Evaluation of the Vocational Training System in Qatar's Public Sector

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In Partial fulfilment of the requirements for the Doctor of Degree of Philosophy

Cardiff Metropolitan University

February 2020

Abstract

The concept of policing a state has had to undergo a change of mindset due to the global nature of today's world. There was anecdotal evidence that the training was outdated and did not take into account the cross-cultural differences that exist in Qatar. This study investigates this hypothesis and evaluates the quality of training at the Police Training Institute in Qatar After conducting an exhaustive literature review covering cross cultural differences, systems thinking and different delivery methods a methodological evaluation of public sector training was conducted using the Soft Systems Methodology of Professor Peter Checkland.

The key findings to come out of the SSM Analysis were: the police training did not meet the participants' expectations, course content failed to provide trainees with new skills, the delivery of the courses lacks interaction and courses were not useful or challenging. A conceptual model was developed that dealt with:

- new content
- cultural differences and;
- new delivery methods

A new course was designed, delivered, tested and evaluated. This was a course on Systems Thinking. Also, an App was designed for mobile phones which enabled the course to be delivered in a more modern manner which used the concept of social media.

The final analysis showed that the Systems Thinking ideas were well received and more courses need to be designed at all levels. It suggested that there is a future for mobile technology in training and it encouraged organizations to experiment with this form of delivery. Recommendations were made for future training at the Police Training Institute and these were well received by the Ministry of Interior of Qatar.

It also suggests that the PTI is an ideal candidate for a learning organization, which would help it to understand what is happening in the outside environment and produce creative solutions using the knowledge and skills of all within the organization

Acknowledgement

I would like to extend my gratitude to all my colleagues at the Ministry of Interior and The Prime Minister & Minister of Interior Sheikh Abdulla Bin Naser Al Thani who encouraged and supported me to do this thesis.

Particular thanks are due to Professor Moscardini for his supervision, insight and dedication over a long period of time.

My warmest appreciation to Professor Mohamed Loutfi, Vice-chancellor of Cardiff Metropolitan University for his care and advice.

My special thanks are also due to all participants for their patience, understanding and generous love during work on interviews.

Finally, I would like to dedicate this work to my beloved parents and home country Qatar.

Hamad Al Kaabi

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CHAPTER ONE. INTRODUCTION

1.1 Background to the Research

Flouris and Yilmaz (2010) argue that an "effective management of human resource-based risks is a cornerstone factor" of organisational success. Similarly, PricewaterhouseCoopers (2008), an internationally- successful advisory service, emphasise that addressing human factor-based risks are crucial for the success of the organisation. In fact, they maintained that it is critical to place 'people' at the heart of any system. Indeed, Aloini, Dulmin and Mininno (2007) elucidate that inadequate training of employees is one of the main risks associated with human factors. Bhattacharya and Wright (2005) maintain that within the context of today's market conditions, "the pervasiveness of complex technology in all spheres of business and the fast rate of change in technology create greater risks that an employee is unable to keep up with these changes or is unable to learn new skills." They also argue that employee skills must be continuously upgraded and that employees must be provided with new growth opportunities in order for them to learn them. Subramanian, Sinha, and Gupta (2012) recommend that training programs also be used to match employee skills to organisational needs. In the same vein, Hartmann et al. (2010) recommended that talent management strategies should focus on recruiting and retaining "highly qualified employees, who are offered higher wages, better job opportunities, a better quality of life and stronger R&D facilities." Hence, the importance of training and continuous professional development cannot be undermined.

In 1970, Nadler coined the term 'human resource development' and provided a model, which featured three components, namely: training, education, and development (Nadler & Nadler, 1991). Since Nadler's inception of the term, a dichotomous approach to HRD has emerged: on one side was a learning and development paradigm that focused on the enhancement of training and development (Garavan, Heraty & Barnicle,1999); and on the other, a performance outcomes paradigm which focused on developing individuals to enhance organisational performance outcomes (Swanson & Holton, 2001). However, Simmonds and Pedersen (2006) contended that "HRD is a combination of structured and unstructured learning and performance-based activities which develop individual and organisational competency, capability and capacity to cope with and successfully manage change."

A significant number of contributions have highlighted the various challenges that the public sector had to overcome in the last two decades (McCraken, Brown & O'Kane, 2011). These challenges were largely anchored on the following issues, namely: an ageing workforce, cost-effective delivery of services, restructuring, and leadership talent shortages (O'Brien, 2010; Whittington & Campion-Smith, 2010; McCraken, Brown & O'Kane, 2011). Such premium placed on cost-efficiency in the public sector in the US and the UK since the 1980s and the 1990s, have driven public sector institutions to utilise and implement more 'business-like' practices in organisational management (McCraken, Brown & O'Kane, 2011). Such a trend in adopting more 'business-like' practices in organisational management has been further reinforced by the global economic downturn which has been characterised by budget cuts throughout the UK and Canada, subsequently giving rise to the 'new public management' which was centered on efficiency and effectiveness (McCraken, Brown & O'Kane, 2011). However, it has been documented by various researchers that public sector professionals were

mostly not adequately trained to effectively collaborate in such an exigent setting (McCraken, Brown & O'Kane, 2011). It is in this context that Coxhead at al. (2010) explicate that "it is not surprising that government departments and other public sector professionals are constantly looking for ways to develop the skills of their managers and future leaders."

As explicated by Fernandez and Rainey (2006), "reform initiatives have swept through governments in the United States and overseas, again and again bringing news about efforts to reinvent, transform, or reform government agencies." Part of such transformation is the premium placed on training public sector employees for increased organisational efficiency and performance (Coxhead at al., 2010; McCraken, Brown & O'Kane, 2011). The correlation between training and public service efficiency has been anchored on the premise that human capital (e.g. knowledge, skills, and behaviour) strengthens the importance of people-related competences that are linked with the 'new public management' construct.

Indeed, the important role of training in raising the performance of public sector organisations has generated mainstream political support since the 1980s, particularly in most industrialised nations (Lafferty & Roan, 2000). In Australia, policy makers have underscored the critical role that its national skills base plays in the achievement of international competitiveness leading to the restructuring of its workforce training programs and institutions since the early 1980s (Lafferty & Roan, 2000). Canada's public sector at present, is using talent management to "recruit and retain highly-trained, qualified staff". Part of its talent management is the training of public sector employees which is considered "central to public service renewal and success […]" (Glenn, 2012).

