study. Ethnographic researchers should describe their methods in such a way that others can simulate their methods. This means that researchers should follow thoroughness and attention to detail, otherwise there will be no credibility, reliability and validity. LeCompte and Preissle (1993: 343) emphasise that the extent of generalisability, reliability and validity of data depends upon "such factors as the level of abstraction addressed, and varies by the constructs or relationships posited, rather than by the degree to which a design conforms to research stereotypes".

5.4 Data Presentation and Statistical Procedures

Once the data has been collected, coded and compiled, the researcher is faced with the dilemma as how to present his/her findings. The methods of presentation of data in diagramtic or tabular format, using simple or complex statistical applications are referred to as quantitative methodology. The process of measurement is therefore pivotal to quantitative research, as it provides a fundamental link between empirical observation derived from qualitative approach and mathematical models applied to data. As discussed earlier in Chapter One, research in learning styles is primarily based on measuring the extent of differences in individuals' methods of learning and

performance. Measuring such differences requires some use, no matter how limited, of statistical techniques.

In this research, in consideration of the questionnaires, the Likert scale was used, where the respondents were asked to rate the extent of their agreement with the question in ticking a number between 1 and 5; where 1 being the least and 5 being the highest levels of agreement.

5.4.1 Basic Statistical Inferences

Setting up hypotheses and testing such hypotheses using basic statistical tools have been one of very common quantitative procedures in learning styles research. On testing for the validity of cognitive personality as the main determinant in learning, Witkin (1962) tests his hypothesis that there is a significant difference between the two groups of students (field-dependents and field-independents) in their learning styles and achievements. Using a simple student's "t" test, he shows that there are significant differences in learning and performance between the two groups of learners. Similarly, Kagan (1965) tests the impulsivity-reflexivity of learners using a simple statistical test referred to as "Matching Familiar Figures Test" (MEFT). According to his test, individuals who make quick responses after having been briefly scanning the alternatives are labelled "cognitive impulsive", whereas those who carefully scrutinise each alternative prior to making a final decision are labelled "cognitive reflective". Kagan (1965) reports a statistically significant difference in the mean values of these two groups.

Another use of simple statistical tests (means and standard deviation) has been reported by Pask and Scott (1972) when they devise a series of problem solving tasks

based on serialist-holist approach. In a later research, Pask (1976) reports that on average holists scored significantly higher on the analogies and divergence tests than the serialists. Using assimilator-explorer style within the family of wholist-analytic, Kaufmann (1979) uses a 32-item self report questionnaire in which learners are scored in accordance with their level of eagerness for novelty (representing explorer) or familiarity (representing assimilator). Using a test for mean differences, he reports that he has found significant differences in performance between the two groups. Similar findings have also been reported by Kirton (1994) and Allinson and Hayes (1996), using slightly different set of inventories. Yamazaki and Kayes (2005) and Auyeung and Sands (1996) have found significant differences in learning styles amongst different cultures in relation to reflective observation and active experimentation. Both studies demonstrate that there are statistically significant differences in styles amongst Chinese and Anglo-Saxon learners: Far Eastern learners tend to be abstract and reflective, whilst Australian/American counterparts being concrete and active. Finally, in his interesting examination of the learning styles across cultures, Charlesworth (2008) has derived the standardised difference between three sample groups of students from different cultures. He finds significant differences amongst these three groups in that the Chinese students tend to score lowest on the activist scale and highest on reflective scale. Moreover, his results show that European students tend to have higher score on pragmatist score than other groups, and that all these differences being statistically significant at the 1% level.

5.4.2 Correlation and Regression Analysis

The other class of statistical approach which has been applied by many researchers in learning styles analysis relate to the use of factor analysis or regression analysis.

These approaches are usually taken when researcher attempts to identify factors which are most responsible for differences in learning styles amongst learners. In other words, such research in learning styles aims to identify, to measure the extent of contribution, and to test for the validity of several factors (gender, age, education, specialisation, socio-economic grouping) in determination of learning differences. Here references are made to only handful of such research outputs. As one of the earliest works in the area of learning styles using factor analysis, Farrell (1983) has examined the learning instruments amongst high school students in Britain. His findings suggest that four factors have been responsible for nearly 90% of variation in learning styles amongst students.

Having used a 32-item computer self-efficacy scale to measure perceptions of capability regarding specific computer knowledge, Murphy et al (1989) have used 114 individuals engaged in computer learning. Using a principal component analysis, they have reported that three factors have been responsible in determining variations in learning. In particular, gender has been shown to be responsible for nearly 60% of variation in learning differences. Similar work on self-efficacy computer based learning has produced almost identical findings under different environments (Torkzadeh and Koufteros, 1994; Moos and Azevedo, 2009).

Boyatzis and Kolb (1995) have used a correlation matrix measuring the extent of bi-relationships amongst several factors in determination of learning styles differences amongst managers. They report that competence and motives tend to associate strongly with learning abilities. In using a cluster analysis, Sundqvist et al (2001) have identified five clusters of learners and reported that uncertainty avoidance and

individualism tend to be responsible for about 80% of variation in learning styles. On the basis of confirmatory factor analysis and a regression model, Boyle et al (2003) have examined the learning differences amongst students in British higher education. Their analysis is based on evaluating the four-factor learning model and report that application directed and undirected learning styles loaded mainly on conception and orientation components. Finally, in looking into cultural learning environments of private secondary science students in Brunei, Dhindsa and Salleh (2009) find that learning styles variations is determined by five main factors: gender, collaboration, deterrence, competition, and congruence.

Within the class of factor analysis there exists a new approach, generally referred to as Structural Equation Model (SEM), designed to determine the extent to which the theoretical model is supported by sample data (Schumacker and Lomax 2004). SEM must be regarded a tool for analyzing multivariate data that has been long known in marketing and business areas as being appropriate for theory testing (Bagozzi, 1980). It goes beyond ordinary regression models to incorporate multiple independent and dependent variables as well as hypothetical latent constructs that clusters of observed variables might represent. In addition SEM provides a set of procedures to test the specified set of relationships among observed and latent variables as a whole, enabling to test the theory even when experiments are not possible. As a result, as has been highlighted in MacCallum & Austin (2000), these methods have become ubiquitous in all the social and behavioural sciences.

In short, SEM comes in two parts: the measurement model, and the structural model. The measurement model is a multivariate regression model that describes the

relationships between a set of observed dependent variable and a set off continuous latent variables. The structural model part considers three types of relationships in one set of multivariate regression equations: i) the relationships among factors, ii) the relationships among observed variables, and iii) the relationship between factors and observed variables that are not factor indicators. All these relationships are represented by a set of linear regression equations for the continuous observed dependent variable, a set of censored normal or censored-inflated normal or censored-inflated normal regression equations for binary or ordered categorical observed dependent variables, asset of probit or logistic regression equations for binary or ordered categorical observed dependent variables.

SEM, therefore, offer a complex study of interrelationships between independent variables and multiple dependent variables, “even when a dependent variable becomes an independent variable in other relationships.” Through the process of CFA, this method estimates and compares the significance values and fit indexes, consequently leading to elimination of some factors which have been found not to have strong alliance with other factors. SEM therefore attempts to find a tailored model with acceptable indexes and significant associations between its constructs. SEM is superior to conventional approaches for the following reasons:

- a. SEM analysis allows for problems related to prediction as well as measurement (Kelloway 1998).
- b. Unlike most statistical methods, SEM observes and analyses all the variables and items involved in the study and hence identifies the most relevant ones (Schumacker and Lomax 2004).
- c. The advantage of SEM over other methods is that errors occurred during measurement are taken into consideration (Schumacker and Lomax 2004).
- d. Due to its dynamic simultaneous property, SEM would enable researcher to have more than one dependent variable at any given time, hence enhancing the

possibility of inter-relationships amongst all variables (Norman and Streiner 2003).

e. Because of its dynamic feature, as highlighted in Raykov and Marcoulides (2006), the use of SEM enables researcher to examine both “direct” and “indirect” effects of the explanatory variables upon dependent variables. Hence, SEM analysis provides the latent variables that are theoretical constructs compared to other regression analysis that are directly observed.

The procedure for CFA is presented in Table 5.1. As shown in this table, the criteria for the choice of deterministic factors through CFA are primarily based on three tests: Chi-square, CFI and RMSE.

Once the deterministic factors have been identified through CFA, then the multivariate SEM will be applied using the AMOS 2.0 software to yield the best fit in a multi explanatory and dependent variables environment. Similarly, the best multivariate model is the one which passes the three main tests statistic criteria, as shown in table 5.1.

Table 5.1: CFA Testing Criteria

Model fit	Description and Test Criteria
Chi-square (χ^2)	This represents the goodness-of-fit statistic which assesses the magnitude of discrepancy between the sample and fitted covariance matrices. This is the product of the sample size minus one and the minimum fitting function. The law of consistency does apply here as any sample size of above 200 would lead to significant value of χ^2 . (Schumacker and Lomax, 2004).
Comparative Fit Index (CFI)	CFI represents the ratio of improvement in non-centrality; that is moving from the null to the proposed model (Raykov and Marcoulides, 2000, p. 41). According to Hu and Bentler (1999), any CFI value of above 95 represents the rejection of null hypothesis.
Root Mean Square Error (RMSE)	RMSE is a population-based index relying on the non-central χ^2 distribution. This index assesses the extent to which a model fits reasonably well in the population (Brown, 2006, p. 83). According to Browne and Cudeck (1993), $RMSE \leq .05$ represents a close fit

5.5 Research Strategy, Design and Research Map

On the basis of what has been discussed above, this research is a deductive one constructed to be triangulation based on both theoretical and empirical stances. It is deductive as the research is based on a set of established theory on learning styles; hence it tests the research hypotheses using the collected data. It is a theoretical triangulation approach as it uses more than one method of data collection. It is also an empirical triangulation approach as it employs different quantitative approaches in answering the research questions. Research in learning styles are primarily based on some form of inventories which have mainly been produced by other researchers built around different environments and situations.

In this study, however, a questionnaire, rather than an inventory, is used for the purpose of data collection. Moreover, as a means of second source of data collection and cross-checks, we aim to conduct a set of semi-structured interviews. So, the strategy for data collection in this research is primarily based on the questionnaire and interviews, but published governmental or organisational reports will also be considered. Prior to final submission of questionnaire to the participants, a pilot study of a small subset of respondents is carried out. The aim of the pilot study is to test the applicability and workability of the data collection, and incorporation of any feedback arising from this process.

5.5.1 Research Design

As stated earlier, the research aims to collect data through two sources: questionnaire and interviews. Where the latter is based on a semi-structurally approach, the former is designed well in advance. The respondents are two groups of higher education students and teaching staff of three public-owned universities in Libya: Tripoli;

Gharyan; and Sabha in the southern region. A questionnaire is designed, for the students distributed in the three institutions. The student's questionnaire is composed of three parts: (1) university environment, (2) cognitive learning styles, and (3) learning preferences. The staff, on the other hand, will be subject to semi-structured interviews, composed of their personal backgrounds, and teaching and faculty culture. Whilst the student questionnaire is aimed to address questions in relation to learning style, the staff interview questions is designed to consider the teaching and the organisational cultural aspects of the higher education in Libyan universities.

The questionnaire for students is composed of the total 67 questions – 26 on university culture environment, and 21 on cognitive learning styles and 20 on learning preferences. On the other hand, the staff interview consists of 6 questions in part one and 7 in part two. The full version of the student questionnaire is presented in Appendix A. The questions, therefore, are designed in a way to furnish the research hypotheses, enabling us to arrive at correct answers to the research questions. All questions are in Likert scale of 1-5, where 1 being the least and 5 the most.

The research aims to take a sample of up to 300 students from the social sciences faculty of each of the three universities. The sample size is large enough to satisfy the so-called Cochran (1977) rule for appropriate sample size for tests of significance and credibility of findings. Furthermore, using the Yamane (1967) method of sample selection, as one of the simplest methods requiring a small number of information, the appropriate procedures for sample sizes for on a sampling precession of 95% (i.e. 5% sampling error) can be determined. For any size of population, the calculation for appropriate sample is based on the following simple formulae:

$$n = N / [(1+N)*e^2] \quad (5.1)$$

In equation (5.1), n and N represent the sample and the population size, respectively; and e is the sampling error, here assumed to be between 5% and 7%. On the basis of the total number of students in each of the three universities as presented in chapter two, as being over 10,000, then the Yamane approach would yield a recommended sample size of less than 300.

In addition to these samples the research aims to conduct up to 10 semi-structured interviews of teaching and management staff of each university. Finally, as a part of our research strategy the questionnaire is to be delivered to participants with a cover letter inviting them to complete every question and instructions for completion and any possible comment on the structure of questions or feedback. Copies of such letters for both students and staff are presented in the Appendix B and C, respectively.

5.5.2 Research Literature Map

The questions in the questionnaires are based on a careful examination of the relevant literature review and in association with our research hypotheses.. In part one where the respondents are asked to answer their views about the university culture and environment, relevant literature includes to learning integrity, responsive teaching, pluralism and identity/hybridity. In part two of the questionnaire there are 21 questions on different aspects of cognitive learning styles, covering the literature on field dependency/independency, impulsivity/reflectivity, holist/serialist, adaptor/innovator, concrete sequential, and assimilator/explorer. Finally, relevant literature on learning preferences in part three include verbaliser/visualiser, auditory, images, physical contact/activities, and mobility.

5.6 Pilot Study

In pursuit of the pilot study, the research has employed a small sample of students from only one university in Libya – Sabha – located in the southern region. The reason behind this choice is primarily owing to the fact that the researcher was born and bred in the region ; hence was familiar to the university's teaching structure and staff/students availability. The prime aim of the pilot study is to identify possible problematic areas and hence improving the questionnaire and the approach. The detailed findings and analysis of the pilot study is presented in Appendix D.

Like most pilot studies, I have picked up a small sample of 20 full-time students and picked up a small sample of 7 teaching member of staff. The sample of both students and staff was taken on random basis from the Social Sciences Faculty of Sabha University. The completion of the questionnaire was self-administered by the respondents, and verbal instruction in completion of the questionnaire was provided to both groups of respondents prior to the distribution of the questionnaire.

As discussed earlier, the student questionnaire consists of three parts: organisation learning culture and environment, cognitive learning styles, and learning preferences. In effect, the first part of the questionnaire deals with what has been discussed in the literature review as PLE, whilst the second and third parts consider, *inter alia*, aspects of PLSP. In short, the questionnaire is designed to test whether learning environment (organisation) and learning styles and preferences have any relationships with one another. In particular, it is of the study's prime interest to test whether the learning

environment (organisational culture) would impact learning styles and personal learning style pedagogy.

As for the learning environment items, the mean values students attached to different questions ranged between 2.25 and 4.21, with an overall mean value of 3.38 and overall standard deviation of 1.06. The lower scores were attached to the following items: i) university culture reflecting student's cultural background, ii) university teaching reflecting student's learning style, and iii) university's support for students diversity. On the other hand, higher scores are attached to the following areas: i) integration of different learning styles into teaching program, ii) knowledge in terms of its global meaning, iii) learning experience enabled through global education, and iv) university being proactive in innovative teaching and learning styles.

As for the cognitive learning styles part, the mean values ranged between 2.85 and 4.15 with an overall estimated mean value of 3.68 and standard deviation of 1.19. The low scores that the students attached to their learning styles relate to the following issues: i) taking short, concise notes, ii) focus on practical details, iii) learning new stuff being difficult, iv) learning with reference to learning material, and v) completing task being difficult, vi) learning effectively when there is lack of restrictive writing procedures. On the other hand, the higher scores were attached to areas such as, i) working on my own in my own time, ii) following guidelines in my learning process, iii) learning instruction being most important when undertaking a technical task, iv) learning theory by associating to real applications, v) expressing views through writing, vi) commencing a new task is easy, and vii) being able to exchange views when learning new ideas/theories.

Finally, in relation to learning preferences and PLSP, the students' responses showed that estimated mean values for this part range from 3.20 to 4.30 with the overall mean value of 3.66 and standard deviation of 1.11. The lowest scores have been attached to the following areas: i) learning through listening, ii) supporting explanation when referring to diagrams and images, iii) learning easier through CDs , MP3 etc, iv) reading newspaper online rather than through radio and TV, v) learning through touch and physical contact, and vi) enjoy doing jigsaw puzzles and mind games. On the other hand, higher scores have been assigned to the following areas: i) listening to a person is more effective than reading books about the issue, ii) learning through mobile device, radio and online, iii) oral directions are preferred to written ones, iv) learning through search in books, magazines and web, and v) holding objects in hands during learning periods.

Two levels of discussions were conducted in the pilot study. The first set of discussions relate to a comparison between the scores for organisational environment/culture assigned by the two groups of staff and students. Although there are some similarities in the way the two groups regard the influence of organisation on learning, the overall scores tend to show a relatively large mathematical difference. This difference can not be statistically significant due to low degrees of freedom; however, it may become statistically significant once the sample size has increased substantially.

The second level of discussion relates to identifying and measuring the extent of possible relationship between PLE, learning styles and PLSP. A simple initial method

of observing for any possible relationship amongst the three variables is by calculating the Pearson correlation measures. The findings suggested that there was a high degree of correlation between learning style and learning preference. Although a rather poor relationship was depicted between learning style and organisation culture/environment, there was a slightly better correlation between learning preference and the organisation environment.

In pursuit of measuring the extent of the contribution that organisation environment may have on learning styles and learning preference, two simple linear regressions were conducted: i) regress learning styles on environment, and ii) regress learning preference on environment. The estimated regressions are shown in the following two equations:

$$\text{Learning Style} = 2.516 + 0.337 \text{ environment} \quad (5.1)$$

(1.390) (0.267)

$$\text{Learning Preference} = 2.637 + 0.306 \text{ environment} \quad (5.2)$$

(0.956) (0.206)

The figures in brackets represent the estimated standard errors generated by the regression. According to these two equations, a one unit increase in the scores of environment leads to 0.337 and 0.306 units increase in learning style and learning preference, respectively. The extent of responsiveness of learning style and learning preference to changes in organisational culture/environment are shown to be rather limited, but the direction of causality appears to be valid.

5.7 Summary and Conclusions

This chapter has presented the research structure and foundations by offering the research questions, research design and the mapping of the literature in relation to the

research hypotheses. The main theme of the research is to identify and measure the extent of contribution of factors giving rise to learning style differences amongst the HE students in three different Libyan universities. Following a thorough examination of the methodological issues, it has been argued that this research lends itself to a triangulation method in collecting and examining the data. The research is therefore based on a deductive approach, adopting both qualitative and quantitative approaches.

The strategy of research is to collect data through two main means: questionnaire and interviews. Where the former is structured and presented here in full, the latter is semi-structured, hence being a rather flexible approach in information gathering. The research aims to collect information from up to 900 students from the three institutions. Moreover, it is anticipated that a further 30 interviews of senior teaching/administration staff universities will enable the researcher to close up any possible informational gap.

The search for a suitable statistical approach has led us to the application of a new method within factor analysis, generally referred to as Structural Equation Model (SEM), designed to determine the extent to which the theoretical model is supported by sample data. As discussed earlier, SEM is a superior approach as it attempts to find a tailored model with acceptable indexes and significant associations between its constructs.

CHAPTER SIX

ANALYSIS OF RESEARCH FINDINGS

PART 1: Student Questionnaire

6.1 Introduction

In developing the student's questionnaire, several attempts were made to improve the final version. The initial format of the questionnaire lent itself towards the literature relating to both the cognitive learning and organisation culture theories. Following constructive feedback from my supervisor, I was advised to conduct a pilot study based on a small sample of Libyan students. Following a short trip to Libya, the amended version of the questionnaire was translated into Arabic and randomly distributed to 20 final-year students of the Social Science Faculty of Sabha University in south of Libya. The reason behind of choice of Sabha was primarily due to the fact that the researcher was born and bred in the region ; hence was familiar to the university's teaching structure and staff/students availability.

The decision on selection of final-year students for the pilot study was based on the idea that such students were more familiar with their environment, teaching/learning structures and more mature to offer any potential constructive comments. The cover letter specifically requested students to fully complete the questionnaire and feel free to make any comment regarding the number of questions, the style and the relevance of questions. The completion of the questionnaire was self-administered by the respondents, and verbal instruction in completion of the questionnaire was provided to respondents prior to the distribution of the questionnaire. On the whole, the prime aim of the pilot study was to identify any possible problematic areas and hence improving the questionnaire and the approach accordingly.

The comments received from the respondents were extremely beneficial as it led to the restructuring and rephrasing of several questions and the addition of a few more questions in parts one and two of the questionnaire. On the whole, the feedback by respondents was positive and constructive in development of the final version of the questionnaire.

As discussed in the methodology chapter, 300 questionnaires were distributed to students in each and every university. Following the findings from the pilot study, it was decided to distribute such questionnaires to the third and final year students of social sciences faculty in each of the three universities. Out of the total 900 questionnaires distributed to all the three universities' students, a respectable 612 were returned completed, giving an overall response rate of 68%. Once the third and final year students in each university were identified, the selection of students in the next stage was performed on pure random basis.

Table 6.1 offers a summary of the information relating response rates based on sex, year of study, and whether the students lived locally. The relatively lower response rate by the female students is primarily associated with the fact that there are fewer female students in these faculties, the share of which being around 35-40 percent across the three universities. On the whole, the response rate by the final-year students was significantly higher than their third year counterparts, as the former group appeared to be more receptive, informed and willing to complete the questionnaire and offer their comments, where possible.

Table 6.1: Main Characteristics of Participating Students

Characteristic	Tripoli	Sabha	Gharyan
Total Questionnaire Distributed	300	300	300
Total Questionnaire Collected	210	204	198
Response Rate (%)	70	68	66
Male Respondents (%)	65	72	68
Female Respondents (%)	35	28	32
Local Respondents (%)	71	89	84
Year 3 Respondents (%)	28	32	30
Year 4 Respondents (%)	72	68	70

As table 5.1 suggests, in all three universities, a large majority of respondents reported to have lived locally with Sabha having the highest rate of 89%, compared to that of Tripoli with 71%.

6.2 Organisational Analysis: University Environmental Characteristics

In relation to both the learning/teaching and the organisational culture theories, the questions in this part of the student's questionnaire aims to measure the organisation characteristics (social aspects, power distance, and masculinity/femininity index), and the contribution made by the organisation in offering effective learning style and innovative teaching. These indices have been calculated based on working-out the average values of the combination of the following questions from part A of the student's questionnaire:

Social Environment Index (SEI) - 1, 2, 3, 4, 12, 16, 17, 18, 23

Power Distance Index (PDI) - 6, 8, 9, 26

Masculinity-Femininity Index (MFI) - 24

LS Effectiveness (LSE) -13, 14, 15

Innovative Teaching Index (ITI) - 5, 7, 10, 11, 19, 20, 21, 22, 25

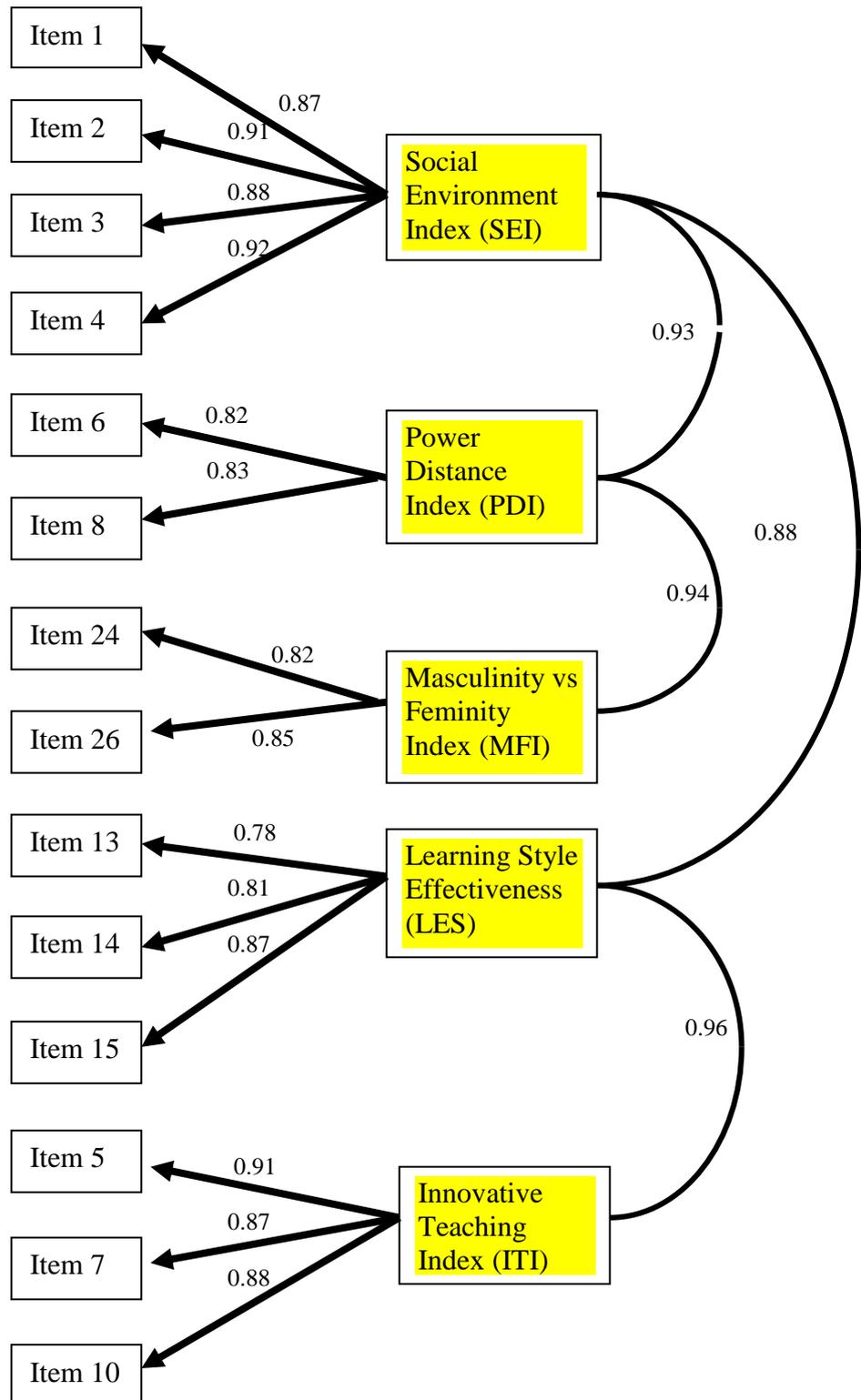
In confirming the above determinant factors representing each of the above 5 constructs a number of fit indices criteria were employed to assess the model fit. As

indicated in the previous chapter, the best fit is determined once a number of criteria are met. Table 6.2 shows the initial and the final revised models characteristics, whilst Figure 6.1 offers the final (revised) map of factors defining our constructs. According to Hu and Bentler's (1999), for an acceptable fit, the Comparative Fit Index (CFI) require to reach values of over .90, whilst values above .95 and nearer to 1.00 correspond to a best model fit. In addition, Root Mean Square Error (RMSE) is another fit index with values ranging from .08 to .06, near to .01 indicating acceptable and values from .06 to .00 indicate close and exact fit (Browne & Cudeck, 1993). Finally, as stated in Bollen (1989), the best fit is the one which yields an estimated adjusted Chi-Square (χ^2/df) of 3.0 or less.

Table 6.2: CFA - Initial and Revised Models – Organisational Culture

Fit Index	χ^2/df	p-value	RMSE	CFI
Initial Model	3.91	0.02	0.061	0.86
Revised Model	2.35	0.01	0.053	0.93

Figure 6.1: CFA - Revised Organisational Constructs



On the basis of CFA findings, presented in Table 6.2 and figure 6.1, Table 6.3 presents the estimated average scores of the five characteristics for all the three

universities. The estimated standard error of each factor is given in the parentheses beneath each respective estimated average score. On the whole these estimated scores are surrounded by relatively small standard errors, indicating that there had been very little or insignificant differences in sub-questions making these indicators. In other words, the average scores for these five indicators are statistically significant and representative. The higher these average scores, the better is the position of the university in terms of social environment and learning/teaching effectiveness.

An examination of this table suggests that Tripoli university appears to score higher on the first three organisational indicators, indicating that the student respondents found this university offering better environment for socialisation and freedom. However, in terms of effectiveness of the role of the organisation in changing students learning styles, both Tripoli and Gharyan universities perform better than Sabha. In terms of innovative teaching, although Tripoli scores higher than Sabha, according to respondents, Gharyan offers much greater value.

On the whole, within the domain of state-trait analysis, as extensively examined in Curry (1987), Riding and Rayner (1991), and Watkins (2001), these five organisation characteristics represent different features of the state of the university. The last row, labelled as the 'overall average organisation index can be treated as an overall average index of the state of the university.

Table 6.3: Scores of Organisations Characteristics

Characteristic	Tripoli	Sabha	Gharyan
Social Environment Index (SEI)	2.702 (.094)	2.445 (.117)	2.592 (.119)
Power Distance Index (PDI)	2.246 (.087)	1.745 (.077)	2.077 (.058)
Masculinity/Feminity Index (MFI)	3.327 (.058)	2.247 (.126)	2.663 (.058)
LS Effectiveness Index (LSE)	3.114 (.127)	2.425 (.092)	3.135 (.105)
Innovative Teaching Index (ITI)	2.962 (.085)	2.423 (.073)	3.021 (.107)
Overall Average Organisation Index	2.871 (.089)	2.258 (.098)	2.694 (.088)

There are some mathematical differences found in these scores between the three universities, but one needs to test whether these differences are statistically significant. In so doing, normal pair-wise t-test distribution should be conducted to test for the statistical significance of any differences between any pair of universities scores. On the basis of around 200 sample size that these estimates have been derived, any t-value greater than 2.4 would mean that there is a statistically significance difference at the 1% level of significance (Field, 2009). Table 6.4 gives the pair-wise comparisons between universities' organisation scores using t-value.

Table 6.4: Pair-wise Comparisons of Organisational Characteristics using t-test

Characteristic	Tripoli v Sabha	Sabha v Gharyan	Gharyan v Tripoli
SEI	2.57*	-1.34	-1.10
PDI	6.26*	-5.53*	-3.4*
MFI	12.5*	-34.3*	-11.1*
LSE	6.26*	-7.39*	0.19
ITI	6.74*	-6.64*	0.65
Overall Average Index	6.42*	-4.67*	-1.97

* Statistically significant at the 1% level.

As it is evident from table 6.4, there are some marked statistical differences between universities in a majority of characteristics. As for the social environment indicator, the only statistical difference appears to be between Tripoli and Sabha, but no such

differences between Sabha and Gharyan and between Gharyan and Tripoli. Conversely, there are marked differences between universities in so far as power distance and masculinity/feminity indicators are concerned. However, highly statistical differences are seen in the most important indicators - the effectiveness of organisation in changing students' learning style, and innovative teaching – where together they form the extent of the success of organisation in shaping effective learning style and teaching. Although no statistical differences found between Gharyan and Tripoli, Sabha's poor performance compared to the other two universities is strongly pronounced by these estimates. On the whole, as this table shows, Sabha performs poorly compared to the other two universities on all aspects of organisation indicators, shown by the overall average index, supported by highly statistical significance.

6.3 Analysis of Cognitive Learning Styles

In association with the mainstream theory in cognitive learning styles, the analysis here is based primarily on two approaches: Experiential Learning Method (ELT) and Fundamental Dimension Method (FDM) as examined in the literature review. Following the studies by Riding (2000) and Sadler-Smith (2001), four general types of cognitive learning styles are derived: abstract conceptualisation (AC); active experimentation (AE); concrete experience (CE); and reflective observation (RO). Moreover, different types of learners are identified using these four learning approaches: activist or converger (AC+AE); reflective or diverger (CE+RO); theorist or assimilator (AC+RO); and pragmatist or accommodator (AE+CE). Furthermore, from the state-trait viewpoint, these types of learning styles/learners should be treated as traits, which may or may not change under different environments (states). In

calculating these learning constructs, the following questions from part B of the student's questionnaire have been used:

AC: 1, 4, 12, 18

AE: 3, 7, 10, 14

CE: 2, 19, 20

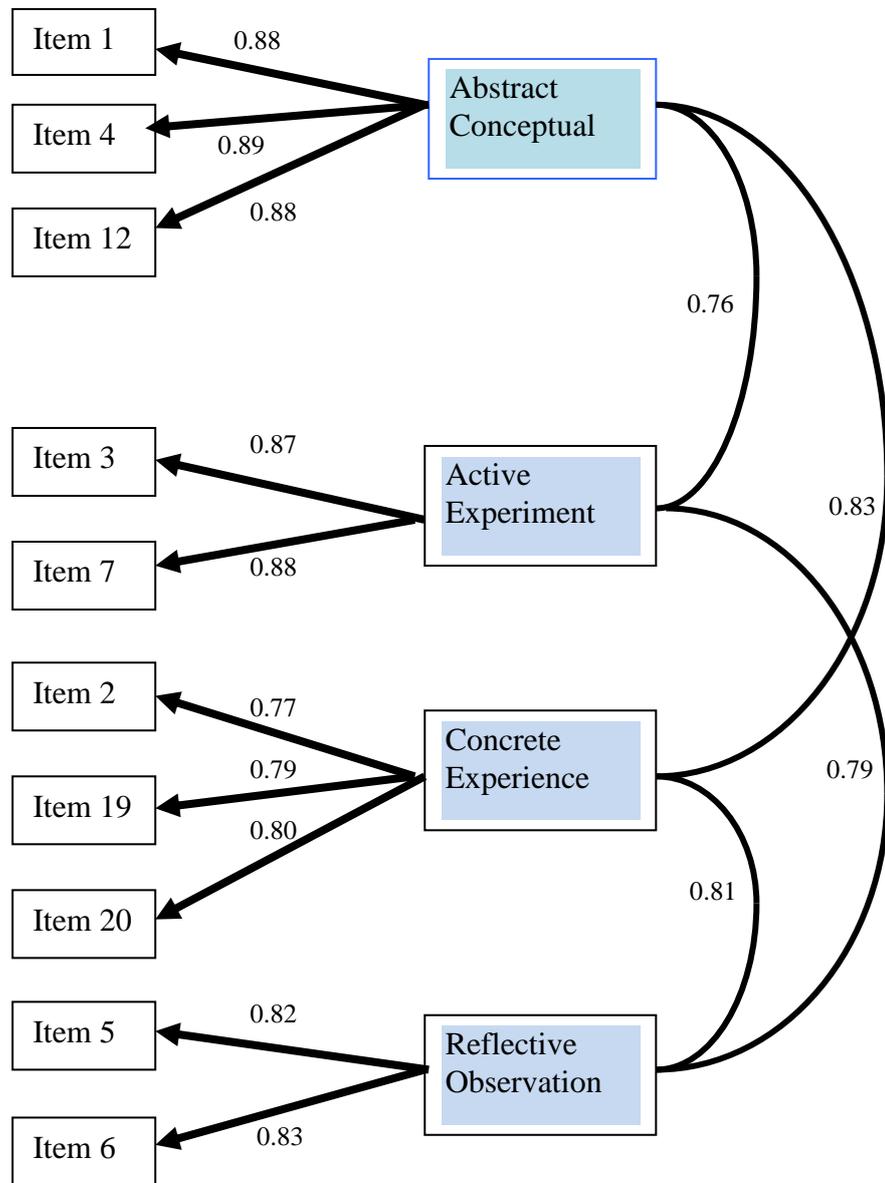
RO: 5, 6, 15

Similarly, to identify the exact number of items determining our constructs for cognitive learning styles the CFA is applied. The initial and revised models' characteristics are presented in Table 6.5; and the associated revised chart is shown as Figure 6.2.

Table 6.5: CFA Initial and Revised Models – Cognitive Learning Styles

Fit Index	χ^2/df	p-value	RMSE	CFI
Initial Model	3.62	0.03	0.066	0.88
Revised Model	2.51	0.01	0.055	0.94

Figure 6.2: Cognitive Learning Styles: Revised Confirmatory Factor Analysis



Following the above findings of CFA for cognitive learning styles, Table 6.6 shows the overall average scores of these constructs for the three universities. Once again, the standard errors, in parentheses, beneath the scores, are relatively small, indicating that all these average scores are statistically significant and representative. According to this table, the respondents in both Tripoli and Gharyan universities have attached much greater weights to AC and AE compared to those in Sabha university. On the

other hand, in Sabha, the respondents have attached much greater weights to CE and RO compared to the other two universities.

On the types of learners as explained earlier, the table suggests that there are similarities and differences in these three universities. As for similarity, all the three universities tend to score values higher than 3 on the type of theorist/assimilator learner. As for differences, whilst Sabha scores low value on activist/converger, the other two universities receive much greater scores. Sabha University have attached much greater weight to reflective/diverger type of cognitive learning style than the other two universities. Students in Sabha have also considered pragmatist/accommodator style of cognitive learning more valuable than their counterparts in the other two universities. On the whole, there appear to be more differences and divisions amongst students in these three universities in terms of choice of cognitive learning styles.

Table 6.6: Cognitive Learning Characteristics

Characteristic	Tripoli	Sabha	Gharyan
Abstract Conceptualisation (AC)	3.502 (.079)	2.682 (.095)	4.081 (.094)
Active Experimentation (AE)	3.254 (.096)	2.823 (.083)	3.751 (.105)
Concrete Experience (CE)	2.374 (.137)	3.872 (.102)	2.012 (.134)
Reflective Observation (RO)	2.525 (.091)	3.567 (.103)	2.582 (.124)
Activist /Converger (AC+AE)	3.378 (.087)	2.753 (.088)	3.916 (.094)
Reflective /Diverger (CE+RO)	2.449 (.111)	3.719 (.097)	2.297 (.097)
Theorist/Assimilator (AC+RO)	3.013 (.074)	3.124 (.095)	3.331 (.096)
Pragmatist/Accommodator (AE+CE)	2.814 (.083)	3.347 (.087)	2.881 (.096)

To demonstrate whether these differences are statistically significant, once again pair-wise t-test is performed, as shown in table 6.7. As this table shows, in a majority of cases differences in cognitive learning styles amongst the three universities are statistically significant at the 1% level. According to Tripoli students, abstract conceptualisation style is the most significant compared to those of the other two universities, whilst concrete experience is regarded as the most relevant learning style amongst the Sabha students compared to the others. Moreover, active experimentation style is shown to be regarded as the most important method of learning amongst the students at Gharyan university.

Table 6.7: Pair-wise Comparisons of Cognitive Learning Styles using t-test

Characteristic	Tripoli v Sabha	Sabha v Gharyan	Gharyan v Tripoli
Abstract Conceptualisation (AC)	9.42*	-14.7*	-6.81*
Active Experimentation (AE)	4.89*	-8.87*	4.87*
Concrete Experience (CE)	-11.5*	16.3*	-2.66*
Reflective Observation (RO)	-10.7*	8.62*	0.54
Activist /Converger (AC+AE)	7.04*	-12.8*	5.89*
Reflective /Diverger (CE+RO)	-12.1*	7.72*	-1.34
Theorist/Assimilator (AC+RO)	-1.37	-1.89	3.65*
Pragmatist/Accommodator (AE+CE)	-6.25*	7.31*	0.82

* Statistically significant at the 1% level.