In Germany (since 1969 and by virtue of its Work Support Act) there has been a consistent yearly increase in the amount of public resources being allocated for the support of vocational training by the Federal Labor Office. After the 1990 reunification, "due to the large effects of the transformation process on the labor market, public vocational training played an even more important role in the eastern part of Germany" (Hujer & Wellner, 2000). During such time, Germany wisely utilized its strong support for training and considered it "a very important instrument of active labor market policy attempting to increase productivity and to reduce unemployment" (Fitzenberger & Prey, 2000). Since then, training has been viewed as one of the most important and promising components of Germany's labour market policies — mirroring the case of many continental European countries which "used active labour market policies as important tools for reducing Europe's notoriously high levels of unemployment without the painful side effects of substantial market reforms" (Lechner, Miquel & Wunsch, 2011).

In the UK, "the provision of world class services remains at the heart of the current government's political strategy" as has been reflected in government spending data which showed substantial and consistent increase in public services expenditures (Murphy et al., 2008). Indeed, findings of a study conducted by Murphy et al. (2008) indicate that a significant training advantage exists for public sector workers due to "social externalities, alternative behavioral objectives, tax appropriation, job security, hierarchical wage structures, and differences in wage dispersion, rent sharing and worker sorting".

In the same vein, Qatar's public sector management is centered on the attainment of an efficient delivery of public services. As clearly explicated in the official website of the Qatar National Project Management (QNPM):

Qatar is developing and growing with clear vision and strategy. Qatar's public service is at the forefront, improving infrastructure, modernizing services, and helping to take its place in the international community. Like governments around the world, Qatar's public service is increasingly focused on effective, efficient delivery that will support continued success and prosperity.

Indeed, included in Qatar's National Development Strategy 2011−2016 are the intended reforms for its vocational training system which include the following plans , namely: (1) strengthening technical education and vocational training; (2) developing "an organizational model for technical education and vocational training" and building the required capabilities; (3) developing "a regulatory framework to align technical education and vocational training with the education sector and labour market needs"; (4) aligning "technical education and vocational training programmes and outputs with the needs of society and the labour market"; and (5) increasing "the prominence of technical education and vocational training programmes" ('Qatar National Development Strategy 2011~2016', 2011, pp.140-143).

However, despite the strides that governments around the world have taken in order to achieve the goal of public service efficiency through the adoption of 'business-like' practices in organisational management, the wide array of challenges brought about by dynamically-changing environments made achieving the aforementioned goal difficult (OECD, 2008). The OECD (2008) explicates the difficulties faced by public sector institutions around the world:

Personnel systems are becoming less adaptive to these new challenges. Indeed, traditional practices in public administration are the product of a different context with different priorities. Now, governments have a new role in society and are taking on new responsibilities but generally without the necessary tools to manage them effectively. Public managers are expected to improve the performance of their organisations focusing on efficiency, effectiveness, and propriety which were not the priorities 50 years ago. Therefore, to be able to respond to a changing environment the public sector has to transform its structures, processes, procedures, and above all, its culture" (OECD, 2008).

It is in this context that the extant situation of the vocational training system in Qatar's public sector needs to be understood, thereby requiring a thorough examination of the current situation of the aforementioned vocational training system using an appropriate methodological framework such as the Soft Systems Methodology (SSM). The utility of SSM in problem structuring has been highlighted in extant literature (Goddard et al., 1994). SSM has been found to possess an intrinsically evaluatory characteristic which helps improve problematical situations by bringing about a systematic assessment of the current situation and then prescribing the desirable changes that must be made (Kayrooz & Trevitt, 2005). In addition to the aforementioned benefits of using SSM to diagnose the problems affecting the vocational training system in Qatar's public sector, SSM has also been recognized to be useful for dealing with real-world problems of management associated with learning and systems

design (Checkland & Scholes, 1990; Reid, 1999; Hindle, 2011; Hardman and Paucar-Caceres, 2011).

1.2 Need for This Study

Qatar has recently undergone a massive reform of the structure of its ministries and state institutions that comprise its public sector to improve the quality and effectiveness of their civil service. This was evidenced by the consistent promotion of ongoing vocational training of all public sector employees. However, such training is almost exclusively based on Western theory and practice. Yet Arab countries have their own distinctive national culture and practices and there is a significant danger that culturally- inappropriate training will affect all stakeholders in government services. As Lewis (2006) notes:

"*Westerners and Arabs have very different views about what is right and wrong, good and evil, logical and illogical, acceptable and unacceptable. They live in two different worlds each organised in its own manner. (Lewis, 2006). To be most effective, any government must serve the local population and all its other stakeholders. However, it must do so in a way that is deemed acceptable to the majority served and be seen to reflect the culture of its people. If a significant perceived gap arises between civil service culture and local culture, a great danger is the potential alienation of its civil society. Each of the trends towards overseas training and education potentially widens the cultural gap between Qatari civil servants and the people they serve. Western practice has been exported around the world, including the Gulf Region and Qatar. Often this is spread by training. Yet in the last thirty years, researchers have increasingly noted a strong influence of local culture on many areas of business and organisational practice. "*

There is no universally- agreed definition of *culture* amongst social scientists. Various leading researchers have defined culture in different ways. In the GLOBE Project (Chhokar, *Brodbeck & House,* 2007), researchers from 38 countries came together to develop a collective understanding They defined it as: "shared motives, values, beliefs, identities, and interpretations or meanings of significant events that result from common experience of members of collectives and are transmitted across age generations"

A well -established cultural theory posits that that each group or category of people carries with it a set of common mental programmes that create its national culture. Each of the major studies and many minor studies confirm this and are closely correlated (Hofstede & Hofstede, 2005). Culturally, the *Western world* — which is largely represented by Americans, British and Northern Europeans — and the *Arab world* — are widely separated and clearly delineated. This significantly complicates the interchange of ideas (Lewis, 2006). Importing essentially alien methods of management, education and training go a long way to institutionalising the effects of any westernisation of public services. The result is that pressures to conform to an alternative culture are creating strong resistance and an even stronger trend towards national cultural identity.

When studies exist, other states within the region, notably Kuwait, Saudi Arabia and UAE, have received far more specific attention than Qatar. Even so, the region has long been regarded as displaying a strong common culture (Lewis, 2006). This is because of a common history and the overwhelming influence of Islam in every facet of personal and organisational life in

the region (Adler, 2002). This has led to a strong Arab identity, especially in the Gulf, helped by institutions such as the influential Qatar based Al-Jazeera broadcaster. As a result, world-renowned cultural theorists such as Lewis (2006), Trompenaars and Hampden Turner (1997), and Hofstede (1980, 1991) and many other authors use the allusion "the Arab World" to refer to the individual Gulf States. This facilitates the generalisation and application of research findings to "the Arab World" as a whole.

Welsh and Raven (2006) note that in the Gulf region, family and religious values probably have a major influence on the way organisations are managed. This makes them fundamentally different from public services in the OECD countries. Yet the trend towards overseas education and training potentially widens the cultural gap between Qatari civil servants and the people they serve. This has become a matter of serious concern to people in Qatar and elsewhere in the Gulf (Al Kaabi, 2007). Indeed, the Qatar National Vision 2030 (GSDP, 2008) clearly states that the:

Preservation of cultural traditions is a major challenge that confronts many societies in a rapidly globalizing and increasingly interconnected world […]. Qatar's rapid economic and population growth have created intense strains between the old and new in almost every aspect of life. (GSDP, 2008).

In this thesis, the term 'training' has the narrow meaning of vocational training. Thus defined, training improves the skills and knowledge needed for a particular job function or trade. This might include continued professional development (CPD) but not taking the professional qualifications themselves. It might take the form of practical training, a short course, or sometimes full-time or part-time study in a University or College. The latter will not include academic courses such as recognised degrees and higher degrees. The need is therefore to improve the vocational training to help Qatar utilise its workforce to the fullest extent.

1.3 Context of the work

The work was carried out in the context of the Ministry of Interior and the Police Training Institute

The Ministry of Interior was formed in 1970 according to the decree No. (5) for the year 1970 stipulating the functions of the ministries and other government organizations in the country. The Ministry of Interior continued since that time its functions and missions providing peace and security and organizing police forces guaranteeing the protection of national security and maintaining safety and security of nationals and expatriates as well along with taking all necessary measures to prevent the happenings of crimes and disclosing the secrets of committed crimes in addition to taking care of nationality related affairs, issuing travel documents, organizing expatriates entry to the country and their residence and organizing the prison. Under its control is the policing of Qatar,

Qatar highly values public security and formed a Police Agency to guarantee protection of lives, public and private property and maintenance of discipline and security. The first Police agency formed in the State of Qatar was "Discipline Police" in 10/9/1949. The functions of this section comprised of providing security and protection for citizens, maintaining discipline by moving patrols, carrying out the mission of permanent guards at vital areas in the capital

and organizing traffic movement. It also carried out all other police related duties like follow up of criminals, conducting investigations on criminal and traffic cases and referring the accused to the courts in addition to deporting the suspects if they deserve it.

Recently under Emiri Decision (56) of 2009 its role was upgraded again be closely aligned with the Qatar National Vision 2030 (QNV2030) (GSDP 2008). This has been launched to serve as a clear roadmap for Qatar's future. It aims to propel Qatar forward by balancing the accomplishments that achieve economic growth with the human and natural resources. This vision constitutes a beacon that guides economic, social, human and environmental development of the country in the coming decades, so that it is inclusive and helpful for the citizens and residents of Qatar in various aspects of their lives. It has four pillars: - Economic Development, Social Development, Human Development and Environmental Development.

To achieve its objectives, the Ministry form the Police Training Institute in 1983 which is responsible for the management of the training programme of the police of Qatar. Training is carried out according to an annual plan (of training and qualification of the Ministry of the Interior). In 1993, policewomen were introduced into the police force. The plan is prepared and executed by the PTI after the Ministry approves it. The PTI is endowed with a mission and an organisational structure to carry out its training responsibilities.

The mission of the Police Training Institute is:

To prepare, in coordination and cooperation with the various departments of the Ministry of Interior, the project of the annual plan of the Ministry regarding training and qualification. This is done according to the training needs of the Ministry and in accordance with the following policies and objectives.

1. To prepare and execute the education orientation and training of the newly recruited personnel as well as to do the same for the officers, non-commissioned officers and privates of the various departments of the Ministry. Orientation in specialised and refreshment courses is carried out in this respect.
2. To conduct a continuous evaluation of the PTI courses in order to improve performance
3. To provide technical and technological aids necessary for education and training
4. To follow up new developments in training methods and techniques at the local, Arab and international levels in order to introduce them for the improvement of the security services and the performance of the personnel of the various departments of the Ministry
5. To prepare the organisational regulations of the police education and training
6. To supervise and evaluate the performance of the educational and training staff of the PTI in the training courses
7. To encourage research and studies related to security, legal and administrative problems in order to present the best solutions for those problems in accordance with the competence of the Ministry and its policies
8. To develop close relations with the security, social and scientific institutions on the local, Arab and international levels and to exchange experiences and information with them in all fields that are beneficial to the objectives of the Ministry
9. To enrich the intellectual and cultural life of the Ministry through c0nvening cultural seasons with the participation of specialised experts in lectures on the various aspects of security (Kratcovski 2007).

This research is carried out under the context outlined above.

1.4 Plan of the Thesis

The thesis consists of seven chapters and appendices.

Chapter One gives the background to the research problem. It discusses the need and the context of the problem. It finishes with an outline of the rest of the thesis.

Chapter Two consists of a thorough literature review. This covers a discussion on training in general, cross-cultural differences especially related to training, methods of analysis in particular the Soft Systems methodology, choice of content for new courses, different methods of delivery, Systems thinking and the Learning Organisation. It also covers the use of mobile Apps in teaching.

Chapter Three describes the research methodology: namely the research philosophy, the research design and the research procedures. It also discusses the data collection methods used. The research aim and objectives are formulated and the originality of the research discussed. The chapter finishes with the contribution to knowledge and discussions of the ethical considerations involved in the work.

Chapter Four describes the application of the Soft Systems methodology to the problem of training in Qatar. It gives details of how the Rich Picture was derived including questionnaires, semi= -structured interviews, brainstorming and SWOT analysis. The CATWOE mnemonic is used to produce a root definition. The major recommendations were to produce new courses that reflected different content and cultural differences and different delivery methods.