In so far as the learners are concerned, there are also marked differences in students' styles between these three universities. Tripoli and Gharyan universities' students tend to be classed as activist/converger compared to those in Sabha university. On the other hand, Sabha students have strongly declared to be classed as reflective/diverger type of learners, compared to the other two universities. Moreover, Sabha students have also declared that they are pragmatist/accommodator type of learners than their other counterparts in the other two universities. According to this table, there are more theorist/assimilator learners in Gharyan than other two universities. On the whole all

these differences in types of learners across these three universities are shown to be highly statistically significant at the 1% level.

6.4 Analysis of Learning Preferences

On the basis of the questionnaire and the literature, here six different preferred learning styles have been identified. The first four relate to VARK and the other two are associated with the work of Sadler-Smith (2001). In some respects these learning preferences are not necessarily mutually exclusive, but do share some common features. For example, some aspects of visual learner can be found in verbaliser-imager, and that read-write learner may have some common denominators with wholist-analytic learner.

In building up these learning preferences, questions in part C of the student questionnaire have been used in the following order:

Visual: 2, 8

Auditory: 1, 3, 4, 5

Read-Write: 6, 7, 10

Kinaesthetic: 13, 17, 18, 19

Verbaliser-Imager: 9, 11

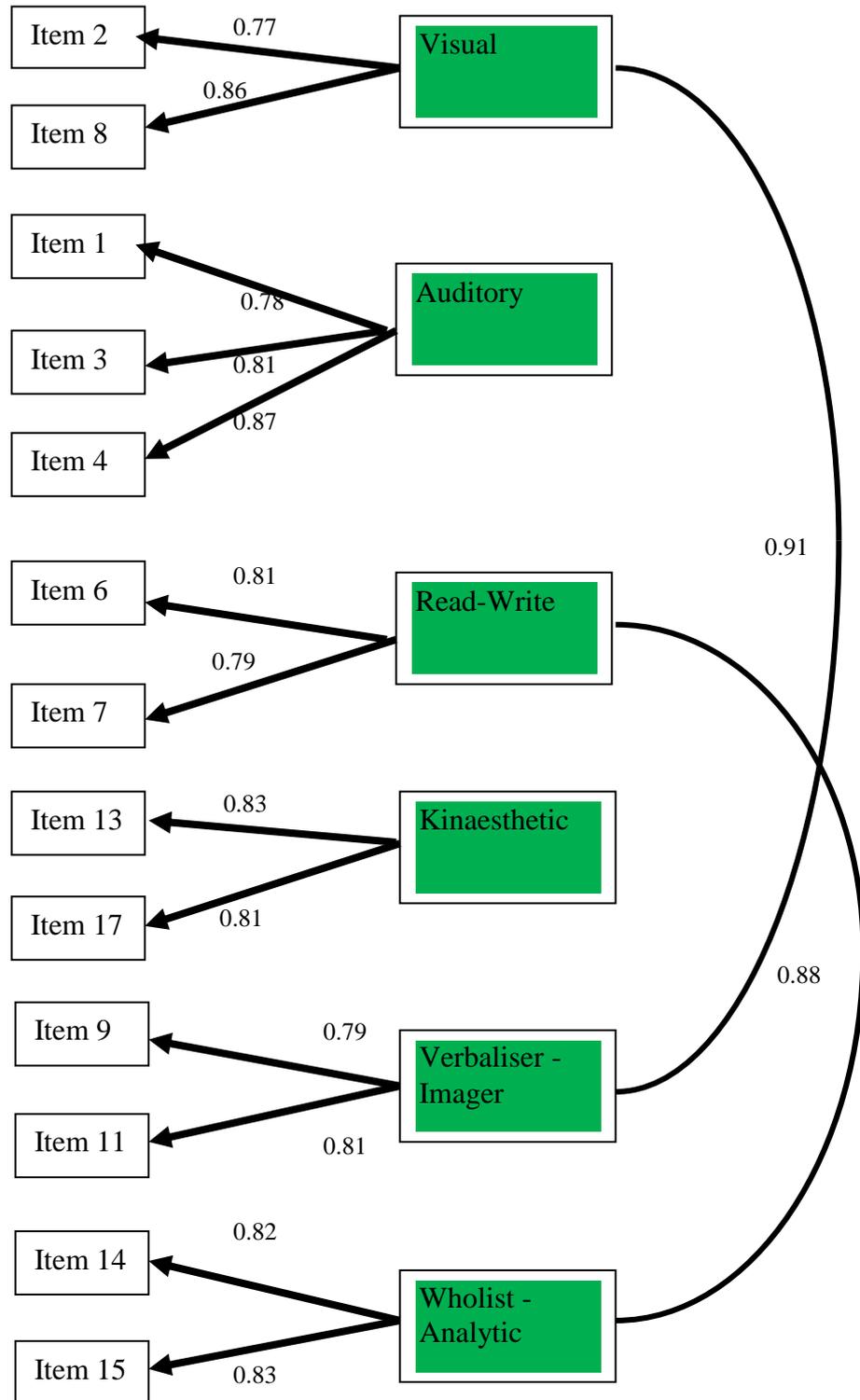
Wholist-Analytic: 14, 15, 20

To finalise the determinants of learning preferences' constructs CFA is applied and consequently Table 6.8, and Figure 6.3.

Table 6.8: CFA Initial and Revised Models – Learning Preferences

Fit Index	χ^2/df	p-value	RMSE	CFI
Initial Model	3.72	0.02	0.068	0.84
Revised Model	2.81	0.01	0.054	0.91

Figure 6.3: Learning Preferences - Revised Confirmatory Factor



The results of revised CFA have led to construction of our constructs' scores with their estimated standard errors in brackets, in table 6.9. Once again, it is worth noting that all these estimated average scores are surrounded by their relatively smaller standard errors, indicating that they are all statistically significant at the 1% level. There appear to be differences in learning preferences amongst students in these three universities. For example, according to this table, whilst Sabha and Tripoli students tend to prefer verbaliser-imager learning styles, most students in Gharyan university appear to prefer wholist-analytic learning style. Furthermore, all three universities tend to score relatively lower on read-write and auditory learning styles.

Table 6.9: Learning Preferences Characteristics

Characteristic	Tripoli	Sabha	Gharyan
Visual	3.021 (.114)	3.153 (.107)	3.011 (.119)
Auditory	2.817 (.144)	2.655 (.098)	2.625 (.122)
Read-Write	2.667 (.111)	2.455 (.113)	2.733 (.096)
Kinaesthetic	2.773 (.044)	2.799 (.105)	3.883 (.092)
Verbaliser-Imager	3.665 (.089)	4.221 (0.102)	2.235 (0.103)
Wholist-Analytic	2.454 (0.097)	2.343 (0.075)	4.078 (0.121)

In testing for the statistical significant differences in learning preferences, a pair-wise t-test is conducted and the results of which are offered in table 6.10. This table reveals very interesting points. Firstly, there appear to be no significant differences in learning styles relating to visual, auditory and read-write. Secondly, there are significant differences in kinaesthetic learners' scores between Sabha and Gharyan, and Gharyan and Tripoli. The more pronounced statistical differences are found amongst the verbaliser-imager learners among these three universities. Sabha students which have scored higher values in verbaliser-imager compared to their counterparts, demonstrate highly significant difference. There are statistical differences found

amongst wholist-analytic students in these universities: whilst no significant difference found between Tripoli and Sabha, Gharyan demonstrates highly statistical significant difference in relation to the other two.

Table 6.10: Pair-wise Comparisons of Preferred Learning Styles using t-test

Characteristic	Tripoli v Sabha	Sabha v Gharyan	Gharyan v Tripoli
Visual	-1.22	1.25	-0.09
Auditory	1.31	-0.33	-1.43
Read-Write	1.92	-2.37	1.21
Kinaesthetic	-0.38	-10.6*	18.3*
Verbaliser-Imager	-5.89*	19.3*	-13.6*
Wholist-Analytic	1.21	-15.4*	13.7*

* Statistically significant at the 1% level.

On the whole, as table 6.10 suggests, marked differences are found amongst learners when they are classed as verbalise-imager (VI) and wholist-analytic (WA), rather than VARK learners. Hence, VI and WA represent more reliable constructs than VARK and better fit for the purpose of modelling.

6.5 Linking Cognitive Learning with Learning Preferences

As discussed in the literature review, within the domains of personal learning style (PLS) and traits-states, one can examine the likely impact of cognitive style on individual's learning preference. In other words, one may propose that it is the interaction of cognitive style and learning strategy which tends to influence the individual's approach to learning. In effect, one may argue, other things being equal, that consideration of certain cognitive style can lead to adoption of a certain learning preference by a learner. This kind of analysis may be interpreted as examining for any potential link or correlation between cognitive learning styles and personal learning preferences. In so doing, simple Pearson pair-wise correlation estimates can help identify whether there are any links between cognitive styles and learning preferences.

Table 6.11 gives a summary of pair-wise correlation estimates between cognitive styles [Activist/Converger (A/C); Reflective/Diverger (R/D); Theorist/Assimilator (T/A); and Pragmatist/Accommodator (P/A)] and learning preferences [Verbaliser-Imager; and Wholist-Analytic] for the three universities. As noticed, the VARK learning preferences are not considered here as they were shown earlier to be of no significant difference amongst the three universities.

The first panel of table 6.11 offers the simple correlation estimates between cognitive styles and learning preferences for Tripoli university. The two cognitive learning styles of R/D and P/A appear to show no significant correlation with any of the two learning preferences. However, as the data suggest, there are strong and significant correlation between A/C and verbaliser-imager and between T/A, and verbaliser-imager. On the whole, as these estimates suggest, it can be argued that the most preferred learning preference amongst students in Tripoli university is verbaliser-imager and that has derived from the way such students regard A/C and T/A as most important cognitive learning styles.

Table 6.11: Pearson Correlation- Cognitive Styles and Learning Preferences

Tripoli	A/C	R/D	T/A	P/A
VI	0.564*	0.067	0.582*	0.109
WA	0.115	0.104	0.082	0.092

Sabha	A/C	R/D	T/A	P/A
VI	0.076	0.602*	0.464*	0.502*
WA	0.252	0.134	0.187	0.101

Gharyan	A/C	R/D	T/A	P/A
VI	0.153	0.068	0.124	0.097
WA	0.614*	0.101	0.542*	0.476*

*Statistically significant at the 1% level.

As for Sabha, once again most students are identified to be verbaliser-imager learners, but according to the correlation estimates such preference tend to have emerged from

R/D, T/A and P/A cognitive learning styles. Finally, the Gharyan students have demonstrated that they are generally wholist-analytic type of learners and that has been regarded to derive from A/C, T/A, and P/A cognitive learning styles.

On the whole, with the exception of Gharyan, most students in these universities have shown to prefer verbaliser-imager learning styles over wholist-analytic. Moreover, in all cases, a common denominator has emerged: students appear to regard Theorist/Assimilator cognitive learning style as the most valuable one in terms of shaping their learning preferences. However, T/A has shown to be associated with verbaliser-imager learning preference in the cases of Tripoli and Sabha, but it has demonstrated to be relevant to wholist-analytic learning preference amongst the students in Gharyan university. All in all, in consideration of the estimated correlation results, one can not draw any general conclusions as what style of learning preference may be associated with any of the cognitive learning styles.

6.6 Linking Organisational Culture with Learning Styles

In so far as the literature on link between organisation – here being a learning institution – and learning styles is concerned, in two ways such a link may be established: personal learning environment (PLE) and personal learning styles pedagogy (PLSP). These two concepts were extensively examined in chapter three and references made to particularly to main contributions by Nisbet and Shucksmith (1986), Evans and Waring (2009) and Hardaker et.al. (2011). Whilst the former relates learning preferences and cognition to the characteristics of the organisation (PDI, masculinity, social environment), the latter relates it to more specific characteristics of a teaching institution, namely, methods of teaching and promoting

new learning styles. In short, PLE refers here to the general aspects of the organisation (PDI, masculinity and social environment) and PLSP relates to the specific aspects (innovative teaching and promotion of new learning).

To demonstrate such possible relationships, one first needs to devise two new measures based on the features of organisation shown in table 6.13: general index and specific index. General index here is calculated by working out the average score of the three general characteristics of these universities; while the specific index is the average score of the remaining two characteristics given in table 6.13. Based on the scores of organisations, table 6.12 presents the two new indices for the three universities. The general index based on the average of two organisational environment factors can be treated as an approximation to PLE and the specific index as PLSP, as shown in table 6.3. As expected Tripoli scores significantly higher in PLE score compared to the other two universities, with Sabha scoring the least. Similarly, Tripoli does much better on PLSP score compared to the other two. On the whole, Sabha performs poorly on both indicators of organisation. In short, as this table shows, Tripoli university significantly better than the other two in creating a friendly and effective environment for learning and teaching.

Table 6.12: Scores of PLE and PLSP, using general and specific characteristics

Characteristic	Tripoli	Sabha	Gharyan
PLE	2.761 (.072)	2.145 (.101)	2.443 (.077)
PLSP	3.035 (.087)	2.345 (.095)	2.855 (.094)

6.6.1 Linkage Through Pairwise Correlation

To evaluate the extent of relationships between PLE and PLSP scores on the one hand and scores of cognitive learning styles, on the other, as the first step, pair-wise correlation measures are calculated and shown in table 6.13.

Table 6.13: Pair-wise correlation between organisation and cognitive learning

Tripoli	PLE	PLSP
Activist-Converger (AC)	0.556*	0.621*
Reflective-Diverger (RD)	0.231	0.143
Theorist-Assimilator (TA)	0.487*	0.652*
Pragmatist-Accommodator (PA)	0.129	0.201

Sabha	PLE	PLSP
Activist-Converger (AC)	0.116	0.021
Reflective-Diverger (RD)	0.131	0.103
Theorist-Assimilator (TA)	0.389*	0.452*
Pragmatist-Accommodator (PA)	0.129	0.101

Gharyan	PLE	PLSP
Activist-Converger (AC)	0.656*	0.686*
Reflective-Diverger (RD)	0.131	0.134
Theorist-Assimilator (TA)	0.387*	0.612*
Pragmatist-Accommodator (PA)	0.129	0.401*

*Statistically significant at the 1% level.

As this table indicates, in all institutions, higher scores of PLE and PLSP tend to relate to higher scores of theorist-assimilator style. Moreover, in the cases of Tripoli and Gharyan, high and significant degrees of correlation have shown to relate to the idea that PLE and PLSP can help develop activist-converger style as well. On the whole, all can be said is that there seems to be the case where in all universities high scores of PLE and PLSP happened to relate to high scores of theorist-assimilator and activist-converger. On the whole, table 6.13 exhibits that a certain cognitive learning styles are promoted by the three universities.

However, the most relevant type of linkage may be found when one attempt to test whether there is any correlation between students' learning preferences and the environmental factors – PLE and PLSP. Following what stated earlier, the two styles of learning preference were found to be verbaliser-imager and wholist-analytic, as VARK styles showed no significant differences amongst these institutions. Table 6.14, therefore, depicts the estimated pair-wise correlation values between PLE, PLSP and the two learning preferences. As this table shows, both PLE and PLSP tend to be more associated with verbaliser-imager rather than wholist-analytic. In the case Tripoli, both PLE and PLSP appear to be responsible for verbaliser-imager style, and that PLSP shown to be significantly associated with wholist-analytic style. In the case of Gharyan, however, PLSP appears to be significantly associated with the wholist-analytic and verbaliser-imager, but PLE tends to be responsible for wholist-analytic.

Table 6.14: Pair-wise correlation between organisation and learning preferences

Tripoli	PLE	PLSP
VI	0.634*	0.605*
WA	0.142	0.432*

Sabha	PLE	PLSP
VI	0.142	0.151
WA	0.201	0.093

Gharyan	PLE	PLSP
VI	0.211	0.354*
WA	0.547*	0.637*

Finally, as for Sabha, neither PLE nor PLSP appear to have much association with learning preferences. This finding was somewhat anticipated as Sabha students had already attached low values to both PLE and PLSP. On the whole, both PLE and PLSP have turned out to exhibit relatively high and statistically significant correlation

with learning preferences in two out of the three universities. Moreover, what these estimated correlation measures show is that apart from Sabha, there seem to be students' learning preferences which tend to match with those of the organisational constructs.

6.6.2 Multivariate Regression Models

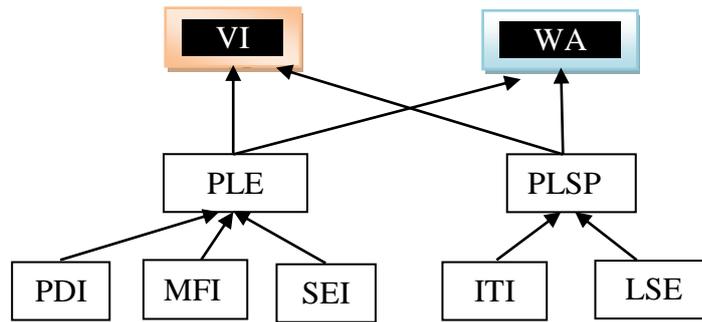
As for the final step in linking organisation culture (PLE and PLSP) with learning styles constructs, a multivariate set of models are conducted. The hypothesis here we wish to test is whether organisational constructs can determine or alter learning preferences of students in the three Libyan Universities. In building these models, we assume learning preferences – VI and WA - being dependent upon changes in organisation factors, here being PLE and PLSP. Using AMOS 20.0 multivariate modelling, the best fits for each and every university have been identified and estimated.

Based on what has been stated, one expects the pre-estimation model of two-dependent and two-independent variable to be exhibited as shown in Figure 6.4. In this figure, it is assumed that both learning preferences are being influenced by both PLE and PLSP. In turn, the chart also shows how the two organisation constructs have been constructed.

Figure 6.4: Multivariate Pre-estimation - Learning Styles and Organisation

Dependent Variables:

Independent Variables:



It is anticipated that the post-estimation may well lead to different structure or subsets of the above chart. As for Tripoli University, based on the two dependent variables (VI and WA) and the two independent variables (PLE and PLSP), Table 6.15 is presented, indicating that whilst PLE and PLSP constructs tend to determine VI, only PLSP is found to solely determine WA. The table also shows that whilst 92% of variations in VI is determined by PLE and PLSP, only 76% of variation in WA is attributed to PLSP. Moreover, in consideration of χ^2/df , RMSE and CFI indicators, the VI model offers better fit altogether than the WA model, indicating that visual-imager learning preference is deemed to match better with the organisational constructs in Tripoli University.

Table 6.15: VI and WA Models Estimates – Tripoli University

Model	χ^2/df	RMSE	CFI	R ²
PLE, PLSP → VI	2.15	0.045	0.91	0.92
PLSP → WA	3.19	0.064	0.72	0.76

The final best fit multivariate model of organisation and learning styles for Sabha University is presented in Table 6.16. As has been demonstrated, both models tend to give relatively low degrees of goodness of fit. Although the WA model offers an R² of 0.73, it performs better compared to that of VI of 0.56, and generally it gives better indicators of fitness. On the basis of these rather weak models, it can however be

argued that on the whole wholist-analytic learner tend to fir better in Sabha University environment.

Table 6.16: VI and WA Models Estimates – Sabha University

Model	χ^2/df	RMSE	CFI	R ²
PLSP → VI	3.35	0.075	0.61	0.56
PLE → WA	3.02	0.066	0.72	0.73

Finally, as for Gharyan University, Table 6.17 offers the final best fit models. In this case as the table demonstrates, WA represents a better model linking learning styles to organisational constructs than the VI model. According to these findings, 95% of variations in WA are explained by PLE and PSLP jointly and that RMSE and other indicators exhibit perfect fit. On the other hand, the VI model offers a relatively low R² of 0.68, indicating that a significant amount of variations in VI is still unexplained by PLSP. Moreover, other indicators for this model have turned up to be unfavourable. On the whole, as this table shows, it can be concluded that wholist-analytic learners tend to fit well in the organisational environment of Gharyan University.

Table 6.17: VI and WA Models Estimates – Gharyan University

Model	χ^2/df	RMSE	CFI	R ²
PLSP → VI	3.04	0.065	0.71	0.68
PLE, PLSP → WA	2.22	0.046	0.90	0.95

PART 2: Analysis of Interviews

6.7 Introduction

As the minor and supportive information in this research analysis, the study has conducted a series of interviews of the teaching staff of the three universities in Libya. The face-to-face interviews were conducted over the period September-November

2012. The interviewees were selected from all teaching departments of the respective university's social science faculty. The selection of the faculty was primarily based on the fact that the researcher had already been familiar with the nature and delivery of the programmes there. Furthermore, the researcher has built up good relationships with a number of academic and administrative staff who were willing and able to conduct the interview. The interview questions were designed to be semi-structured, allowing the interviewees to shed light on whatever comments or suggestions they wished to offer. Table 6.18 presents some characteristics of the total 30 interviewees across all the three universities.

According to this table, the average age of interviewees across the universities varied between 38 and 45. Large majority of the interviewees declared that they had Masters Degrees, with teaching experience of between 5 and 6 years. In Gharyan university, 9 out of 10 teaching staff stated that they had received their postgraduate degrees from abroad, compared to 8 in Tripoli and only 3 in Sabha universities.

Table 6.18: Main Characteristics of Interviewee

Characteristic	Tripoli University	Sabha University	Gharyan University
No of Interviewees	10	10	10
of which Female	2	5	3
Age	39	45	38
Highest Qualification			
• BA/BSc	0	1	0
• MA/MSc	9	7	9
• PhD	1	2	1
Years of Experience	6	5	6
Degrees from abroad	8	3	9

It must be noted here that the variation in number of interviewees in terms of whether they had their degrees from abroad or not, does not necessarily represent regional variations in this case. Theoretically, the criteria for selection of candidates to be sent abroad for studies are based on educational attainment and the general knowledge of foreign languages. Indeed, some elements of favourism or nepotism have, in practice, played significant roles for such selection of academics.

6.8 Interview: Findings and Analysis

Seven similar open-ended questions were put forward to all the interviewees in these three universities. The questions were as follows:

1. How do you explain university's culture towards teaching and learning?
2. In your view, are there any specific teaching and learning methods that the university follows?
3. What learning styles do you promote? If so, do you follow these methods?
4. In your teaching do you consider students' learning background?
5. Do you think your students are proactive in learning in context effectively?
6. Do you think your students need to modify their initial learning styles in order to satisfy the degree programme requirements in this university?
7. In your view, do you believe this university, on the whole, is proactive in promoting innovative teaching and learning styles?

Questions 2 and 7, in particular, are important here as they attempt to find if there is any structured teaching and learning methods that the university follows. Furthermore, question 6 attempts to find out whether the university is aware of the initial learning styles of the students prior to joining the higher education, and whether the university is willing to improve their styles to meet the degree programmes.

Prior to detail analysis of the responses offered by these interviewees, here presented a summary answers in table 6.19.

Table 6.19: Summary Response to the Questions

Q	Tripoli	Sabha	Gharyan
1	-Offer detailed explanation (5) -Offer no clear explanation (2) -Not sure (3)	-Offer clear explanation (4) -Offer no clear explanation (3) -Not sure (3)	-Offer detailed explanation (6) -Offer no clear explanation (2) -Not sure (2)
2	-Negative (7) -Positive (2) -Not sure (1)	-Negative (6) -Positive (3) -Not sure (1)	-Negative (4) -Positive (4) -Not sure (2)
3	-Offer clear explanation (2) -Offer unclear explanation (4) -Not sure (4)	-Offer clear explanation (2) -Offer unclear explanation (5) -Not sure (3)	-Offer clear explanation (4) -Offer unclear explanation (4) -Not sure (2)
4	-Negative (7) -Positive (3)	-Negative (4) -Positive (6)	-Negative (4) -Positive (6)
5	-Negative (7) -Positive (3)	-Negative (6) -Positive (4)	-Negative (4) -Positive (6)
6	-No (4) -Yes (6)	-No (5) -Yes (5)	-No (3) -Yes (7)
7	-No (8) -Yes (2)	-No (9) -Yes (1)	-No (7) -Yes (3)

As this summary table suggest, on the whole, there are mixed views about aspects of teaching and learning in these universities. As for question 1, apart from Gharyan, in majority of cases, the other two universities staff had either no clear explanation for university's culture towards teaching or they were not sure at all of any such culture. In relation to question 2, in majority of cases, it was noticed that staff had negative view about any sustained or specific teaching/learning being followed by their universities. Similarly, as for question 3, only a minority of staff offered clear explanations in relation to promotion of any learning styles. However, when asked if they considered the students' learning backgrounds, in majority of cases, positive answers were received. On the other hand, as for question 5, majority of staff declared that their students found not to be proactive in learning in context effectively. However, as stated by many staff there, such information is always passed on to the manager and filed up for the purpose of staff meeting. The interviewees were also united in the view that students needed to modify their initial learning in satisfying the

programme's requirements. Finally, about half of interviewees believed that their respective universities were proactive in innovative teaching and learning.

6.8.1 Detailed Analysis – Tripoli University

Question 1: How do you explain university's culture towards teaching and learning?

The researcher received mixed messages from different teaching staff. Two interviewees, out of ten, stated that teaching and learning culture is somewhat ambiguous issues in Tripoli University, and nobody knows or has the time to investigate these approaches. One of the interviewees said: “we just go to our overcrowded classrooms, offer our lectures and then leave – no one has extra time to make any investigation about teaching or learning approaches”.

In three occasions, members of staff expressed that there existed some form of teaching/learning approaches but could not elaborate upon. One particular interviewee said: “we are told that the university follows a set of pre-determined and correct approaches in teaching and learning – but we haven't seen them!” On the other hand, one interviewee, a female lecturer with 7 years of teaching and research experience, stated that she did attend, from time to time, to faculty wide meetings about development of innovative teaching and learning approaches. However, she explained that most members appeared to be confused and could not spend extra time in reading or understanding of these approaches. She said: “I had no idea why we were gathering and what for – no agenda or any proper plan”.

Generally, although some explanations offered by those (only 3 interviewees) who stated that there were some set of rules and regulations on teaching and learning approaches, they offered unclear and incomprehensible account of such culture. It

appeared to the researcher that they expressed their views about teaching and learning but all based on hearsay!

Question 2: In your view, are there any specific teaching and learning methods that the university follows?

The general feedback for this question was more clear cut. Seven out of ten interviewees clearly expressed that there are “no clear vision in identifying any specific methods of teaching and learning whatsoever”. One interviewee said that she had been trying to promote amongst students form of cognitive pedagogy and learning but she pointed out that “I appeared to be the odd one out among my colleagues – so students did not appreciate it”.

However, two interviewees argued that there had always been some specific methods of teaching/learning promoted by the university, but “no one seems to follow them – there is no genuine mechanism of implementing these methods”. Another interviewee, a 52 years old senior lecturer who had just moved from Benghazi to Tripoli, strongly believed that since the establishment of the so-called University of Libya in both Benghazi and Tripoli, back in the early 1970s, there had been clear statements and documents regarding promotion of innovative teaching and learning approaches. However, he admitted that since these two universities changed management in the early 1980s – hence changed their names to Al-Fatah in Tripoli, and Garyounis in Benghazi – “the promotion of such ideas and methods have long forgotten.”

Question 3: What learning styles do you promote? If so, do you follow these methods?

There appeared to be a lot of confusion amongst interviewees vis-à-vis their own learning methods promoted. The only two clear and concise explanations came from the staff who stated that they had studied in the UK and were very much aware of the importance of cognitive learning styles. One of these staff explained that in his classes of Social Sciences, he promoted the method of field trip and teamwork as an effective means of learning. He totally rejected the old learning style based on memorisation – “a totally inefficient and useless method of learning, turning a potentially intelligent student into a parrot”.

An older member of staff elaborated on why the teaching community in the university offer no research on innovative teaching and learning – “during the 40 years of the old regime, no rewards were made to those who came up with new ideas in helping or promoting new methods of learning or teaching – and no punishment for those who failed to support appropriate teaching”. Another interviewee, a young lecturer who had been working there for only 2 years, stated: “when I started working in this university I had a dream that I would be able to offer the most recent approaches in learning to my students. But that created a massive tension between me and the rest of staff who thought they had been threatened by my action”.

On the whole, in so far as any attempts made to improve learning and teaching methods, the researcher found a majority of staff being deluded and confused over what direction to take to enhance the learning standards. One interviewee clearly stated that “the management is totally lost and have no time or resources to allocate to

us to improve our teaching and learning methods”. In support of this statement, another interviewee was extremely bitter that his request for a power-point presentation equipment for improved teaching had been rejected by his manager on the ground that “we have better things to do with the money than spending it on some redundant equipment”.

Question 4: In your teaching do you consider students’ learning background?

This is a question where most interviewees declared that they did not and could not consider the students’ learning backgrounds. Seven out of ten interviewees clearly stated that they had no time to consider all that as they were teaching so many modules to different groups of students with varying backgrounds. When the researcher asked if they were given resources and rewards, would they do it, half of the interviewees said they would but did not know how to do it. “The university is supposed to come up with some clear cut approaches promoting the idea of understanding the students’ learning backgrounds, but like anything else, they have no idea whatsoever”, one angry respondent stated.

One female interviewee was bitter that despite her repeated requests for teaching support in identifying the student learning preferences and promoting cognitive approaches, “no one seems to have listened to what I have said, let alone doing it”. Another interviewee pointed out the serious extent of corruption and incompetence at the top of the university management by saying: “the top management has no clue how a modern university should be run. They are only there to get bonuses and promotion and have no interest in listening to our demands”. He also stated: “students are also sick and tired of this system, but their voices are not heard”.

Question 5: Do you think your students are proactive in learning in context effectively?

Most interviewees were in agreement that a small number of students appear to be proactive in learning in context effectively, however, the majority are there just because they have nothing else to do. One interviewee stressed: “we the teachers should also be to blame as we do not teach them how to be proactive in learning”. He continued: “if we did, I am certain that a much larger number of students would become interested to extend their learning ability and become proactive”.

“On the whole, if resources became available to us, we could and would offer support to our needy students to learn how to become proactive learners”, an old teaching member of staff said angrily. He further stated: “I am glad that most of our students do know that it is not all the teachers’ fault, but the rotten system of teaching and learning in this and all other universities in Libya”.

A young member of staff who had just returned from the UK where he had had his PhD degree stated: “what you see here in this old and rotten Libyan Higher Education system stems from the fact that the whole system of education is rotten to its core – we need to shake up the whole system”. He talked about his research and learning experience in the UK university, in illustrating the contrast with the Libyan system: “higher education in the UK is based on teaching self-discipline and independent research and learning and full support throughout – something we must try to learn and run in this system”.

Question 6: Do you think your students need to modify their initial learning styles in order to satisfy the degree programme requirements in this university?

Six out of the ten interviewees clearly stated that students need to seriously modify their initial learning styles or preference in order to be able to succeed in their studies. However, once again they were in agreement that resources should be allocated to encourage and guide students to do so. “In some cases we have noticed that the students’ learning preferences are too far from what we regard as crucial in their success. We may be able to help a few but not all – we need more support and funds to do so”, said an enthusiastic lecturer.

Another interviewee explained that “we have repeatedly reported poor performance of students across board being related to their wrong methods of learning, but received no genuine responds from our managers”. Only one interviewee said that there is no need for students to modify their learning, simply because “no matter how they perform they leave the university with very little knowledge and skills, and no ambition”.

Question 7: In your view, do you believe this university, on the whole, is proactive in promoting innovative teaching and learning styles?

Based on the previous questions, it was anticipated that there may be disagreement among the interviewees in relation to their view on the university being proactive in innovative teaching and learning styles. However, in majority of cases – 9 out of ten – the researcher received negative respond. The general view was that the university has no clear and unambiguous strategy in promoting any innovative teaching and learning styles. “Just the old, ineffective and impractical methods of teaching and learning

styles, and nothing else” said an interviewee. Another interviewee stated: “we have been out of touch with new developments in teaching and learning styles and now it is too difficult to change”. He continued: “massive resources and supports need to be allocated to the Higher Education system in this country to put things right”.

Even the only interviewee, who believed that there was a proactive strategy followed by the university in innovative teaching and learning, failed to explain or convince the interviewer of his view. “There is bound to be a set of policies in promoting teaching and learning effectively, but I am not quite aware of that”. On the whole, the feedback was one of the negative respond to any university-wide strategy in promotion of proactive and innovative teaching and learning styles.

6.8.2 Detailed Analysis – Sabha University

Question 1: How do you explain university’s culture towards teaching and learning?

No clear explanation was received from three of the interviewees when they were asked to tell us anything about university’s culture towards teaching and learning. Of the other seven, three respondents stated that they were not aware of any such culture in the university. However, the remaining four interviewees had something to say about it. “As far as I am aware, there is no genuine attempt made at promoting any culture vis-à-vis structured teaching and learning. Individual lecturers have their own style, but surely not very efficient or effective ones”, one young lecturer said. “In our department, as I know well, there has recently been talks of identifying a set of teaching and learning strategies beneficial to students – but not aware of anything at the university wide”, another interviewee stated.

Question 2: In your view, are there any specific teaching and learning methods that the university follows?

Once again, the feedback received was one of the negative one. Most interviewees had no idea if anything specific has been designed at university-wide. One of the older members of staff with 12 years of teaching at Sabha articulated: “over the past three years a handful of individuals have made genuine attempts at thinking and creating some specific criteria and policy for the faculty-wide teaching and learning, but resources have been limited and that has forced them back to square one”. One member of teaching staff was positive that there is a set of specific teaching and learning methods, but stated that “not many lecturers wish to follow them as they are notoriously demanding and time consuming”.

A younger lecturer who had received his MBA from Egypt stated that he had been so frustrated over the past few years that the university had promised to do something with structuring specific design of teaching and learning, but “nothing has happened, just words, empty words and no action”.

Question 3: What learning styles do you promote? If so, do you follow these methods?

Two interviewees clearly stated about their own learning style that they promote in order to help students to succeed. One of these lecturers who teaches economics of education to the final year students said: “most of our students prefer to do practical things to learn more effectively. I have introduced an interactive team work sessions after each semester prior to examination.” He elaborated on this by saying: “each time

is responsible to read a certain number of relevant material and make summary presentation using computer presentation or any pictorial means – this way they have done at automatic revision without them really knowing”. The other lecturer said that he had developed his own short reading list comprising the summary of all the relevant material. He said that using this method “I found that students would be encouraged to search for more material by their own – my students have generally performed much better than elsewhere”.

The large majority of staff simply declared that they followed the old tradition of teaching and thought there was nothing wrong with that. One member of staff said: “some of these new methods of teaching or learning may not necessarily fit in with our cultural backgrounds – so it fails to work”. When the researcher asked if he could expand on that issue, he said: “from day one when we go to school we are told that the only way to learn is to memorise – now how could we change this method which is far deep rooted in the students’ heads as the most effective way”.

Question 4: In your teaching do you consider students’ learning background?

Four teaching staff openly declared that they had no idea what specific learning backgrounds did their students have. “All we know that they are taught in their pre-university schooling that the only way to learn is through memorisation and repetition”, said one of them. Another interviewee stated: “we teach sometimes in very large classes and have no idea and no resources to find out what learning backgrounds our students have”.

On the positive side, six interviewees declared that they have made efforts to identify the specific backgrounds of students learning “through holding small classes or meetings in say the university refectory”. She continued: “we sometimes spent hours of our holiday times trying to help the weaker students through remedial classes, identifying their overall learning backgrounds – but the management tends not to support us”. Another interviewee referred to lack of funds and resources in meeting these issues, “the university must first and foremost allocate funds to teaching staff to have regular meetings – like tutorial system which are available to students in the Western Universities – with their students, helping them in their learning process”.

Question 5: Do you think your students are proactive in learning in context effectively?

Six of ten interviewees admitted that their students lack imagination and learn just to get through the university programme to “find a job – perhaps in the public sector- get married, have children – a vicious circle!” He, however, admitted that “we must try to break this circle and teach them how they could progress through learning in context effectively”.

Another interviewee, an older professor with 17 years of experience in Sabha University, blamed the system of education in Libya for failing miserably to correct the errors. He said: “for many years we have argued that to improve learning and teaching we need to train our students to be thinkers rather than followers; be proactive rather than passive learners – but nobody seems to listen to us at all”.

On a more positive approach an interviewee said: “we need to work together and overcome lack of enthusiasm in students learning and staff teaching innovation”. He

added: “no good talking about the past, let’s think of the future and how we could promote students’ awareness of becoming proactive learners”.

Question 6: Do you think your students need to modify their initial learning styles in order to satisfy the degree programme requirements in this university?

The interviewees were divided on this issue, as 5 agreed that the students do need to modify their learning styles, against those who thought that the initial learning styles would suffice. A senior staff who claimed to have taught in three universities around Libya in the past, stated: “we are all aware of the fact that students must make every effort to cope with our teaching methods, hence changing their learning styles”. He continued: “no wonder most of our students perform badly – resources need to be made available to convey this message to our students.”

Another interviewee explained passionately: “students don’t need to change their initial learning styles, because we, the lecturers make sure to deliver our material in the way they are happy to learn”. When the interviewer asked if he could further expand on that, he added: “because we have no time or no resources to search for ways of changing the students learning backgrounds, instead most of us thus prefer to change our teaching styles to fit in with the way students could learn effectively”.

Question 7: In your view, do you believe this university, on the whole, is proactive in promoting innovative teaching and learning styles?

The interviewer received a very strong negative message from almost all the interviewees about university’s role in promoting proactive and innovative teaching and learning. Only one interviewee said that there was a rather loose set of rules of

regulations in regard the university's promotion of innovative teaching and proactive learning. However, he admitted that "nobody seems to know about it or follow it."

An interviewee, a young man in his late 20s, said that he felt disgusted with the way the management treated the staff and the students. He continued: "we know what students want and how to do it but the university management has never realised the importance of promotion of this culture".

6.8.3 Detailed Analysis – Gharyan University

Question 1: How do you explain university's culture towards teaching and learning?

Six out of ten interviewees in this university declared that they have felt changes over the past five years now. One interviewee said: "although the university is moving towards some form teaching and learning structure, it still lacks on cognitive learning styles". Another interviewee praised the university management for having developed a platform for members of faculties "to exchange their teaching experiences and eventually ending up with a structured culture towards the Western styles of teaching and learning". He also added: "I have seen changes taking place but we all want to see significant changes, particularly in relation to student-staff understanding".

Two interviewees strongly rejected the idea of the university ever willing to adopt an effective teaching and learning culture. One of them added: "for forty years we were told that our teaching and learning were the best in the world; now we realise that we had been told lots of lies". He passionately continued: "the reversal of this belief takes time, resources and devotion – and for all those the government needs to take care of the teaching staff's welfare".

Question 2: In your view, are there any specific teaching and learning methods that the university follows?

Two interviewees declared that they were not sure of any such specific, if any, teaching or learning methods ever existing. However, four interviewees were generally adamant that there are specific teaching methods adopted by the faculties but they are old and ineffective. “The teaching method very much depends on the subject, but one common thing is that they are all based on traditional methods”, one senior lecturer said. A female teaching member who had been teaching for nearly 8 years, supported the view that changes in teaching and learning methods are on the way, but she was not sure “whether this will be a one off thing or an on-going dynamic strategy”.

The negative feedback came from another four teaching staff who believed that generally changes would be superficial and fail to be of any service to students. “Change of regime is a good news but changing people’s attitude towards any effective teaching and learning methods will be hard to think to happen”, said a senior staff. Another negative feedback came from this young lecturer who stated that he would have liked to introduce a new method of teaching and present it at university-wide, but “no one was interested as it meant that they had to change their rotten old style of teaching – in short, they don’t like change”.