Chapter Five describes, in detail, the response to the problems identified by the SSM. This was an experimental course designed to test cultural differences, a Systems Thinking course which was supplying new content and an experiment in the use of using mod bile Apps as a teaching delivery.

Chapter Six is a thorough analysis of the three main aspects of this research: cultural differences, new content and new delivery methods. All primary data is available in the Appendices

Chapter Seven summarises the result of this work, how the objectives were achieved and details recommendations for improvement of the public service training in Qatar.

CHAPTER TWO. LITERATURE REVIEW

The present study aims to investigate the vocational training system at the ministries in Qatar and to suggest recommendations for its improvement. To achieve such aim, the present study begins by conducting a literature review relevant to training, cultural differences, soft systems methodology (SSM) and systems thinking.

During the conduct of the review, the following dominant themes relevant to the present study emerged, namely: (1) variations in training; (2) cultural differences which include the different frameworks that are focused on cultural differences, studies that focus on cultural differences relevant to learning and training; (3) the SSM concept; (4) innovative course content which included the systems thinking concept and its application and utility in training; and (5) methods of delivery of training courses which include the role of ICT in learning and vocational training.

The structure of this section is as follows: First, results of the review pertinent to training are presented. This will be followed by a discussion of the following topics: (1) course content, which include the characteristics of effective course content, systems thinking concept and its application and utility in training; (2) cultural differences, which include the different frameworks that are focused on cultural differences, as well as studies that focus on cultural differences relevant to learning and training; (3) the SSM concept, the purpose or goal of SSM, the SSM paradigm, the strengths and weaknesses of SSM, and the application of SSM in learning systems; (4) systems thinking and systems dynamics; and (5) methods of delivery of training courses which include the role of ICT in learning and vocational training.

2.1 Training

Qatar has its economy deeply rooted in oil — particularly in natural gas production. However, like other states in the Arabian Gulf region, Qatar is currently diversifying its economy. Its medium and long-term ambitions are to create the capacity to compete on an international and global level with a much more varied economy. This has invariably meant significant changes in people's attitudes, especially in business and government. Vocational training has long been seen as a means of improving Qatar's public services.

While Qatar has recognised the importance of training, the picture on training provision is mixed. There are numerous training centres attached to various ministries and government institutions. Both private and public sectors use various bespoke training courses, while government officials regularly attend training programs organised by internationally- known organisations (QNDS 2011). Most seem to offer mainly Western style training courses. GSDP (2007) admits that: "*officials still a lack necessary expertise to undertake higher tasks they lack skills needed to develop themselves, despite their multiple participation in training.*"

One institution that is highly involved in public sector training is the Institute of Administrative Development (IAD). The IAD was originally established by Law No. (6) of 1997, although its origins goes back to 1964 as the Institute for Administration. The IAD has for some time, been one of the main official centres of expertise of public services in Qatar. It offers training courses in three major areas, namely: administration, finance and information technology. The IAD has being reorganised three times. The first time was in 1997 under Law No. (6) of 1997. Later, under Decree Law No. (27) of 2007. Its role was expanded to training for administrative

development. More recently under Emiri Decision (56) of 2009, IAD's role was made to be closely aligned with the Qatar National Vision 2030 (GSDP, 2008).
In its 2010-2011 planning handbook (IAD, 2010), the IAD makes a firm link between QNV 2030 and its development programmes. It now offers courses at three management levels and aims to collaborate with ministries, government departments and bodies and public institutions. The IAD fortifies its international links and collaboration with international partners including European and American organisations. Indeed, a specialist independent 'Co-operation Unit' has now been created to strengthen overseas links. The IAD now undoubtedly stands at the heart of the public sector training system in Qatar. The boundaries of this training system will be examined and analysed in terms of its 'sphere of influence'. This will be established by reviewing and analysing:

a. Extant literature comprised by empirical research and related studies, etc. that have emerged over the course of the past two decades that delve on the role of education and training in enhancing public administration effectiveness/efficiency;

b. The contribution of the Institute of Administrative Development (IAD) established under Emiri Decision (56) of 2009 as the official 'hub' of expertise in the State of Qatar; and

c. The evolution of discourses regarding public sector training as the key concept in interpreting and redefining knowledge for the realization of an accountable, transparent, effective and efficient public service.

The Police Training Academy is part of the IAD and is responsible for the training of the Qatar Police Force. It has a Director and Vice Director and is then divided into sectors each with a set of trainers led by a principal trainer.

The courses are divided into obligatory and elective. The obligatory courses are essential for promotion and deal with the Law and police procedures. The elective courses are concerned with more general issues such as leadership, motivation etc and there was a feeling that these courses were not successful. This was the problem and SSM was chosen to delve deeper into the reasons underlying this dissatisfaction.

The Police Training Academy was chosen as the focus for this research.

Despite the relatively growing number of academic studies in the region that delve on vocational training. Only a few studies have addressed the subject of public sector training, especially within the context of Qatar. Hence, this study is envisaged to significantly add to the body of knowledge available in this field for researchers, policy makers and practitioners in the Gulf.

Within the context of the present study, the term 'training' is taken to mean *vocational training*. Thus defined, training improves the skills and knowledge needed for a particular job function or trade. This might include continued professional development (CPD) but not taking the professional qualifications themselves. It might take the form of practical training, a short course, or sometimes full-time or part-time study in a university or college. The latter will not include academic courses such as recognised degrees and higher degrees.

The boundaries provided by will be used to decide whether a particular training programme was excluded from the research. (Buyens and Wouters, 2005) suggest the following conditions for public sector training programmes: 'decision', 'objectives', 'employees' and 'financing'. A training programme should result only from a 'decision' taken by the enterprise to offer training. The primary 'objective' must be to enable the participant to gain new competencies or develop existing ones. Basic familiarisation programmes for the job, organisation or working environment such as induction programmes do not fall within the given classification.

The ‘employee’ condition will be met only if the person undertaking training has a working contract with the employer sponsoring training. People such as apprentices or those receiving special training will not be included. Finally, to fall within the survey population, the training activity should be ‘financed’ partly or entirely by the concerned ministry, whether directly by the provider or indirectly by the employees themselves. Part financing includes time off during normal working hours for training or paying for special training equipment.