Question 3: What learning styles do you promote? If so, do you follow these methods?

Four teaching staff out of ten stated that they have their own specific teaching method requiring new learning styles. “The learning method I tend to promote is based on

activities normally conducted in the classrooms in groups”, a new teaching staff stated. He continued: “when I was in the UK studying for my PhD, I noticed that activity-based learning produced much greater and beneficial outcomes than our old and redundant method”. Another positive response came from a senior teaching staff who openly said: “for many years I thought our old learning approach works, but I was very much mistaken”. He added: “I have now come to my senses and have recently promoted seminar sessions with small number of students – it is taking a lot of my time, and get no financial reward, but I am still happy to do it”.

Four teaching staff stated that they have not even bothered to change their students learning styles, as they believed: “it won’t be popular; besides it is extremely time consuming and no reward at the end”. One female lecturer said: “we need to find extra time to come up with promotion of new learning styles, but our morale is too low – poor salaries and no academic justice and rewards”.

Question 4: In your teaching do you consider students’ learning background?

The researcher received more positive feedback from the staff here. Six interviewees stated that they do their best to identify the general students’ backgrounds in learning preferences. “I do spend talking to a small number of students to see if their learning backgrounds deviate from the norm – in most cases, though, they seem to follow similar learning styles”, a senior member said. Another positive feedback came from a lecturer in his 40s who has been teaching for nearly 12 years: “without understanding the students’ learning background the teaching is totally worthless – and for that I always make sure to gear my teaching to suit the average student’s learning”.

Four staff openly declared that it would be a notoriously difficult and time-consuming task to find out the students' learning backgrounds. One interviewee said: “we need extra teaching support to help us do this task – going back again to resources which we are not allocated to”.

Question 5: Do you think your students are proactive in learning in context effectively?

Six interviewees out of ten stated similar statement: “there are some students who are proactive in learning in context, but are in minority”. One interviewee who had received his PhD from a UK university was happy to see that “the number of such students tend to be increasing over time – slowly but surely”. Another lecturer believed that the only way to create and promote proactive learners is for “our teachers try to update their teaching styles, demanding students to become in context learners”.

However, four interviewees were adamant that the big bulk of their students were far from being proactive learners. “The system breeds passive learners – and that is going to stay unchanged for the time being”, a senior member of staff said. However, he admitted that “old styles of teaching should also be blamed for promotion of non-active learners”.

Question 6: Do you think your students need to modify their initial learning styles in order to satisfy the degree programme requirements in this university?

A large majority of interviewees were in agreement that students enter university with rather weak and outdated learning styles, and these need to change to accommodate

for programmes demand. An interviewee, the course leader for one of the largest programmes in Social Sciences, stated that “given our students rather weak learning backgrounds, we always prescribe to all our teaching staff to inform the students that they desperately need to change their learning to satisfy our programme”. However, when the researcher further questioned if all teachers follow this instruction, the interviewee replied: “of course not. Unfortunately there are some lecturers in our faculty who are afraid of change and progress – but are in minority”.

One interviewee rejected the idea that students need to modify their initial learning style by arguing: “it is not the students who should change their learning styles, but the teaching staff who should stop teaching the old stuff”. He further added: “all these changes we talk about should first come from the top of the university management and I guarantee the rest would follow”. In similar way, another interviewee referred to promotion of new learning styles for students as means of enabling them to cope with programmes demand more effectively. He said: “this procedure takes time and a lot of effort which cannot be done without additional resources and funds”.

Question 7: In your view, do you believe this university, on the whole, is proactive in promoting innovative teaching and learning styles?

Once again a large majority of responses were negative. Seven out of ten interviewees clearly stated that there is and there has been no strategy for promoting innovative teaching and learning at this university. “The problem is that we are never appreciated for doing something new or interesting”, a senior lecturer complained. He added: “in the past we have had a series of meetings to promote some forms of innovative

teaching and learning style at faculty level, but like anything else in this country, nothing has changed – you see people hate to change for better!”

Another interviewee indicated that “we need to do one thing at the time – first promote innovative teaching then proactive learning comes with it”. Speaking with oozing passion she continued: “this university and others in this country are ruled and controlled by men who think they know everything – they are very conservative and not prepared to change even the very basic thing in their teaching delivery”.

6.8.4 An Overall Analysis of Interviews

An overall examination of the interview findings help identify similarities and differences in organisational culture among the three universities. First and foremost, in relation to the social environment of these organisations, similar pattern was observed: all three exhibit relatively high scores of PDI and MAS. Second, due to lack of financial support for development of innovative teaching and proactive cognitive learning styles, all three universities staff declared that there has been no university-wide teaching and learning styles.

Furthermore, due to corruption and incomprehensive strategies, there has been no fair promotional scheme in place, creating disincentive for teaching staff to develop any innovative teaching/learning plans. As for differences in these three establishments, the findings from the interviews led to no significant issue separating one from the others.

6.9 Summary and Conclusions

This chapter presents the findings from the analysis of the questionnaire, compiled and collated from the students of three Libyan universities, and of teaching staff interviews in Tripoli, Sabha and Gharyan. With reference to the theoretical frameworks based on organisational culture and learning styles literature, the analysis of the questionnaire has attempted to identify the main styles of learning (cognitive or preferred) reported by students. In so doing, a series of statistical analysis have been performed. First and foremost, in identifying the number of factors leading to construction of our constructs the so-called confirmatory factor analysis (CFA) was approached. Then using pair-wise t-test, the analysis has shown that there are significant differences in learning preferences and cognitive learning amongst these students in the three universities. More importantly, the analysis has found some significant differences amongst the scores for organisation characteristics (PDI and MFI), where Tripoli appears to have performed better on such indicators than the other two universities.

In an attempt to explore possible linkages between organisational constructs (PLE and PLSP) and learning styles the study has estimated and evaluated the findings derived from both the correlation approach and the multivariate models, using AMOS 20.0. The findings have indicated that there appear to be some rather strong relationship between learning styles and organisational factors. In particular, it was found that there appeared to be a link between PLE / PLSP and the learning styles preferred by students. We have derived some mixed conclusions from our findings. Whilst strong case of verbaliser-imager model appears to be a dominant model of learning in Tripoli university, and a weaker VI model in Sabha University, Gharyan University tends to

support the wholist-analytic learning style. On the whole, it can be argued that the research has shown that there is much stronger positive correlation between PLE / PLSP and verbaliser-imager style of learning in all the three universities. This appears totally with the earlier findings that the verbaliser-imager tends to be a more common style of learning amongst students in these universities.

In support of our major data collected from the students questionnaire, this chapter has also considered a minor data by having examined and analysed the findings from interviews of 30 members of teaching staff in the three universities. The researcher put forward seven semi-structured questions to ten teaching staff in each of the three universities. As discussed earlier in chapters 2 and 5, the questions were designed to cover the overall university culture in promotion of innovative teaching and cognitive learning styles, as well as the role of teachers in providing and promoting new teaching styles. Moreover, the questions aimed to cover the students' learning backgrounds against the university's required cognitive learning styles helping students to satisfy their programmes of study.

On the whole, the researcher discovered several areas worth noting here. First and foremost, it is evident from the feedback by these 30 teaching staff that what is regarded as university-wide teaching and learning culture is either absent or loosely defined. In the light of the detailed responses from the interviewees, it can be said that this has given rise to both teachers and their students to proceed with the old and traditional methods of teaching and learning for many years. Moreover, as it was brought up by several members of staff of the universities, lack of financial and promotional incentives and general poor leadership has led to decline of teachers'

morale. From the findings, one is led to believe that neither teachers were prepared to change, as it was time-consuming, and nor the students as they had been learning under the old and ineffective learning styles.

One of the areas which were highlighted by several interviewees was the issue of university support through provision of resources and funds for any new and innovative teaching developments. It has appeared that the universities, on the whole, have failed miserably to promote any innovative teaching and have denied their students of quality teaching and learning styles. This message was echoed and passionately raised by a large number of the interviewees. In short, the findings from the interviews suggest that the entire Higher Education system in Libya has under-performed for many years in the two most important aspects of education quality: innovative teaching and promotion of cognitive learning styles.

CHAPTER SEVEN

DISCUSSIONS AND ANALYSIS

7.1 Introduction

In the previous chapter a detailed examination of the research findings was presented. However, in conducting a balanced and appropriate discussion, one needs to develop a link between the empirical findings and the questions of the thesis in consideration of the relevant literature. As can be recalled, the research's main aim has been to investigate the role of organisational culture on the structure of learning styles amongst students in selected Libyan universities. In so doing, the following questions form our main research questions:

- 1) What are the main characteristics of learning styles amongst Libyan students in the HE sector?
- 2) To what extent does the organisational culture affect the learning styles amongst the Libyan students in the HE sector?

In finding the answers to the above questions, a through investigation of the two strands of theory has been made. First and foremost, in examination of the theoretical foundation of learning styles the research has embarked upon a detailed review of literature by paying special references to the main characteristics of cognitive styles based on the process of mental activities, learning and problem solving and being independent of subject content. On bipolarity characteristic of cognitive styles, that the dimensions are value-neutral and that each pole has qualities that are adaptive in particular circumstances. The final conclusion the study has drawn is in line with that of Jackson (2005) where individual's personality is assumed to be dynamic and hence can be developed through self-awareness, preferences and beliefs.

In search for the possible role of organisation in shaping learning styles, the study has begun by adapting the literature on national culture as the basis for understanding the role of values, beliefs and other cultural constructs shaping an organisation. It was, however, learnt that organisations, regardless of size, history, location and activity, possess six common cultural characteristics: i) holistic, ii) historically influenced, iii) anthropologically orientated, iv) socially constructed, v) soft, and vi) relatively stable over time. In effect, the organisation environment, whether physical or mental, can play a role in determination or shaping of learning styles.

In short, cognitive learning styles, personality and all relevant psychological constructs are still sluggishly going through their evolutionary paths. Nevertheless, developments in the areas of personalized learning environment (PLE), personal learning style pedagogy (PLSP), collaborative approach, online learning, virtual world classroom, and variable personality models are all indicative of proactive progress in this area. As stated earlier, PLSP considers the learning styles in association with the contributions made through teaching. Moreover, the elements of PLE provide an insight into the potential link between organisational influence and learning styles.

As discussed in length, the relevant methodology was found to be a mixed approach based on a survey, consisting of a structured questionnaire and semi-structured interviews. In order to satisfy the statistical properties, the sample size for each and every university was set at 300 students, for which the response rates varied between 66% and 70%. On the whole, as argued earlier, the final sample for each university turned out to be sufficient for consistency and reliability of the inferred statistics. Interviews of teaching staff in each and every university were conducted in support of the findings from the student questionnaire. On the whole, as demonstrated in Chapter

Six, the results appeared to be conclusive in terms of satisfying our initial aims and questions of thesis.

7.2 Discussions: Findings and Questions of Thesis

As fully elaborated in Chapter Six, the results of the research come from two main sources: questionnaire and interview. The questionnaire was developed to cover a wide range of questions relevant to the main theme of research, concentrating on three areas: university environment, cognitive learning styles, and preferred learning styles. The questions were particularly designed in relation to the questions of the thesis and in consultation with the literature.

As for the interview, seven questions were designed aiming to identify the learning/teaching environment and styles of teaching or any innovation in delivery of information to students. In Chapter Six, an evaluation of such questions and answers for each and every university staff were presented, aiming to link the findings from interviews to the feedback received through students' questionnaire.

In dealing with the questionnaire a series of statistical techniques were applied. First and foremost, in attempting to identify the most relevant set of questions for any given construct the CFA method was approached, confirming the determinant factors representing each construct and a number of fit indices criteria were employed to assess the model fit. As indicated in the previous chapter, the best fit is determined once a number of criteria are met, leading to the final (revised) map of factors defining the constructs. According to Hu and Bentler's (1999), for an acceptable fit, the Comparative Fit Index (CFI) require to reach values of over .90, whilst values

above .95 and nearer to 1.00 correspond to a best model fit. Moreover, Root Mean Square Error (RMSE) is another fit index with values ranging from .08 to .06, near to .01 indicating acceptable and values from .06 to .00 indicate close and exact fit (Browne & Cudeck, 1993). Finally, the best fit is the one which yields an estimated adjusted Chi-Square (χ^2/df) of 3.0 or less.

Secondly, in identifying any significant difference in constructs from one university to another, normal pair-wise t-test distribution was conducted to test for the statistical significance of any differences between any pair of universities scores. Thirdly, in order to identify any possible correlation between pair-wise constructs in relation to organisational culture, cognitive learning styles and preferred learning styles a series of correlation matrices were estimated.

The CFA and pair-wise t-test tests led the study to adopt the mainstream theory in cognitive learning styles, the analysis here is based primarily on two approaches: Experiential Learning Method (ELT) and Fundamental Dimension Method (FDM) as examined in the literature review. Consequently, four general types of cognitive learning styles are derived: abstract conceptualisation (AC); active experimentation (AE); concrete experience (CE); and reflective observation (RO). Moreover, different types of learners are identified using these four learning approaches: activist or converger (AC+AE); reflective or diverger (CE+RO); theorist or assimilator (AC+RO); and pragmatist or accommodator (AE+CE). Furthermore, from the state-trait viewpoint, these types of learning styles/learners should be treated as traits, which may or may not change under different environments (states).

These statistical analyses also showed that two styles of learning preferences had emerged from the study: wholist-analytic (WA) and verbal-imager (VI). Other learning preferences primarily based on VARK proved not to have been present or significant among the students examined in the three Libyan universities.

Finally, in establishing a link between organisation's role and learning styles, it was noticed that in two ways such a link may be established: personal learning environment (PLE) and personal learning styles pedagogy (PLSP). Whilst the former relates learning preferences and cognition to the characteristics of the organisation (PDI, masculinity, social environment), the latter relates it to more specific characteristics of a teaching institution, namely, methods of teaching and promoting new learning styles. In other words, PLE refers to the general aspects of the organisation and PLSP relates to the specific aspects (innovative teaching and promotion of new learning).

To demonstrate such possible relationships, one first needs to devise two new measures based on the features of organisation: general index and specific index. General index here is calculated by working out the average score of the three general characteristics of these universities; while the specific index is the average score of the remaining two characteristics. Based on the scores of organisations, there presented the two new indices for the three universities. The general index based on the average of three organisational environment factors can be treated as an approximation to PLE and the specific index as PLSP. As expected Tripoli scores significantly higher in PLE score compared to the other two universities, with Sabha scoring the least. Similarly, Tripoli does much better on PLSP score compared to the

other two. On the whole, Sabha performs poorly on both indicators of organisation. In short, as this table shows, Tripoli university significantly better than the other two in creating a friendly and effective environment for learning and teaching.

Finally, in measuring the extent of any possible relationship between the organisational constructs and learning styles constructs, the study, as demonstrated in chapter Six, approached a multivariate regression analysis. The hypothesis here we wish to test is whether organisational constructs can determine or alter learning preferences of students in the three Libyan Universities. In building these models, we assume learning preferences – VI and WA - being dependent upon changes in organisation factors, here being PLE and PLSP. Using AMOS 20.0 multivariate modelling, the best fits for each and every university have been identified, estimated and reported.

7.2.1 Research Question One: The main characteristics of learning styles among Libyan students

The findings from the questionnaire were markedly deterministic in that they clearly showed the differences, as well as similarities in cognitive and preferred learning styles among the three Libyan universities' students. As for similarity, all the three universities tend to score relatively higher values on the type of theorist/assimilator learner. As for differences, whilst Sabha scores low value on activist/converger, the other two universities receive much greater scores. Sabha University students are found to have attached much greater weight to reflective/diverger type of cognitive learning style than the other two universities. Students in Sabha have also considered pragmatist/accommodator style of cognitive learning more valuable than their

counterparts in the other two universities. On the whole, there appear to be more differences and divisions amongst students in these three universities in terms of choice of cognitive learning styles.

More specifically, in a majority of cases differences in cognitive learning styles amongst the three universities were shown to be statistically significant at the 1% level. According to Tripoli students, abstract conceptualisation style is the most significant compared to those of the other two universities, whilst concrete experience is regarded as the most relevant learning style amongst the Sabha students compared to the others. Moreover, active experimentation style has been regarded as the most important method of learning amongst the students at Gharyan University. From learners' point of view, Tripoli and Gharyan universities' students tend to be classed as activist/converger compared to those in Sabha University. On the other hand, Sabha students have strongly declared to be classed as reflective/diverger type of learners, compared to the other two universities. Moreover, Sabha students have also declared that they are pragmatist/accommodator type of learners than their other counterparts in the other two universities. Finally, the study found that there are more theorist/assimilator learners in Gharyan than other two universities.

As for learning preferences, it was found that whilst Sabha and Tripoli students tend to prefer verbaliser-imager learning styles, most students in Gharyan University tend to prefer wholist-analytic learning style. Furthermore, all three universities tend to score relatively lower on read-write and auditory learning styles. More specifically, first of all, there appeared to be no significant differences in learning styles relating to visual, auditory and read-write. Secondly, there have been significant differences in

kinaesthetic learners' scores between Sabha and Gharyan, and Gharyan and Tripoli. The more pronounced statistical differences have been found amongst the verbaliser-imager learners in these three universities. Sabha students which have scored higher values in verbaliser-imager compared to their counterparts, demonstrate highly significant difference. There were statistical differences found amongst wholist-analytic students in these universities: whilst no significant difference found between Tripoli and Sabha, Gharyan demonstrates highly statistical significant difference in relation to the other two. On the whole, marked differences are found amongst learners when they are classed as verbalise-imager (VI) and wholist-analytic (WA), rather than VARK learners. Hence, VI and WA have been chosen to represent more reliable constructs than VARK and better fit for the purpose of modelling.

In relating learning preferences to cognitive learning styles, simple correlation estimates were devised. The two cognitive learning styles of R/D and P/A appeared to show no significant correlation with any of the two learning preferences (WA and VI). However, as the estimates suggested, there have been strong and significant correlation between A/C and verbaliser-imager and between T/A, and verbaliser-imager. On the whole, as these estimates suggest, it can be argued that the most preferred learning preference amongst students in Tripoli university is verbaliser-imager and that has derived from the way such students regard A/C and T/A as most important cognitive learning styles.

As for Sabha, once again most students are identified to be verbaliser-imager learners, but according to the correlation estimates such preference tend to have emerged from R/D, T/A and P/A cognitive learning styles. Finally, the Gharyan students have

demonstrated that they are generally wholist-analytic type of learners and that has been regarded to derive from A/C, T/A, and P/A cognitive learning styles.

On the whole, with the exception of Gharyan, most students in these universities have shown to prefer verbaliser-imager learning styles over wholist-analytic. Moreover, in all cases, a common denominator had emerged: students appear to regard Theorist/Assimilator cognitive learning style as the most valuable one in terms of shaping their learning preferences. However, T/A has shown to be associated with verbaliser-imager learning preference in the cases of Tripoli and Sabha, but it has demonstrated to be relevant to wholist-analytic learning preference amongst the students in Gharyan university.

From the author's viewpoint, having studied in Sabha University, it can be said that a typical social science student would be a theorist/assimilator due to the nature of teaching material and associated examination procedures. However, the case of wholist-analytic, observed in this research to be of a typical Gharyan university student, is somewhat out of norm and may be associated with sampling biases. One major conclusion drawn from the application of simple correlation was that, all in all, in consideration of the estimated correlation results, no general verdict could be made as what style of learning preference may be associated with any of the cognitive learning styles.