The last 50 years has led to the massive development of vocational training in both public and private sectors. Training has generally been ‘outer-directed’ by HRM departments, and training needs often stemmed from organisational goals rather than individual needs (Pedler, 1994). Systematic training is a key aspect of human resource development, although much of the training now takes place with cohorts of trainees being trained in the same skills. Problems with this traditional style of management training subsequently led to a re-focusing on ‘learning’ with significant emphasis on learning-styles development.

Where used, the theory involved in training is often subsumed under a broader learning theory. It borrows most of its principles from the education theory, such as Bloom's Taxonomy (Bloom 1956) and various cognitive theories (Dawson, 2008; Lave, 1988; McClelland, *et al*, 1995). Other theories used include Reigeluths Elaboration Theory (Reigeluth, 1987), Experiential Learning (Chisholm, 2009) from authors such as Kolb (1984) and (Honey and Mumford (1992); Organisational Learning (Argyris & Schon 1978); and Social Learning Theory (Akdere, 2005; Bandura, 1986). Gagne’s Instructional Design Theory has particular relevance to the Ministry of Interior (Gagne & Driscoll, 1988) as it developed from military training and key aspects of the Ministry of Interior are organised along military lines.

Extant learning literature points to the three major dimensions of learning: skills, knowledge and attitude (Nadler & Nadler 1991). Training quality in public administration must consider these dimensions along with the views of several key stakeholders and applicable learning perspectives (Rusaw, 2007). These perspectives will include those of the learner, the training facilitator and the organisation. Together, these will allow an organisation to develop an appropriate training model where both the needs of the organisation and the trainees are considered in the drive for quality.

There are many definitions of the term ‘quality’ though many authors agree that Juran’s definition of "*fitness for intended use*" is at the heart of most quality systems (Juran, 2010). This is expanded in ISO 9000 which defined ‘quality’ "*the totality of features and characteristics of a product or service that bear on its ability to satisfy stated or implied needs.*" When it comes to training, most authors agree that quality can only be properly defined by a system of training evaluation.

There are two major forms of training evaluation. The first is based on a pragmatic system developed by Donald Kirkpatrick (1967) and is underpinned on empirical information. The second form is theoretically- based (Tamkin, *et al.* 2002). In the USA especially, systems developed by the International Board of Standards for Training, Performance and Instruction (IBSTPI) are widely- used (Fischer 2009).

After 50 years since its development, the Kirkpatrick (1959) approach has received wide recognition (Federman and Benn 2010). Some authors such as Hamblin (1974); Tannenbaum and Yukl (1992); Kaufman and Keller (Kaufman, *et al.* 1998); Phillips (1995, 1999) incorporated additional features to the Kirkpatrick model. Authors such as Alvarez, (2004) and Brinkerhoff (2006) expanded the Kirkpatrick model to include more steps and covered a wider range of stakeholders in training evaluation.

Kirkpatrick's (1959) model has four levels of evaluation, namely: (1) level 1 – *reaction* or feedback of participants; (2) level 2 – *learning* or learning success of participants; (3) level 3 – *behaviour* or learning transfer/application on the job; and (4) level 4 – results as measured by business success (Gessler, 2009). According to Kirkpatrick and Kirkpatrick (2013), "reactions of participants shall be measured on all programs for two reasons: to let the participants know the value of their reactions and to measure their reactions and obtain suggestions for improvement." The importance of participant feedback was based on the premise that "if training is going to be effective, it is important that trainees react favourably to it" (Kirkpatrick 1970). For level 2 – Kirkpatrick (1959) explained that the success of the training programme can be gauged if it is able to accomplish the following: (a) if the participants are able to gain an understanding of the "concepts, principles and techniques being taught"; (b) if the participants are able to "develop and/or improve skills"; and (c) if the participants have changes in their attitudes.

In addition, Kirkpatrick (1959) provided some important guidelines for evaluating learning success. These guidelines, as enumerated by Kirkpatrick (1959) include the following: (1) measuring "knowledge, skill and /or attitudes before and after the training"; (2) using "a paper-and- pencil test for knowledge and attitudes"; (3) administering a "performance test for skills"; (3) generating 100% response rate; and (4) using "a control group that does not receive training to compare it with the experimental group that receives training."

Level 3 evaluation involves the successful application of the learnt materials in the workplace. Kirkpatrick (1959) developed the following guidelines for measuring behavioural change due to training: (1) if possible, evaluate behaviour pre and post training; (2) since behaviour modification "and the development of new behavioural patterns take time, so the evaluation should be repeated after an appropriate amount of time"; (3) conduct a survey of one or more stakeholder groups consisting of "participants, superiors, colleagues of participants and others who can evaluate the behaviour of participants"; and (4) undertake "a cost-benefit analysis."

Level 4 evaluation, as pointed out by Kirkpatrick (1959) involves the evaluation of business results. According to Kirkpatrick (1959), the following question should be addressed during the evaluation: "how have business results changed due to training?" Kirkpatrick (1959) elaborated that "results could be determined by many factors including less turnover, improved quantity of work, improved quality, reduction of waste, reduction in wasted time, increased sales, reduction in costs, increase in profits, and return on investment (ROI)."

However, one of the criticisms of Kirkpatrick's model is that it was a largely pragmatist approach with weak theoretical grounding. Developers of other models have attempted to create training evaluation models that are anchored on theoretical grounds and covered areas such as parallel learning, education and knowledge transfer. Holton (1996) was one of Kirkpatrick's fiercest critics. He believed that any good evaluation model would specify outcomes correctly and account for the effective intervening variables that affect outcomes and indicate causal relationships. He proposed his own model with three primary outcome measures — learning, individual performance, and organisational results — which placed greater emphasis on secondary influences, especially individual learning characteristics that ties training in its evaluation much more closely into the learning theory.

2.1.1 Course Content

A dominant theme that emerged during the literature search related to vocational training is the topic of 'course content.' In addition, the importance of 'systems thinking competencies' in the

context of the learning organisation construct emerged as a new perspective relevant to training. Hence, this section of the literature review will discuss the results of the review pertaining to the following themes: (1) characteristics of effective course content within the context of vocational training; and (2) systems thinking competencies within the context of training in general.

2.1.2 Characteristics of Effective Course Content

Boyce and Pahl (2007) have highlighted the significance of course content in knowledge acquisition by explaining that course content is important in the acquisition of knowledge about a particular subject because knowledge, although intrinsic in nature, is also an implicit aspect of course content. According to Rudestam and Schoenholtz-Read (2002), vocational training courses should be designed in such a way that they match the trainees' needs. This view was supported by Chan et al. (2006) who argued that since the main goal of vocational training organisations is to afford industry-specific knowledge and skills to enhance the employability of individuals, these training organisations must design and subsequently deliver training courses that cater to the needs of trainees. Hence, Chan et al. (2006) elucidated that course content must be designed in such a way that employees or trainees are able to address industry-specific problems in their workplaces. Thus, course content must be designed by taking into consideration, the employee's own perspective on the manner by which their work-related needs are to be met.

Bradley (2002) suggested that training courses should be designed in such a way that they can be undertaken flexibly. Similarly, in the report commissioned by Germany's Federal Ministry for Economic Cooperation and Development (2012) that delves on the selection and structuring of content of vocational training courses, it was emphasised that since vocational training is intended to adapt to current developments, course content should be "adaptable and flexible to account for new circumstances." Furthermore, the report stressed the following salient points: (1) the training concept must be integrated into the cultural and social conditions of a country; (2) course content must be flexible and adaptable to the changing conditions of labour markets; (3) course content should allow "insights into general connections so that subjectively meaningful, networked knowledge structures can be developed" (Federal Ministry for Economic Cooperation and Development, 2012).

These suggestions buttress earlier recommendations made by Godfey (1997) regarding the design of course content for vocational training programmes. According to Godfey (1997), training institutions should be flexible enough to effectively respond to the dynamically-changing labour market situations. To achieve this, Godfey (1997) recommended the following: (1) course designers should be well in touch with the latest technological trends and international product markets that will affect the future economic structure of the country; (2) course designers should be consistently in touch with educators, trainers, employers, trainees, observers and job seekers in order to have a 'feel' for the relevant training programmes and labour markets.

In a study conducted by Pohl et al. (2005) which evaluated the design of an e-learning system for vocational training, it was concluded that the trainees found the course interesting and engaging which accounted for the high success rate of the training based on the completion rate. In addition, the trainees viewed the course as simple and usable — since the course content were perceived by trainees as highly relevant to their work practice. Findings of a study conducted by Nkirina (2009) which explored the challenges associated with integrating

entrepreneurship education in Tanzania's vocational training system point to the need for courses to be less theoretical and more practical; as well as to be more interesting to trainees as opposed to being boring. Hence, findings from the studies conducted by Pohl et al. (2005) and by Nkirina (2009) buttress the claims earlier made by Rudestam and Schoenholtz-Read (2002) and by Chan et al. (2006) with regards to the requirement for course content to meet the needs of trainees and to help them address problems specific to their workplaces.

Although most of the aforementioned literature (Godfey, 1997; Bradley, 2002; Rudestam & Schoenholtz-Read, 2002; Chan *et al*., 2006; Boyce & Pahl, 2007; Federal Ministry for Economic Cooperation and Development, 2012) is largely prescriptive in nature and hence lacks critical analysis, their key ideas were nonetheless buttressed by empirical studies (Pohl *et al*., 2005; Nkirina, 2009). Table 2.1 presents the summary of the results of the literature review on course content.

Table 2.1 Summary of the Results of the Literature Review on Course Content

Author	Type of Literature	Characteristic of Effective Course Content
Godfey (1997)	Peer-reviewed journal article	• Keeps pace with the latest technological trends and international product markets that will affect the future economic structure of the country. • Responsive to the dynamically- changing labour market situations.
Bradley (2002)	Case Study	• Offers flexibility
Rudestam and Schoenholtz-Read (2002)	Reference book	• Matches the needs of trainees
Chan et al. (2006)	Peer-reviewed journal article	• Matches the needs of trainees • Addresses industry-specific problems in the trainees' workplaces. • Takes into account, the trainees' own perspective on how their work-related needs are to be met.
Pohl et al. (2005)	Peer-reviewed journal article (Empirical research)	• Interesting and engaging • Highly relevant to the trainees' work practice
Boyce and Pahl (2007)	Peer-reviewed journal article	• Facilitates knowledge acquisition about a particular subject
Nkirina (2009)	Peer-reviewed journal article	• Less theoretical and more practical • Interesting to trainees

Federal Ministry for Economic Cooperation and Development, (2012)	Commissioned Report	• Integrates the cultural and social conditions of a country • Flexible and adaptable to the changing conditions of labour markets • Permits "insights into general connections so that subjectively meaningful, networked knowledge structures can be developed" (Federal Ministry for Economic Cooperation and Development, 2012).

Source: Created by the Researcher

2.2 Cultural Differences

2.2.1 Theoretical Frameworks Relevant to 'Cultural Differences'

The major sources were (1) *cross-cultural dimension framework* by Hofstede (1980; 2001); (2) *seven dimensions of culture* by Schwartz (1992); (3) *cultural syndromes* by Triandis (1994); and (4) *dimensions of culture* by Trompenaars (1993).

2.2.1.1 Hofstede's (1980, 2001) Cross-Cultural Dimension Framework

Hofstede's seminal work on cultural differences states "that people possess 'mental programs' that contain a dimension of national culture that are cultivated and reinforced through experience". (Hofstede 1980) He based his work on a sample of IBM employees scattered across 40 countries. His framework consists of five cultural dimensions, namely:

(1) *Power Distance Index (PDI)*

This measures the equity of power in the organisation

(2) *Uncertainty Avoidance Index (UAI),*

This measures how threatened the staff are when the situation is not clear

(3) *Individualism (IDV) vs. Collectivism*,

This measures whether the staff members can work in groups or by themselves i.e. are they socially integrated.

(4) *Masculinity (MAS)–Femininity (FEM)*

Is it a male dominant organisation or a gender neutral one?

(5) *Confucian dynamism*

This is his term for long or short term vision and action.

Hofstede's work has been often cited. e, g, "its clarity, parsimony, and resonance with managers" (Kirkman, Lowe & Gibson, 2006). Trompenaars states that his work is responsible "for opening management's eyes to the importance of the cross-cultural management subject." (Trompenaars 1993).