7.2.2 Research Question Two: The role of organisation in learning styles among the Libyan students

In an attempt to find appropriate answers to this question, the study, first and foremost, identified and measured the values of the constructs associated with

organisation (here being the university) culture. Following the application of CFA for final factor determination, the findings suggested that Tripoli University appeared to score higher on the first three organisational indicators, indicating that the student respondents found this university offering better environment for socialisation and freedom. However, in terms of effectiveness of the role of the university in changing students learning styles, both Tripoli and Gharyan universities perform better than Sabha. In terms of innovative teaching, although Tripoli scores higher than Sabha, according to respondents, Gharyan offers much greater value. On the whole, within the domain of state-trait analysis, these five organisation characteristics represent different features of the state of the university.

In the next stage, as demonstrated in Chapter Six, the study made attempts to find ways of linking organisation constructs with learning styles within the Libyan higher education context. First, new variables (constructs) were made out of the existing ones, namely, PLE representing the three organisational constructs (PDI, MAS, Social features), and PLSP representing the learning and teaching features of the university. Together, therefore, PLE and PLSP represent the university social and teaching/learning environmental constructs. Second, using the simple correlation technique, the study aimed to estimate the extent of possible correlation between organisational constructs (PLE and PLSP) and those of cognitive learning styles constructs (AC, RD, TA, PA).

As the estimated pair-wise correlation measures showed in all institutions, higher scores of PLE and PLSP tend to relate to higher scores of theorist-assimilator style. Moreover, in the cases of Tripoli and Gharyan, high and significant degrees of

correlation have shown to relate to the idea that PLE and PLSP can help develop activist-converger style as well. On the whole, all can be said is that there seems to be the case where in all universities high scores of PLE and PLSP happened to relate to high scores of theorist-assimilator and activist-converger. On the whole, exhibits that a certain cognitive learning styles are promoted by the three universities.

In terms of measuring the extent of correlation between organisation and preferred learning styles (WA and VI), both PLE and PLSP tend to be more associated with verbaliser-imager rather than wholist-analytic. In the case Tripoli, both PLE and PLSP turned out to be responsible for verbaliser-imager style, and that PLSP shown to be significantly associated with wholist-analytic style. In the case of Gharyan, however, PLSP appeared to be significantly associated with the wholist-analytic and verbaliser-imager, but PLE tends to be responsible for wholist-analytic. Finally, as for Sabha, neither PLE nor PLSP appeared to have had much association with learning preferences. This finding was somewhat anticipated as Sabha students had already attached low values to both PLE and PLSP. On the whole, both PLE and PLSP have turned out to exhibit relatively high and statistically significant correlation with learning preferences in two out of the three universities.

The examination of correlation matrix associating organisation to learning styles offers useful insight into the possible pair-wise relationships among constructs. However, any structural model should be based on a multivariate setting to enable researcher to observe any multi dimensional associations among variables in the model. Moreover, any multivariate setting will enable researcher to examine the extent of responsiveness of one factor to another in a dynamic environment. So, as the final step in linking organisation culture with learning styles constructs, a multivariate

set of models were developed; with the hypothesis that whether university constructs can determine or alter learning preferences of students in the three Libyan Universities.

Based on the assumption that the organisational constructs (PLE and PLSP) can seriously alter students' learning styles, it was demonstrated that PLE and PLSP tend to affect VI and WA differently. In the case of Tripoli University, it was indicated that whilst PLE and PSLP constructs tend to determine VI, only PSLP was found to solely determine WA. The results also showed that whilst 92% of variations in VI is determined by PLE and PSLP, only 76% of variation in WA is attributed to PSLP, indicating that visual-imager learning preference is deemed to match better with the organisational constructs in Tripoli University.

As for Sabha, it was found that both models tend to give relatively low degrees of goodness of fit. Although the WA model offers an R^2 of 0.73, it performs better compared to that of VI of 0.56, and generally it gives better indicators of fitness. On the basis of these rather weak models, it could however be argued that on the whole the wholist-analytic learner tend to fit better in Sabha University environment.

Finally, as in the case of Gharyan University, WA represented a better model linking learning styles to organisational constructs than the VI model. According to these findings, 95% of variations in WA are explained by PLE and PSLP jointly and that RMSE and other indicators exhibit perfect fit. On the other hand, the VI model offers a relatively low R^2 of 0.68, indicating that a significant amount of variations in VI is still unexplained by PLSP. Moreover, other indicators for this model have turned up

to be unfavourable. On the whole, as demonstrated in Chapter Six, it can be concluded that wholist-analytic learners tend to fit well in the organisational environment of Gharyan University. However, as discussed in the previous subsection, based on the author's experience, this is something which tends to be out of norm with a typical Libyan University.

7.2.3 Other considerations – Interview findings

As the findings from the questionnaire have suggested the range of student learning styles appear to be limited, particularly in the case of Gharyan and Sabha universities. When investigating through the multivariate method, it was discovered that the two broad types of learners tend to have been fully influenced by either two organisational constructs. In particular, PLSP tends to have been rather weak in affecting students across board. As the literature suggests, this may indicate that on the whole the students' learning styles have not been fully influenced by the university, and that may have possibly led to students' failure and dissatisfaction.

Generally speaking, in an environment where inclusive free higher education is offered to everyone it is highly likely that most prospective students take advantage of this free public good regardless of their initial interests or abilities. On the other hand, in a free education system where teaching jobs are secured and no reward and punishment system being in place, then it is also highly likely that the teachers may fail to deliver the best service to their students mainly due to lack of incentives. As discussed in Chapter Two, the issue of poor quality teaching delivery coupled with low wages and poor promotional schemes could be detrimental for the higher education sector.

In order to make a balanced discussion on this issue it would be beneficial if attention was to focus on the findings received from teaching staff interviews. As one of the most important questions for interviewees, they were asked if they cast their views on whether their universities had any structured policy of proactive teaching/learning methods in place. In a majority of cases, as elaborated in Chapter Six, the interviewees were either confused over the matter or expressed that there were no structured system of proactive teaching and learning in place. In a small number of cases, lecturers declared that there had been some policy vis-à-vis teaching strategies but no one knows much about it or how to follow it at all.

In most cases, lecturers stated that due to lack of funds made available to departments and poor and unjust promotional schemes, no body shows any enthusiasm to explore or research the processes of improving teaching and learning culture in Libyan universities. Lack of funds in providing lecturers with allowances for research and educational development was also seriously echoed by a large number of staff interviewed. In particular, a member of teaching staff openly declared that the old learning style based on memorisation is what most students follow and that is also being conveniently supported by teaching staff. Due to lack of time and poor wages, it was echoed by most interviewees, that any thought of introducing innovative teaching is unpopular and not welcome by anyone.

On the other hand, most interviewees were in agreement that a small number of students appear to be proactive in learning in context effectively, and that a good majority of students are there just because “they have nothing else to do”. Although a

large number of teachers declared that they had no idea about their students learning preferences backgrounds, they stated that students need to seriously modify their initial learning styles or preference in order to be able to succeed in their studies. However, once again they were in agreement that resources should be allocated to encourage and guide students to do so.

The research has demonstrated that there has been limited cognitive learning styles among the three Libyan universities and that such students have been confined to a non-innovative and outdated teaching methods and resources. In short, the higher education sector has failed miserably to offer new approaches in teaching and hence no genuine cognitive learning styles have been promoted and presented to students.

7.3 Summary and Conclusions of the Research

With the prime aim of examining the relationship between learning styles and learning environment in Higher Education in Libya, the research has embarked on a comprehensive literature relating to learning styles and organisational culture. In chapter two, several references have been made to cultural, political, economic and educational issues, aiming to provide the real essence of life in Libya. On the political economic side it has been argued that the country has been heavily relying on oil and gas as the main sources of earnings since the early 1960s. In directly controlling the political economy environment, the previous regime of Muammar Ghaddafi acted as a rentier state, where all the revenues from oil and gas were directly received by the government. The process of distribution of funds into different sectors of the economy appeared to have proven to be problematic and shrouded with corruption and inefficiency.

As was discussed earlier, for over 40 years up to 2011, the country was run as a closed militarised economy, with the grand ambition of self sufficiency in food and technology. Yet, agriculture did not perform as well as anticipated. Education sector was of no exception. As far as the numbers are concerned, the previous regime claimed that it had built hundreds of schools, technical colleges and several universities, all fully financed by the state. As discussed earlier, once the doors were open in 2011, it was realised that a large number of such schools and universities were either under-staffed or run with highly unqualified and unmotivated teachers and instructors. For decades, school and university teachers, alongside almost all public servants, were denied their rightful rewards, as their wages had been kept unchanged since the early 1980s.

The chapter makes a reference to the unfair and unjust teaching environment, where the quality of teaching and research was seriously undermined and diminished and that was clearly echoed in the recent research papers referred to earlier. In short, what was supposed to be delivered as a ray of hope in all aspects of life for Libya – especially in education - during the late 1950s and early 1960s was dashed by corruption, inefficiency and total mismanagement of the previous regime.

The theoretical foundations and methods of measuring the effectiveness of learning styles have been examined and discussed in length in chapter three. In particular, the concept of cognitive learning style has become the paramount and focal issue in this chapter. Although it is claimed that well over 70 different theories/models of learning style do exist, here we have grouped the learning style theories into five distinct types:

the experiential learning theory (ELT), VAK and VARK, fundamental dimensions, personality/cognitive/learning centred, and neuropsychological. A thorough examination of these theories has revealed that the three former models appear to have been the most popular ones where together represent nearly 90% of total research work conducted to date. However, it should be noted that the two latter models of learning style (personality/cognitive/learning centred, and neuropsychological) are at their early stage of development, and that further research and development required to produce relevant finding in verifying their potential usefulness.

In particular, in analysing the main characteristics of cognitive styles the research learnt that they should be treated as the process of mental activities, learning and problem solving and being independent of subject content. Moreover, cognitive styles are perceptual, intellectual, personality and social domains; and tend to remain unchanged over a long period of time. Finally, cognitive styles assumed to be relatively independent of abilities and aptitudes. Nevertheless, as reported, recently, in the area of neuropsychology the assumption of fixed personality has been relaxed, so that individual's personality would be changed over time and under different situations. This model, developed by Jackson (2005) proposes that "sensation seeking" provides a core biological drive of curiosity, learning and exploration. In other words, Jackson (2005) assumes that individual's personality is dynamic and hence can be developed through self-awareness, preferences and beliefs.

In this chapter references were made to drawbacks and shortcomings of each and every method. A more comprehensive review of literature conducted by Coffield et al

(2004), based on 13 of the most influential models for closer study, including VARK and ELT, report that the theoretical origins and terms of each model, and the instrument that was purported to assess types of learning style defined by the model are weak, dubious or unworkable. Coffield et al (2004) have summed up their findings by stating that most popular learning style theories had been adequately validated through independent research, and the idea of a learning cycle, the consistency of visual, auditory and kinesthetic preferences and the value of matching teaching and learning styles were all "highly questionable."

Despite all these serious criticisms forwarded to the mainstream theory, it should, however, be noted that there has been a genuine development in the areas of learning and personality over the past few years. In short, as stated earlier, cognitive learning styles, personality and all relevant psychological constructs are still sluggishly going through their evolutionary paths. Nevertheless, developments in the areas of personalized learning environment (PLE), personal learning style pedagogy (PLSP), digital equity, collaborative approach, online learning, virtual world classroom, and variable personality models are all indicative of proactive progress in this area. As has been recommended by Pashler et al (2009), the only way to see genuine changes and developments taking place in learning is for researchers to remain truthful, frank, ethical and "impartial in their research work"; hence reporting the true picture of their findings to the public and to the decision-makers.

In chapter four, a comprehensive and detailed analysis of national and organisational culture was offered. The chapter stated that quality in learning has now moved away from a mechanistic mode to one of holistic and culturally based approach. Moreover, Jonassen and Grabowski (1993) regard cognitive learning style as a process which

includes several aspects of differential psychology relating to individual differences in the learner and the learning environment. As man being a social animal, it may be argued that the learning environment is expected to be heavily influenced by social environment. Hofstede (1991: 5) regards culture as a social environment (living and working) where there exists a “collective programming of the mind which distinguishes the members of one group from another”. Furthermore, as culture is derived from one’s social environment, it cannot be inherited but learned. On the basis of this observation, notwithstanding human nature, it is fair to argue that cognitive learning styles tend to be influenced by both national and organisational cultures. Therefore, it was argued that there may exist a direct link between aspects of culture and cognitive learning styles, varying from one nation to another and one organisation to another.

The five dimensions of culture – national or organisational – developed by Hofstede offered that Power Distant Index (PDI) is regarded as the first dimension (characteristic) of culture, primarily dealing with the way different cultures treat inequality arising from physical and environmental features. In short, this index can be treated as a proxy for equality and democracy: the higher the PDI the greater will be the chance of inequality and authoritarian politics. Individualism Index (IDV) is the second dimension of culture, relating to the extent in which individuals are seen to depend less on the group (family, friends, and society as a whole) and stand on their own feet. Collectivism, on the other hand, represents the case where the interests of the groups supersede those of the individuals. The findings suggest, as detailed earlier, that the Anglo-Saxon states (USA ranked as first) tend to exhibit much higher

scores of IDV than other nations. Conversely, the Latin Americans, Arab/Muslim and the Confucian states score significantly lower than other countries.

The third dimension is referred to as Masculinity Index (MAS), indicating the aspect of gender and the way sexes are not treated equally. Surprisingly, Japan has scored the highest value of MAS, with USA and Great Britain scoring above the average. However, the Arab/Muslim states and Latin Americans tend to score below average value, but not significantly different from the average figure. Uncertainty Avoidance Index (UAI), referring to the way the different societies cope with the anxiety arisen from uncertainty. In short, the cultures with low score of UAI are said to cope with anxiety more effectively than those with high score. Finally, the fifth and the most recently developed dimension of national culture is referred to as Long Term Orientation Index (LTO), following the scholarly work of Bond (1983). Due to their high regards and respect for family values and the belief in the prolonged stability of the society, the Confucian countries have scored the highest values of LTO.

One of the main points in relation to these dimensions is that they are all inter-dependent and correlated with one another. Indeed, the extent to which they are correlated with one another varies substantially from case to case. For example, in a study by Kashima et al (1995), it is shown that there seems to be a rather strong positive association between MAS and IDV: the countries with low score of MAS tend to be less individualistic and more collectivist. Similarly, it is demonstrated that high MAS scores tend to associate with low PDI.

In arriving at the core of our analysis, this chapter has made a comprehensive review of empirical approaches and findings relating to the relationship between culture and learning styles. At the outset we have hypothesised that there is a potentially direct

link between culture (national or organisational) and learning styles. In a work environment setting, White (1992), Mumford (1993), Twati and Gammock (2004) and several other researcher have shown that organisations tend to develop different strategies vis-à-vis learning and sharing information depending on the culture of organisation, primarily derived from nationality, activity and other related factors. In particular, Honey and Mumford (1982) has tested the learning and decision-making abilities of several US managers, based on the method of ELT. According to their findings, a range of activist, reflector, theorist and pragmatist learners were identified amongst these managers.

In relation to the role of culture in education sector references were made to several critical research works. First and foremost is that of Lambert and Klineberg (1967), a comprehensive investigation into the role of cultural values, cultural practices and learning styles amongst school children in several countries. In particular, they report that individualism and masculinity tend to be highly correlated with learning styles: the higher the index of MAS and IDV, the greater is the likelihood of the learner being active experimentalist. Another interesting finding has been reported by Joy and Kolb (2007) in their survey of learners across different countries and regions of the world. Their comprehensive results suggest that learning styles have a lot to do with LTO, MAS and IDV indices. In short, on the basis of their estimated findings, Joy and Kolb (2007) state that whilst the Confucian countries tend to be abstract learners, most European countries prefer active experimentation style to reflection. It has been demonstrated in this chapter that whilst a large number of studies tend to agree on MAS being a major cultural determinant of learning styles, others (Littrell, 2005; Bright, 2006; Watkins, 1996) have related learning styles to PDI and UAI.

Having examined a large number of studies, the research reported that findings support the view that differences in organisational cultures are primarily due to background and developmental stage of the institutions. In the earlier work of Wallace et al (1999), such differences in organisational cultures, have been referred to as 'climate' factors rather than cultural values/practices. In a rather cautious manner, it has been shown that climate factors tend to refer to current issues/problem, relating to a given unit/department of an organisation, and hence can not possibly replace the well-rooted organisational cultural factors.

Chapter five has offered the overall methodology of the research by considering the research questions, research design and the mapping of the literature in relation to the research hypotheses. Following a thorough examination of the methodological issues, it has been argued that this research lends itself to a triangulation method in collecting and examining the data. The research is therefore based on a deductive approach, adopting both qualitative and quantitative approaches. The strategy of research is to collect data through two main means: questionnaire and interviews. Where the former is structured and presented here in full, the latter is semi-structured, hence being a rather flexible approach in information gathering. The research aims to collect information from up to 300 students from each and every of the three institutions. Moreover, it is anticipated that a further 30 interviews of senior teaching/administration staff universities will enable the researcher to close up any possible informational gap.

A brief examination of the approach was offered in the pilot study based on a small sample of students and staff in Sabha University. The main discussion arose from

pilot study related to identifying and measuring the extent of possible relationship between PLE, learning styles and PLSP. The findings suggested that there was a high degree of correlation between learning style and learning preference. Although a rather poor relationship was depicted between learning style and organisation culture/environment, there was a slightly better correlation between learning preference and the organisation environment.

Finally, the search for a suitable statistical approach has led us to the application of a new method within factor analysis, generally referred to as Structural Equation Model (SEM), designed to determine the extent to which the theoretical model is supported by sample data. As discussed earlier, SEM is a superior approach as it attempts to find a tailored model with acceptable indexes and significant associations between its constructs.

Chapter six has presented the findings from the analysis of the questionnaire, compiled and collated from the students of three Libyan universities, and of teaching staff interviews in Tripoli, Sabha and Gharyan. With reference to the theoretical frameworks based on organisational culture and learning styles literature, the analysis of the questionnaire has attempted to identify the main styles of learning (cognitive or preferred) reported by students. In so doing, a series of statistical analysis have been performed. First and foremost, in identifying the number of factors leading to construction of our constructs the so-called confirmatory factor analysis (CFA) was approached. Then using pair-wise t-test, the analysis has shown that there are significant differences in learning preferences and cognitive learning amongst these students in the three universities. More importantly, the analysis has found some

significant differences amongst the scores for organisation characteristics, where Tripoli appears to have performed better on such indicators than the other two universities.

The findings have indicated that there appear to be some rather strong relationship between learning styles and organisational factors. In particular, it was found that there appeared to be a link between PLE / PLSP and the learning styles preferred by students. We have derived some mixed conclusions from our findings. Whilst strong case of verbaliser-imager model appears to be a dominant model of learning in Tripoli university, and a weaker VI model in Sabha University, Gharyan University tends to support the wholist-analytic learning style. On the whole, it can be argued that the research has shown that there is much stronger positive correlation between PLE / PLSP and verbaliser-imager style of learning. This appears to tally with the earlier findings that the verbaliser-imager tends to be a more common style of learning amongst students in these universities.

In support of the findings derived from the questionnaire, the researcher put forward seven semi-structured questions to ten teaching staff in each of the three universities. The questions were designed to cover the overall university culture in promotion of innovative teaching and cognitive learning styles, as well as the role of teachers in providing and promoting new teaching styles. Moreover, the questions aimed to cover the students' learning backgrounds against the university's required cognitive learning styles helping students to satisfy their programmes of study. First and foremost, it is evident from the feedback by these 30 teaching staff that what is regarded as university-wide teaching and learning culture is either absent or loosely defined. This

has given rise to both teachers and their students to proceed with the old and traditional methods of teaching and learning for many years. From the findings, one is led to believe that neither teachers were prepared to change, as it was time-consuming, and nor the students as they had been learning under the old and ineffective learning styles.

As our final concluding remark and one of the areas which were highlighted by several interviewees was the issue of university support through provision of resources and funds for any new and innovative teaching developments. It has appeared that the universities, on the whole, have miserably failed to promote any innovative teaching and have denied their students of quality teaching and learning styles. This message was echoed and passionately raised by a large number of our interviewees. In short, the findings from the interviews suggest that the entire Higher Education system in Libya has under-performed for many years in the two most important aspects of education quality: innovative teaching and promotion of cognitive learning styles.

7.4 Limitations of the Study

Despite the efforts made by the researcher to produce a comprehensive study based on the Libyan Higher Education, the study suffers from several limitations, as follows:

- 1) The theoretical foundation upon which this research is based is derived from a certain number of popular and applicable approaches. A more detailed research can consider a much larger number of such theories or methods.
- 2) The research has considered a certain number of statistical and estimation approaches in deriving the final results. However, for the sake of

comparison and cross-checking, some forms of non-linear equations system could have been used.

- 3) The sample of the study is based on only three out of around 20 universities in Libya; hence only offering a limited scope for analysis and formulating final conclusive remarks.
- 4) The sample has drawn only from the Social Sciences faculties of the three universities; hence offer limited scope in extending the analysis to all the faculties in these universities.

7.5 Contributions of the Study

Any social sciences research is expected to make some form of contribution to knowledge. Here the main contribution of the research has been to extend the theoretical framework of learning styles and of organisational culture together and applying them to the case of three Libyan Universities. Some of such contributions are as follows:

- 1) To date, no genuine research has been conducted on learning styles in Libyan Universities. The research, for the first time, has made an effort to identify the learning styles among students in three Libyan Universities and hence identify the role that these universities play in enhancing learning styles and pedagogical approaches.
- 2) The study has developed and polished a learning styles questionnaire comprising of three distinctive parts fitting the Libyan Higher Education environment.
- 3) In addition to the questionnaire, the study has embarked on conducting up to 30 interviews of selected members of teaching staff in these three

universities as means of supportive minor data. The research is therefore a triangular approach, hence enhancing the overall quality of the findings.

- 4) The findings from the research can offer an insight into the issues and severe shortcomings surrounding the Libyan Higher Education. Particularly in the area of teaching innovation and development of cognitive learning styles, the research has identified a number of strategies which should be considered by the decision makers to overcome the teaching/learning issue.

7.6 Policy Implications and Recommendations

In the light of what stated in the previous and the current chapters, it is evident that there has been a serious failure in the part of the universities in Libya to create a positive environment for development of cognitive learning styles and innovative teaching methods. As the findings from both the quantitative and qualitative approaches demonstrate, there have been limited learning styles found among students and that not being altered or enhanced by the universities, mainly due to their limited financial resources and lack of incentives among teachers. Accordingly, in promotion of proactive teaching and learning styles, the study wishes to promote the following recommendations to the university lecturers and management, and government decision makers.

- 1) Development and promotion of different cognitive learning styles matching with the higher education requirements must be enforced at the intermediate and high school; to be initially financed and fully monitored by the government.

- 2) The higher education managers, in general, and university managers, in particular, must make sure to have a clear, concise and effective set of policies in place in relation to promotion of teaching innovation and promotion of effective cognitive learning styles.
- 3) In so doing, the university management should make every effort to have the necessary funds available for development of new teaching/learning strategies either offered by consultants or teachers.
- 4) It must be borne in mind that the only way to promote new and dynamic teaching/learning methods is for the university management to bring about a fair and efficient methods of reward and punishment in place. Fair staff promotion schemes, as mentioned by a large number of interviewees, is a must and has to be made available to all who are prepared to offer quality teaching service. In addition, wages and salaries should be index-linked and be based on contributions and nothing else.

7.7 Personal Reflection : My Reserach Journey

Back in the 2009 when I applied to Huddersfield University, from Libya, for a PhD research programme I had no idea how and when I would be able to accomplish this massive task. I joined the University with very little knowledge of learning styles literature but I was eager to find out how different would the learning styles be from one organisation to another or from one country to another.

On my first day, as I was warmly welcome by the University research office and the School of Education I realised that I had come to an environment where support would be in abundance. As time went by I realised that research approaches in

England are significantly different from the one I was familiar with. Nevertheless, I managed with the help of my supervisor to pick up the research method suitable for my study. From then on life appeared to be much smoother and study became more interesting, yet demanding.

Once the methodology of research became clear I began to proceed with the process of interviews and distribution of questionnaire to the three Universities in Libya. Unfortunately, by the late 2011 the political turmoil had already grown its momentum in Libya and led to closure of several public and private institutions. Distribution and collection of questionnaire proved extremely time-consuming and troublesome. On the hindside, had there been no political instability I would have to consider two more universities and large sample of students. Similarly, I would have been able to have face-to-face interviews of teaching staff of the universities, rather than confinig myself to use of skype or telephone calls.

Although the journey that I have experienced over the past five years has been rather difficult, lonely at times, and nerve-wrecking, it has truly made me a new man. I believe that my research findings and recommendations can and should be at a service to Libyan higher education institutions in their journey to developing a truly innovative teaching and learning styles. I now feel confident, knowledgeable and in search of further research in this area.

APPENDIX A: Student Questionnaire

Student Questionnaire

Part One: University Culture and Environment

1. I think this university reflects my social and cultural life outside education.
1 2 3 4 5

2. I think the university gives priority to meeting the needs and demands of the students.
1 2 3 4 5

3. The university provides an environment where students meet and socialise with one another.
1 2 3 4 5

4. The university expects students to follow a set of strict rules and regulations on attendance and behaviour.
1 2 3 4 5

5. New ideas are encouraged and promoted by the university.
1 2 3 4 5

6. The staff and teachers in this university are very concerned about protecting their views/values and not receptive to views expressed by students.
1 2 3 4 5

7. Students are encouraged to solve problems creatively in this university.
1 2 3 4 5

8. Teachers and instructors are very formal and unfriendly with students.
1 2 3 4 5

9. Teachers and instructors are willing to listen to constructive criticisms by students.
1 2 3 4 5

10. In conducting a new task or a test, my teacher provides me with clear and concise set of instructions.

1	2	3	4	5
<input type="checkbox"/>				

11. I believe my learning styles and learning backgrounds are reflected in the university's teaching process.

1	2	3	4	5
<input type="checkbox"/>				

12. I feel my teachers/instructors proactively integrate groups from different backgrounds into the learning experience.

1	2	3	4	5
<input type="checkbox"/>				

13. I feel my learning style is compatible with the other students in the same course.

1	2	3	4	5
<input type="checkbox"/>				

14. I think my learning style has changed since I have joined this university.

1	2	3	4	5
<input type="checkbox"/>				

15. I think that my learning style now is effective in dealing with this current course I am studying.

1	2	3	4	5
<input type="checkbox"/>				

16. I feel this university supports and promotes diversity and different ways of living your life.

1	2	3	4	5
<input type="checkbox"/>				

17. I feel that students' diversity in the classroom means it is more difficult to manage to learn and work together.

1	2	3	4	5
<input type="checkbox"/>				

18. My values, attitudes and way of thinking change depending on the people I am socialising with and the specific environment.

1	2	3	4	5
<input type="checkbox"/>				

19. I believe knowledge is global in terms of meaning.

1	2	3	4	5
<input type="checkbox"/>				

20. I feel the teaching provided in this university is specific to subject learning around the diversity of learners.

1	2	3	4	5
<input type="checkbox"/>				

21. I feel the learning experience is enabled through a global educational perspective.

1	2	3	4	5
<input type="checkbox"/>				

22. On the whole, I believe this university is proactive in promoting innovative teaching and learning styles.

1	2	3	4	5
<input type="checkbox"/>				

23. I feel this university promotes the idea of collectivism in all aspects of learning and teaching.

1	2	3	4	5
<input type="checkbox"/>				

24. In my view men and women are treated equally in this university.

1	2	3	4	5
<input type="checkbox"/>				

25. In my view, students in this organisation are recognised for their creative work.

1	2	3	4	5
<input type="checkbox"/>				

26. I believe, on the whole, there is an open atmosphere in this organisation.

1	2	3	4	5
<input type="checkbox"/>				

Part Two : Cognitive Learning Styles

1. In new learning, I prefer to work on my own and take my own time.
1 2 3 4 5
2. When working in a group, I am ready to help other members of the team.
1 2 3 4 5
3. I learn most successfully by experiencing practical applications and demonstrations.
1 2 3 4 5
4. I prefer to get clear guidelines for learning anything new.
1 2 3 4 5
5. When writing, I prefer to produce concise and short piece of information.
1 2 3 4 5
6. When learning something new, my first thought is a visual image.
1 2 3 4 5
7. I prefer focusing on the practical detail of whatever new, as it is the most natural process of learning.
1 2 3 4 5
8. Beginning to learn something new is usually difficult process for me.
1 2 3 4 5
9. When undertaking a task or an activity, I prefer refer to the learning material and then read available instructions.
1 2 3 4 5
10. In undertaking a new learning process, I prefer to get on with the activity.
1 2 3 4 5
11. When I have to learn technical expertise, I prefer learning the instruction carefully.
1 2 3 4 5

12. When learning new ideas or theories, I prefer to associate them with real applications.
- 1 2 3 4 5
13. I prefer one-to-one teaching with someone working personally with me.
- 1 2 3 4 5
14. In learning new material, I prefer to see limited restrictive written procedures.
- 1 2 3 4 5
15. When writing, I feel there should be an opportunity for me to express my own opinions.
- 1 2 3 4 5
16. When learning a new topic, I feel it is a relatively easy process for me.
- 1 2 3 4 5
17. When learning, completing the task is difficult for me.
- 1 2 3 4 5
18. In undertaking a task or an activity, I look at the available learning material but develop my own way of achieving the activity or task.
- 1 2 3 4 5
19. When undertaking a new learning process, I would intuitively relate the subject to previous experience.
- 1 2 3 4 5
20. When learning new ideas or theories, I prefer to be in a position to discuss with my classmates is the most appropriate style.
- 1 2 3 4 5
21. I believe my learning style has changed significantly since my school times.
- 1 2 3 4 5

Part Three: Learning Preferences

1- I can remember more about a subject through listening than reading.

1 2 3 4 5

2. I tend to learn more effectively through means of diagrams, images or other forms of visual directions.

1 2 3 4 5

3. Learning is generally easier for me by listening to lectures.

1 2 3 4 5

4. I prefer learning new phrases by repeating them aloud rather than by writing them on paper.

1 2 3 4 5

5. I believe by listening to a good speaker or colleague is more effective means of learning than reading about the same issues in a book, magazine or on-line.

1 2 3 4 5

6. I seem to follow oral instructions more easily than written ones.

1 2 3 4 5

7. I usually learn new information by searching and reading from books, magazines and on the Web.

1 2 3 4 5

8. In understanding any issues and their implications, I believe it is more intuitive to look at diagrams and photographs.

1 2 3 4 5

9. I generally have printed directions when going somewhere new and this is better than oral directions.

1 2 3 4 5

10. I follow the news through reading newspaper rather than listening to the radio or watching TV.

1 2 3 4 5

11. For me the most effective way to remember something is by visualising it in my head.

1	2	3	4	5
<input type="checkbox"/>				

13. I tend to feel more comfortable with touch and physical contact with people (handshake, embrace).

1	2	3	4	5
<input type="checkbox"/>				

14. Writing seems to be an effective way for me to embed ideas and thoughts.

1	2	3	4	5
<input type="checkbox"/>				

16. Taking notes tends to support me in remembering important facts and ideas.

1	2	3	4	5
<input type="checkbox"/>				

17. I seem to learn most effectively when I am moving around and creating, repairing and improving objects.

1	2	3	4	5
<input type="checkbox"/>				

18. During learning periods I have a tendency to hold objects in my hands.

1	2	3	4	5
<input type="checkbox"/>				

19. Jigsaw puzzles and other mind games are very enjoyable and engaging for me.

1	2	3	4	5
<input type="checkbox"/>				

20. When I was young I learnt spelling and grammar most effectively by writing words on paper.

1	2	3	4	5
<input type="checkbox"/>				

استبيان الطالب

الجزء الأول: الثقافة و المحيط الجامعي

1- أعتقد أن هذه الجامعة تعكس حياتي الثقافية و الإجتماعية خارج نطاق الدراسة.

1	2	3	4	5
<input type="checkbox"/>				

2- أعتقد أن هذه الجامعة تعطي الأولوية لمتطلبات و حاجيات الطلاب.

1	2	3	4	5
<input type="checkbox"/>				

3- توفر الجامعة بيئة مناسبة حيث يمكن أن يلتقي الطلاب و يتصادقون.

1	2	3	4	5
<input type="checkbox"/>				

4- تتوقع الجامعة من الطلاب أن يتبعوا قوانين و تعليمات صارمة تتعلق بالدوام و السلوك.

1	2	3	4	5
<input type="checkbox"/>				

5- تشجع الجامعة الأفكار الجديدة و تعززها.

1	2	3	4	5
<input type="checkbox"/>				

6- يهتم العاملون و المدرسون في هذه الجامعة بشكل كبير بحماية و جهات نظرهم و قيمهم و لا يتقبلون و جهات النظر المطروحة من قبل الطلاب.

1	2	3	4	5
<input type="checkbox"/>				

7- يُشجع الطلاب في هذه الجامعة على حل مشاكلهم بشكل خلاق.

1	2	3	4	5
<input type="checkbox"/>				

8- المدرسون و الموجهون في هذه الجامعة رسيون جداً مع الطلاب و غير ودودون.

1	2	3	4	5
<input type="checkbox"/>				

9- يبدي المدرسون و الموجهون رغبة بالاستماع إلى النقد البناء من قبل الطلاب.

1	2	3	4	5
<input type="checkbox"/>				

10- عند إجراء امتحان أو واجب جديد, يزودني معلمي بتعليمات واضحة و دقيقة.

1	2	3	4	5
<input type="checkbox"/>				

11- أعتقد أن اساليب تعليمي و خلفيتي التعليمية تنعكس في العملية التعليمية للجامعة.

1	2	3	4	5
<input type="checkbox"/>				

12- أشعر أن المعلمين و الموجهين يدمجون بشكل استباقي مجموعات من الطلاب من خلفيات مختلفة إلى تجربة التعلم.

1	2	3	4	5
<input type="checkbox"/>				

13- أشعر أن اسلوبي في التعلم متوافق مع اساليب الطلاب الآخرون في نفس الإختصاص.

1	2	3	4	5
<input type="checkbox"/>				

14- أعتقد أن اسلوبي في التعلم قد تغير منذ أن بدأت الدراسة في الجامعة.

1	2	3	4	5
<input type="checkbox"/>				

15- أعتقد أن اسلوبي في التعلم الآن فعال في التعامل مع الإختصاص الذي أدرسه.

1	2	3	4	5
<input type="checkbox"/>				

16- أشعر أن هذه الجامعة تدعم و تعزز التنوع و الاساليب المختلفة في عيش حياتك.

1	2	3	4	5
<input type="checkbox"/>				

17- أشعر أن تنوع الطلاب في الصف يعني أنه سيكون هناك صعوبة في التعلم و العمل مع الطلاب الآخرين.

1	2	3	4	5
<input type="checkbox"/>				

18- تغير قيمي و موافقي و طريقتي في التفكير يعتمد على الناس الذين أصادقهم و على المحيط المحدد.

1	2	3	4	5
<input type="checkbox"/>				

19- أعتقد أن المعرفة عالمية فيما يتعلق بالمعنى.

1	2	3	4	5
<input type="checkbox"/>				

20- أشعر أن التعليم في هذه الجامعة محدد لموضوع التعلم حيث هناك تنوع في المتعلمين.

1	2	3	4	5
<input type="checkbox"/>				

21- أشعر أن تجربة التعلم يمكن أن تُمكن من خلال منظور تربوي عالمي.

1	2	3	4	5
<input type="checkbox"/>				

22- بشكل كلي أعتقد أن هذه الجامعة سبابة في تعزيز الاساليب الخلاقة للتعلم و التعليم.

1	2	3	4	5
<input type="checkbox"/>				

23- أشعر أن هذه الجامعة تعزز فكرة الجماعية في جميع جوانب التعلم و التعليم.

1	2	3	4	5
<input type="checkbox"/>				

24- من وجهة نظري, يُعامل الرجال و النساء بشكل متساوٍ في هذه الجامعة.

1	2	3	4	5
<input type="checkbox"/>				

25- من وجهة نظري, الطلاب في هذه المنظمة معروفون بعملهم الخلاق.

1	2	3	4	5
<input type="checkbox"/>				

26- أعتقد ككل يوجد في هذه المنظمة جو أو شعور عام منفتح.

1	2	3	4	5
<input type="checkbox"/>				

الجزء الثاني: اساليب التعلم المعرفية

1- في التعلم الجديد, أفضل أن أتعلم بمفردي و أن أخذ وقتي بذلك.

1	2	3	4	5
<input type="checkbox"/>				

2- عندما نعمل كمجموعة, أكون جاهزاً لمساعدة أعضاء الفريق الآخرين.

1	2	3	4	5
<input type="checkbox"/>				

3- أتعلم بشكل أفضل بتجريب التطبيقات العملية و الشرح.

1	2	3	4	5
<input type="checkbox"/>				

4- أفضل الحصول على تعليمات واضحة لتعلم أي شيء جديد.

1	2	3	4	5
<input type="checkbox"/>				

5- عندما أكتب أفضل أن أنجز نص معلومات قصير و دقيق.

1	2	3	4	5
<input type="checkbox"/>				

6- عندما أتعلم شيئاً جديداً، أول ما أفكر به هو التخيل البصري.

1	2	3	4	5
<input type="checkbox"/>				

7- أفضل التركيز على التفاصيل العملية لأي شيء جديد لأنها العملية الطبيعية الأفضل في التعلم.

1	2	3	4	5
<input type="checkbox"/>				

8- بداية تعلم شيء جديد هو عملية صعبة بالنسبة لي.

1	2	3	4	5
<input type="checkbox"/>				

9- عند القيام بواجب أو نشاط، أفضل الإشارة إلى المادة التعليمية أولاً ثم قراءة التعليقات المتوفرة.

1	2	3	4	5
<input type="checkbox"/>				

10- عند القيام بعملية تعليمية جديدة، أفضل مواصلة النشاط.

1	2	3	4	5
<input type="checkbox"/>				

11- عندما يجب أن أتعلم خبرة تقنية، أفضل أن أقرأ التوجيهات بحذر.

1	2	3	4	5
<input type="checkbox"/>				

12- عندما أتعلم أفكار أو نظريات جديدة، أفضل أن أربطها بتطبيقات واقعية.

1	2	3	4	5
<input type="checkbox"/>				

13- أفضل التعليم وجهاً لوجه مع شخص يعمل بشكل شخصي معي.

1	2	3	4	5
<input type="checkbox"/>				

14- عند تعلم مادة جديدة, أفضل رؤية إجراءات محدودة مقيدة و مكتوبة.

1	2	3	4	5
<input type="checkbox"/>				

15- عند الكتابة, أشعر أنه يجب أن يكون هناك فرصة للتعبير عن آرائي.

1	2	3	4	5
<input type="checkbox"/>				

16- عند تعلم فكرة جديدة, أشعر بأنها عملية سهلة نسبياً بالنسبة لي.

1	2	3	4	5
<input type="checkbox"/>				

17- عند التعلم, إنهاء الواجب صعب بالنسبة لي.

1	2	3	4	5
<input type="checkbox"/>				

18- عند إنجاز واجب أو نشاط, أنظر إلى المواد التعليمية المتوفرة و لكنني أفضل أيضاً أن أطور طريقتي الخاصة في إنجاز الواجب أو النشاط.

1	2	3	4	5
<input type="checkbox"/>				

19- عند إنجاز عملية تعلم جديدة, أربط بشكل حسي الموضوع بتجربة سابقة.