2.2.1.2 Schwartz' (1992) Seven Dimensions of Culture

Research by Schwartz produced the following cultural dimensions:

(a) *conservatism*,
(b) *intellectual autonomy*,
(c) *affective autonomy*,
(d) *hierarchy*,
(e) *mastery*,

(f) *egalitarian commitment*, and
(g) *harmony*.

Steenkamp (2001) and Kagitcibasi (1997) argued that Schwartz' values capture more cultural aspects than the dimensions developed by Hofstede. In addition, Brett and Okumura (1998) stressed that Schwartz's framework is superior to Hofstede's because "[…]it is based on a conceptualization of values; it was developed with systematic sampling, measurement and analysis techniques; and […] its normative data are recent, collected in the late 1980s and early 1990s." However, a key criticism is that that the cultural values were based purely on assumptions (Peng, Nisbett & Wong, 1997).

2.2.1.3 Trompenaars' (1994) Dimensions of Culture

Another model was discussed by Trompenaars (1993) who also had seven dimensions. These were:

(1) universalism versus particularism,

Universalism emphasises general rules and norms whereas particularism reacts to different circumstances. Universalism is usually found in a society that has strong family or tribal ties

(2) individualism versus collectivism,

A collectivist society will place societal norms over the rights of the individual as typified by the Soviet Union.

(3) neutral versus emotional,

This measures how much emotional responses are tolerated in the society. The "stiff upper lip" of the English would exemplify a neutral culture

(4) specific versus diffuse, #In a specific culture the private life of an individual is clearly delineated from the work environment. Diffuse culture would have more synthesis between private and public life.

(5) achievement versus ascription,

An achievement culture places great values on top managers and officials as being the one who shape society.

(6) orientation in time,

This dimension looks at the attitude towards time and punctuality

(7) attitudes towards the environment.

This examines the extent to which the society thinks it can control nature

Table 2.2 below presents the summary of the results of the literature review relevant to the models of cultural differences.

Table 2.2 Summary of the Results of the Literature Review Related to the Models of Cultural Differences

Author	Type of Research Conducted	Concept of Cultural Differences	Framework or Model	Benefits	Criticisms
Hofstede (1980, 2001)	Primary research involving a large sample of employees from 40 countries	Cultural differences are anchored on national culture that are cultivated and reinforced	Cross-Cultural Dimension Framework consisting of five cultural dimensions (power distance index,	Serves as the foundation for cross-cultural research related to a diverse range of disciplines, but has been	Largely based on a national level of analysis. Lacks construct validity when used at an individual level of analysis

	employed by IBM	through experience.	uncertainty avoidance index, individualism vs. collectivism, masculinity – femininity, Confucian dynamism	deemed more valuable to management	
Schwartz (1992)	A survey of teachers and students in more than 40 countries (primary research)	Cultural differences are based on universal human value types	Seven Dimensions of Culture (conservatism, intellectual autonomy, affective autonomy, hierarchy, mastery, egalitarian commitment, harmony)	Captures more cultural aspects than the dimensions developed by Hofstede (Kagitcibasi, 1997). Plays a more important role in trade-related studies compared to Hofstede's cultural dimensions (Ng, Lee & Soutar, 2007).	Cultural values were based purely on assumptions (Peng, Nisbett & Wong, 1997).
Trompenaars (1994)	Secondary research	Cross-cultural differences are based on seven fundamental dimensions of national culture	Seven fundamental dimensions of national culture (1) universalism versus particularism, (2) individualism versus collectivism, (3) neutral versus emotional, (4) specific versus diffuse, (5) achievement versus ascription, (6) orientation in time, and (7) attitudes towards the environment	Deemed useful in the areas of organizational management and change management, particularly within the context of corporate acquisitions, mergers and alliances	Did not take into account the impact of individual characteristics on behaviour as the level of analysis is largely on a national or country level of analysis. Only two dimensions could be clearly confirmed statistically — the Individualism / Achievement and Universalism / Diffuse dimensions (Hofstede, 1996). It lacks content validity (Hofstede, 1996).

Source: Created by the Researcher

2.2.2 Studies That Focus on Cultural Differences Relevant to Learning & Training

Knowledge acquisition is a major characteristic of vocational training. Hence, a review of literature that is related to knowledge acquisition or learning, as well as to training itself is required. This subsection presents the results of the review of studies that explore the impacts of cultural differences on: (1) group activities (Cox, Lobel & McLeod, 1991); (2) deductive reasoning (Unsworth & Medin (2005); (3) learning and achievement motivation (McClelland, 1961; Niles, 1995; Rogers & Spitzmueller (2009); and knowledge transfer (Li et al., 2014).

2.2.2.1 Impacts of Cultural Differences on Group Activities

Cox, Lobel and McLeod (1991) tested the hypothesis that differences in cultural norms would result in different behaviours while undertaking a group task. Cox, Lobel and McLeod (1991) examined the impacts of ethnic group differences between Asians, Blacks, Hispanics and Anglos in assessing competitive and cooperative behaviours on a group activity. The research tool that was used was the Prisoner's Dilemma Task wherein study participants were given the option to either cooperate or compete with one another. Results of the study indicate that groups consisting of participants with collectivist cultural traditions are more likely to display greater cooperative behaviour compared to those displaying individualistic cultural traditions, who are in turn more likely to be more competitive. Thus, the findings of this study buttress the frameworks that are related to the cultural dimension of *individualism versus collectivism* proposed by Hofstede (1980, 2001); Triandis (1994); and Trompenaars, (1993). A key limitation of this study, however, is that the results only addressed one cultural difference and one behavioural dimension of a collectivist orientation. In addition, despite the importance given to situational ethnicity and biculturalism, Cox, Lobel and McLeod (1991) did not investigate these factors.

2.2.2.2 Impacts of Cultural Differences in Deductive Reasoning

Unsworth and Medin (2005) investigated if indeed cultural differences are present in the use of intuitive or deductive as opposed to formal or inductive reasoning. Unsworth and Medin (2005) validated the findings of the study conducted by Norenzayan et al. (2002), wherein results of their experiments confirmed that cultural differences operate in deductive reasoning. According to Norenzayan et al. (2002), compared to European Americans, Koreans who participated in the study were found to be more conservative and were therefore less likely to claim that a particular argument is valid since they tend to have a belief bias. On the other hand, European Americans were found to be more likely to decontextualize an argument from its logical structure and are hence better than Koreans in judging the logical validity of arguments. However, Unsworth and Medin (2005) analysed the average hit and correct rejection rates in each of the experiments conducted by Norenzayan et al. (2002), and found contrasting evidence, claiming that European Americans were no better than Koreans at "determining the validity of concrete deductive arguments with conclusions varying in believability." Nonetheless, Unsworth and Medin (2005, p.528) claimed that it is possible that East Asians and European Americans use "different cognitive strategies in other cognitive tasks."