1	2	3	4	5
<input type="checkbox"/>				

20- عند تعلم أفكار أو نظريات جديدة, أفضل أن أناقشها مع زملائي في الصف لأنه الأسلوب الأفضل للتعلم.

1	2	3	4	5
<input type="checkbox"/>				

21- أعتقد أن اسلوبي في التعلم قد تغير بشكل هام منذ ماكنت في المدرسة.

1	2	3	4	5
<input type="checkbox"/>				

الجزء الثالث: أولويات التعلم

1- استطيع أن أتذكر عن موضوع من خلال الإستماع أكثر من القراءة.

1	2	3	4	5
<input type="checkbox"/>				

2- أتعلم بشكل جيد أكثر من خلال وسائل المخططات البيانية و الصور و الأشكال الأخرى من التوجيهات البصرية.

1	2	3	4	5
<input type="checkbox"/>				

3- التعلم بشكل عام هو أسهل بالنسبة لي من خلال الإستماع إلى المحاضرات.

1	2	3	4	5
<input type="checkbox"/>				

4- أفضل تعلم العبارات الجديدة بتكرارها بصوت عالي مرات عديدة أكثر من كتابتها على الورق.

1	2	3	4	5
<input type="checkbox"/>				

5- أعتقد أن الاستماع إلى متكلم جيد أو زميل هو وسيلة أفضل للتعلم من قراءة نفس الشيء في كتاب أو مجلة أو على الإنترنت.

1	2	3	4	5
<input type="checkbox"/>				

6- أبدو أي أتبع التعليمات الشفوية بسهولة أكثر من التعليمات المكتوبة.

1	2	3	4	5
<input type="checkbox"/>				

7- عادةً ما أتعلم المعلومات الجديدة من خلال البحث عنها و قرائتها في الكتب أو المجلات أو على الإنترنت.

1	2	3	4	5
<input type="checkbox"/>				

8- لفهم أي أفكار و مضامينها, أعتقد أنه من البديهي أكثر أن تنظر إلى المخططات البيانية و الصور الفوتوغرافية.

1 2 3 4 5

9- عادةً ما يكون لدي توجيهات مطبوعة عند الذهاب إلى مكان جديد و هذا أفضل من التوجيهات الشفوية.

1 2 3 4 5

10- أتتبع الأخبار من خلال قراءة الجرائد أكثر من الاستماع إلى الراديو أو مشاهدة التلفاز.

1 2 3 4 5

11- بالنسبة لي, أفضل طريقة لتذكر شيء هو أن أتخيله في رأسي.

1 2 3 4 5

12- أشعر بارتياح أكثر من خلال اللمس والتواصل الجسدي مع الآخرين (مصافحة و عناق).

1 2 3 4 5

13- الكتابة تبدو طريقة ناجعة بالنسبة لي لتضمين أفكار و معتقداتي.

1 2 3 4 5

14- تدوين الملاحظات يبدو مساعداً بالنسبة لي لتذكر الحقائق و الأفكار الهامة.

1 2 3 4 5

15- أبدو أنني أتعلم بشكل أفضل عندما أتقل و أصنع و أصلح و أطور المواد.

1 2 3 4 5

16- خلال فترات التعلم, كان لدي ميول لمسك المواد بيدي.

1	2	3	4	5
<input type="checkbox"/>				

17- ألغاز البانوراما و الألعاب العقلية الأخرى تبدو جذابة بالنسبة لي و ممتعة.

1	2	3	4	5
<input type="checkbox"/>				

18- عندما كنت يافعاً, تعلمت التهجئة و القواعد بشكل فعال من خلال كتابة الكلمات على الورق.

1	2	3	4	5
<input type="checkbox"/>				

19. الألغاز بانوراما وغيرها من الألعاب الذهنية هي ممتعة جدا والانخراط بالنسبة لي .

1	2	3	4	5
<input type="checkbox"/>				

20 . عندما كنت صغيرا تعلمت الإملائي والنحوي أكثر فعالية من خلال كتابة الكلمات على الورق .

1	2	3	4	5
<input type="checkbox"/>				

Staff interview

Part One: Personal Information

1. Gender?
2. How old are you?
3. What is your highest level of educational qualification?
4. Have you had any education abroad?
5. What is your official job title in this university?
6. How long have you been working in this university?

Part Two: University Environment and Teaching

1. How do you explain the university's culture towards teaching and learning?
2. In your view, are there any specific teaching and learning methods that the university attempts to promote?
3. If so, do you think you and your students follow those methods?
4. In your teaching do you consider the students' learning backgrounds?
5. Do you think that your students are proactive in learning in context effectively?
6. Do you think that your students need to modify their initial learning styles in order to satisfy the degree programme requirements in this university?
7. In your view, do you believe this university, on the whole, is proactive in promoting innovative teaching and learning styles ?

مقابله الاساتدة

الجزء الاول

1. ماهو جنسك؟

2. كم عمرك؟

3. ماهو المستوى الأعلى لتأهيلك الجامعي؟

4. ماهو عملك الرسمي في هذه الجامعة؟

5. كم مضى على عملك في هذه الجامعة؟

الجزء الثاني: المحيط و التعليم الجامعي

1- كيف تشرح ثقافة الجامعة بالنسبة للتعلم و التعليم؟

.....
.....
.....
.....
.....
.....
.....

2- هل يوجد من وجهة نظرك طرق تعلم و تعليم محددة تحاول الجامعة أن تعززها؟

.....
.....
.....
.....
.....

3- إذا كان هناك طرق محددة, هل تعتقد أنك و طلابك تتبعون هذه الطرق؟

APPENDIX B: Student Invitation Letter

University of Huddersfield The Business School

Dear Student,

I am postgraduate (PhD) student at the University of Huddersfield, England. My main theme of research is in the area of Learning Styles at Higher Education in Libya. As an integral part of my research, I am carrying out a survey to diagnose the role of the university culture in development of learning styles.

I would be extremely grateful if you would complete the enclosed questionnaire. There is no need for you to give your name, the information are required for scientific purposes only and by no means are intended to connect persons by their replies. The information therefore is treated CONFIDENTIAL.

This questionnaire consists of three parts:

Part One: University Culture and Environment.

Part Two: Cognitive learning styles.

Part Three: Learning preferences.

Instructions

Please, answer all questions as appropriate according to the instructions provided at the start of each part.

Please do not think hard about answer, just put the first answer that come to your mind.

If you feel any question does not apply to you or for any reason you do not want to answer it, just go to the next question.

Please note that the questions are given in statements. Possible answers are shown in Likert scale, with 1 being the highest level of disagreement and 5 being the highest level of agreement with the statement.

I would like to have your written comments (if any) or explanations on any issue, whether or not this has been covered in the questionnaire. Please use comments sheet for this purpose.

I would like to take this opportunity here to thank you sincerely for your extremely helpful cooperation in completing this survey.

جامعة هادرسفيلد

كلية إدارة الأعمال

عزيزي الطالب:

أنا طالب دكتوراه في جامعة هادرسفيلد في إنكلترا. الموضوع الأساسي لبحثي هو أساليب التعلم في قطاع التعليم العالي في ليبيا. وكجزء مكمل من بحثي أقوم بإجراء استبيان لتحليل دور الثقافة الجامعية في تطوير أساليب التعلم.

سأكون ممتناً لك إذا أجبت على الاستبيان المرفق. وبما أن هدف البحث هو علمي، ليس هناك أي حاجة لإن تعطي اسمك أو ربط الإجابات بإسماء أصحابها لذلك سيتم التعامل مع المعلومات بسرية كاملة.

يتكون هذا الاستبيان من ثلاثة أجزاء:

الجزء الأول حول الثقافة و المحيط الجامعي

الجزء الثاني حول أساليب التعلم المعرفي

الجزء الثالث حول أولويات التعلم

إرشادات:

أجب من فضلك على كل الأسئلة بشكل مناسب يتلائم مع الإرشادات المعطاة في بداية كل جزء.

أرجو ألا تفكر كثيراً بالسؤال وأن تعطي أول إجابة تخطر في ذهنك.

إذا شعرت أن سؤالاً ما لا ينطبق عليك لإسباب لا تريد ذكرها، انتقل من فضلك إلى السؤال التالي.

لاحظ من فضلك أن الأسئلة معطاة على شكل عبارات نصية وأن الإجابات الممكنة هي وفقاً لمعيار ليكرت حيث أن الرقم (1) يمثل أعلى مستوى من الرضا للعبارة و الرقم (5) يمثل أعلى مستوى من القبول للعبارة.

من فضلك أكتب أي تعليق لك أو شرح لأي مسألة سواء وردت في الاستبيان أم لم ترد. كما أرجو أن تستخدم ورقة التعليقات لهذا الغرض.

وأود أن أنتهز هذه الفرصة لأشكرك بإخلاص لتعاونك المفيد في إكمال هذا الاستبيان

APPENDIX C: Staff Invitation Letter

University of Huddersfield The Business School

Dear Member of Staff,#

I am a postgraduate (PhD) student at the University of Huddersfield, England. My main theme of research is in the area of Learning Styles at Higher Education in Libya. As an integral part of my research, I am carrying out a survey to diagnose the role of the university culture in development of learning and teaching styles.

I would be extremely grateful if you would permit me to conduct an interview. There is no need for you to give your name, the information are required for scientific purposes only and by no means are intended to connect persons by their replies. The information therefore is treated CONFIDENTIAL.

This interview consists of two parts:

Part One: Personal background.

Part Two: Questions relating to University/faculty culture and teaching/learning.

I would like to take this opportunity here to thank you sincerely for your extremely helpful cooperation in completing this survey.

كلية إدارة الأعمال

عزيزي الوظيف:

أنا طالب دكتوراه في جامعة هادرسفيلد في إنكلترة. الموضوع الأساسي لبحثي هو أساليب التعلم في قطاع التعليم العالي في ليبيا. وكجزء مكمل من بحثي أقوم بإجراء استبيان لتحليل دور الثقافة الجامعية في تطوير أساليب التعلم.

سأكون ممتناً لك إذا سمحت لي بإجراء مقابلة معك, ولا أتوقع أن تدوم المقابلة أكثر من ساعة واحدة. وبما أن هدف البحث هو علمي, ليس هناك أي حاجة لإن تعطي اسمك أو ربط الإجابات بإسماء أصحابها لذلك سيتم التعامل مع المعلومات بسرية كاملة.

تركز المقابلة بشكل أساسي على أمران:

الأول هو الخلفية الشخصية للمشاركة و الثاني هو الثقافة و التعليم الجامعي.

وأود أن أنتهز هذه الفرصة لأشكرك بإخلاص لتعاونك المفيد في إكمال هذا الاستبيان.

APPENDIX D: Analysis of the Pilot Study

E. 1. Introduction

In pursuit of the pilot study, the research has employed a small sample of students from only one university in Libya – Sabha – located in the southern region. The reason behind this choice is primarily owing to the fact that the researcher was born and bred in the region; hence was familiar to the university's teaching structure and staff/students availability. The prime aim of the pilot study is to identify possible problematic areas and hence improving the questionnaire and the approach.

Like most pilot studies, I have picked up a small sample of 7 teaching members of staff, and 20 full-time students. The sample of both staff and students was taken on random basis from the Social Sciences Faculty of Sabha University. The completion of the questionnaire was self-administered by the respondents, and verbal instruction in completion of the questionnaire was provided to both groups of respondents prior to the distribution of the questionnaire.

E.2. Analysis of Findings: Staff Questionnaire

The staff questionnaire consists of two parts: personal details, and organisational culture. In our sample of staff, 2 were women and five men, with the typical age range of 30-55. All the staff declared that they had acquired at least a postgraduate degree, with an average working experience of 6 years. Only two members of staff declared that they had been graduated from US/European universities. In relation to the second part of the questionnaire, 20 questions on the main topic of organisational (university)

culture and environment were presented to staff. Table 1 show the estimated mean and standard deviation of the 7 staff based on the questionnaire's 20 questions.

The mean values range from scores of 3.00 to 4.43, with an overall mean value of 3.85 and overall standard deviation of 1.01. The questions with the scores lower than the overall mean are primarily in relation to i) student diversity in classroom, ii) innovative teaching and learning styles, iii) online/TV use, and iv) physical contact. On the other hand, areas such as, i) teaching process in consideration of students learning, ii) socialisation environment, iii) global meaning of knowledge, iv) visualisation approach in learning/teaching, and v) writing method of teaching/learning. On the whole, these findings suggest that, as far as the academic staff are concerned, the university culture and environment tend to support and accommodates students' learning styles. In short, despite these estimated mean values, care must be exercised in generalising the findings, as these results are only based on a small sample size.

Table 1: Mean and Standard Deviation Estimates – Organisational Culture

Question	Mean Value	Standard Deviation
1	3.86	0.69
2	4.14	0.90
3	3.86	0.90
4	3.71	1.38
5	3.00	1.41
6	4.14	0.90
7	4.00	0.82
8	3.86	0.90
9	4.00	0.82
10	3.29	1.25
11	3.00	1.53
12	4.43	0.98
13	3.29	1.25
14	4.43	0.53
15	4.00	0.82
16	4.00	1.15
17	3.71	1.11

18	3.71	1.38
19	3.86	0.90
20	4.71	0.49
Average	3.85	1.01

E3. Analysis of Findings: Student’s Questionnaire

The student questionnaire consists of three parts: organisation learning culture and environment, cognitive learning styles, and learning preferences. In effect, the first part of the questionnaire deals with what has been discussed in the literature review as PLE, whilst the second and third parts consider, *inter alia*, aspects of PLSP. In short, the questionnaire is designed to test whether learning environment (organisation) and learning styles and preferences have any relationships with one another. In particular, it is of the study’s prime interest to test whether the learning environment (organisational culture) would impact learning styles and personal learning style pedagogy.

Part one, organisation (university) learning environment, consists of 10 questions, for which the estimated mean and standard deviation values, based on 20 respondents, are presented in table 2. According to this table, the mean values students have attached to different questions range between 2.25 and 4.21, with an overall mean value of 3.38 and overall standard deviation of 1.06. The lower scores are attached to the following questions: i) university culture reflecting student’s cultural background, ii) university teaching reflecting student’s learning style, and iii) university’s support for students diversity. On the other hand, higher scores are attached to the following areas: i) integration of different learning styles into teaching program, ii) knowledge in terms of its global meaning, iii) learning experience enabled through global

education, and iv) university being proactive in innovative teaching and learning styles.

Table 2: Mean and Standard Deviation Estimates - University Culture and Learning Environment

Question	Mean Value	Standard Deviation
1	3.12	1.07
2	3.25	1.06
3	3.53	1.10
4	2.63	1.14
5	2.25	1.55
6	3.94	1.02
7	4.15	0.93
8	3.15	0.92
9	4.21	0.89
10	3.75	0.91
Average	3.38	1.06

The estimated mean values and standard deviations relating to part two – cognitive learning styles - of the student questionnaire are presented in table 3.

Table 3: Mean and Standard Deviation Estimates – Cognitive Learning Styles

Question	Mean Value	Standard Deviation
1	3.90	1.33
2	3.55	1.32
3	3.80	1.15
4	3.50	0.83
5	3.60	1.14
6	3.30	1.30
7	3.15	1.42
8	3.25	1.07
9	3.65	0.99
10	3.90	0.91
11	4.10	1.41
12	3.55	1.57
13	4.10	0.85
14	3.85	1.46
15	4.15	1.18
16	4.15	0.88
17	2.85	1.39
18	3.70	1.17

19	3.65	1.18
20	3.80	1.28
Average	3.68	1.19

As this table shows, the mean values range between 2.85 and 4.15 with an overall estimated mean value of 3.68 and standard deviation of 1.19. The low scores that the students have attached to their learning styles relate to the following issues: i) taking short, concise notes, ii) focus on practical details, iii) learning new stuff being difficult, iv) learning with reference to learning material, and v) completing task being difficult, vi) learning effectively when there is lack of restrictive writing procedures. On the other hand, the higher scores are attached to areas such as, i) working on my own in my own time, ii) following guidelines in my learning process, iii) learning instruction being most important when undertaking a technical task, iv) learning theory by associating to real applications, v) expressing views through writing, vi) commencing a new task is easy, and vii) being able to exchange views when learning new ideas/theories.

Finally, in relation to part three – learning preferences and PLSP, the students’ responses are presented in table 4. The estimated mean values for this part range from 3.20 to 4.30 with the overall mean value of 3.66 and standard deviation of 1.11.

Table 4: Mean and Standard Deviation Estimates - Personal Learning Preferences

Question	Mean Value	Standard Deviation
1	3.30	1.03
2	3.20	1.47
3	3.50	1.36
4	3.60	1.50
5	4.30	1.08
6	4.25	0.85

7	4.30	0.86
8	4.00	1.17
9	4.05	1.28
10	3.55	1.23
11	3.35	1.27
12	3.30	0.92
13	3.45	0.60
14	3.50	0.83
15	3.75	1.37
16	3.55	1.15
17	3.65	1.14
18	3.80	0.77
19	3.45	1.19
20	3.30	1.13
Average	3.66	1.11

The lowest scores have been attached to the following areas: i) learning through listening, ii) supporting explanation when referring to diagrams and images, iii) learning easier through CDs , MP3 etc, iv) reading newspaper online rather than through radio and TV, v) learning through touch and physical contact, and vi) enjoy doing jigsaw puzzles and mind games. On the other hand, higher scores have been assigned to the following areas: i) listening to a person is more effective than reading books about the issue, ii) learning through mobile device, radio and online, iii) oral directions are preferred to written ones, iv) learning through search in books, magazines and web, and v) holding objects in hands during learning periods.

E4. Discussions

There are two levels of discussions which the study attempts to offer. The first set of discussions relate to a comparison between the scores for organisational environment/culture assigned by the two groups of staff and students. Although there are some similarities in the way the two groups regard the influence of organisation on learning, the overall scores tend to show a relatively large mathematical difference.

This difference can not be statistically significant due to low degrees of freedom; however, it may become statistically significant once the sample size has increased substantially.

The second level of discussion relates to identifying and measuring the extent of possible relationship between PLE, learning styles and PLSP. In evaluating such relationships, the study considers the re-examination of tables 2, 3 and 4. A simple initial method of observing for any possible relationship amongst the three variables is by calculating the Pearson correlation measures shown as table 5. As it is logically evident, there is a high degree of correlation between learning style and learning preference. Although a rather poor relationship is depicted between learning style and organisation culture/environment, there is a slightly better correlation between learning preference and the organisation environment.

Table 5: Simple Pearson Correlation Measures

	<i>Environment</i>	<i>Style</i>	<i>Preference</i>
Environment	1		
Style	0.19400511	1	
Preference	0.24005652	0.85598226	1

In pursuit of measuring the extent of the contribution that organisation environment may have on learning styles and learning preference, we conduct two simple linear regressions: i) regress learning styles on environment, and ii) regress learning preference on environment. The estimated regressions are shown in the following two equations:

$$\text{Style} = 2.516 + 0.337 \text{ environment} \quad (\text{Eq 1})$$

(1.39) (0.267)

$$\text{Preference} = 2.637 + 0.306 \text{ environment} \quad (\text{Eq 2})$$

(0.956) (0.206)

The figures in brackets represent the estimated standard errors generated by the regression. According to these two equations, a one unit increase in the scores of environment leads to 0.337 and 0.306 units increase in learning style and learning preference, respectively. The extent of responsiveness of learning style and learning preference to changes in organisational culture/environment are shown to be rather limited, but the direction of causality appears to be valid.

In conclusion, the findings exhibited in all the tables and the above two equations must be taken with caution as they are derived based on a limited sample size of 20, hence their validity is doubtful. It is, therefore, anticipated that a larger sample size can improve the validity of our findings, hence enabling us to draw more comprehensive and concrete conclusions on our estimated results.

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