2.2.2.3 Cultural Differences in Learning and Achievement Motivation

Cultural differences in learning motivation were explored by various scholars in the past. For instance, in McClelland's (1961) seminal work that focused on the examination of the variations in achievement patterns amongst different cultures, particularly between Far Eastern and Western cultures, it has been argued that motivations for learning and achievement are

strongly associated with economic development and the rise and fall of civilisations. McClelland (1961) conducted a qualitative study that was aimed at analysing the achievement motive, as well entrepreneurial characteristics and behaviour and sources of achievement, both past and present, of what he considered as highly achieving societies. McClelland (1961) elucidated that cross-cultural differences in the levels for the need for achievement were attributable to differences in personality, which in turn, was attributed to child-rearing practices and to eco-cultural forces that are likely to generate socialization practices and instil varying levels of need for achievement.

Niles (1995) conducted a study that examined and compared the motivation patterns and learning strategies of Asian and Australian students enrolled at an Australian university. Niles (1995) administered a survey to Australian and overseas students studying at the Norther Territory University in the faculties of Arts, Education, Business, and Science and used the Study Process Questionnaire developed by Briggs (1987; cited in Niles, 1995). Findings of the study suggest the following: (1) there are both similarities and differences when it comes to motivation patterns and learning strategies; (2) while the Australian students were largely motivated by competition, the Asian students, on the other hand, were found to be more motivated by the need for social approval; and (3) the Asian students were not rote learners as claimed in prior literature. Thus, findings of the study highlight the strong influence of cultural differences on achievement motivation and learning strategies. In addition, findings of the study contradicted the earlier proposition of McClelland (1961) which highlighted that economic development was considered to be the key determinant of achievement motivation.

Rogers & Spitzmueller (2009) conducted a study that examined the impact of goal orientation and *individualism-collectivism* construct on the learning processes and performance outcomes of a technical training programme. Rogers & Spitzmueller (2009) collected data from 92 employees (all engineers) of a multinational corporation belonging to the oil and energy industry who were then enrolled at a technical training program. The international diversity of the sample was comprised by Americans (33%), Nigerians (25%), Canadians (9%) and other nationalities such as Russians, Qataris, Columbians, Indians, Papua New Guineans and Angolans (30%). Rogers & Spitzmueller (2009) used a subset of items from Hofstede's (1980) measure of individualism and collectivism. For the goal orientation variable, items for learning goal orientation and performance goal orientation from the measure developed by VandeWalle et al. (2001; cited in Rogers & Spitzmueller 2009, p. 191) were used. For the 'learning variable', differences between post-test and pre-test were computed. These tests were designed by the company and were subsequently used to ascertain whether participants were able to benefit from the training programme or otherwise. These tests were focused on the technical skills and knowledge relevant to the course content. For the 'motivation to learn' variable, a scale developed by Noe and Schmitt (1986, cited in Rogers & Spitzmueller 2009, p. 191) was used to determine whether or not the participants were motivated to acquire the relevant skills and knowledge. Rogers & Spitzmueller (2009) found that the individualism-collectivism construct could potentially serve as a key moderator of the influence of goal orientation on learning and motivation during training. Rogers & Spitzmueller (2009) highlighted that the individualism-collectivism construct bear some important implications for the training and development programmes of organisations. A key implication of the individualism-collectivism construct within the context of training and development programs is that important individual differences have the capacity or the potential to negatively affect the effectiveness of training for employees who are from different cultural backgrounds. Another

important implication, according to Rogers & Spitzmueller (2009), is that since goal orientation is induced by situational influences, simple manipulation of task instructions could increase performance and the likelihood of achieving learning goals. Thus, Rogers & Spitzmueller (2009) suggested that for organisations to create a climate for optimal training performance, they should consider the individualism-collectivism construct in shaping instructions and overviews within training.

2.2.2.4 Knowledge Transfer

Li et al. (2014) conducted a meta-analysis of the influencing factors on knowledge transfer with a particular emphasis on cultural factors. Li et al. (2014) analysed a total of 69 peer-reviewed articles that focus on knowledge transfer and Hofstede's (1980) Cross-Cultural Dimension Framework. The articles were divided into two groups based on the following cultural characteristics proposed by Hofstede (1980): (1) individualism, low power distance; and (2) collectivism, high power distance. Findings of the study indicate that the following factors affect the knowledge transfer process: "transfer willingness, trust, tie strength, credibility of the source, network centricity, and network density" (Li et al., 2014, p. 292). Furthermore, it was found that "the meta-analytic comparison of the influencing factors across two cultural contexts indicate that significant differences occur due to knowledge ambiguity, transfer capacity, transfer willingness and network centricity (Li et al., 2014, p. 292). Li et al. (2014, p.284) maintained that "in knowledge transfer activities, first, the knowledge seeker evaluates and subjectively locates the potential knowledge source, and the process of doing so is affected by power." However, a key limitation of the study is that it did not address more detailed dimensions of knowledge transfer such as efficiency and effectiveness as the scope of the analysis was limited to the aforementioned two cultural dimensions. Findings of the study nonetheless support the findings of previous studies.

Table 2.3 summarises the findings from the review of literature related to studies dealing with cultural differences on learning.

Table 2.3 Summary of Literature Review Results Relevant to Studies that Delve on Cultural Differences

Author	Type of Research Conducted	Main Thrust of Study	Findings
Cox, Lobel and McLeod (1991)	Primary research	Evaluated the impacts of cultural differences on group activities	Groups consisting of participants with collectivist cultural traditions are more likely to display greater cooperative behaviour compared to those displaying individualistic cultural traditions, who are in turn more likely to be more competitive
Unsworth and Medin (2005)	Secondary research	Validated the findings of the study conducted by Norenzayan et al. (2002)	Unsworth and Medin (2005) found contrasting evidence, claiming that European Americans were no better than Koreans at "determining

			the validity of concrete deductive arguments with conclusions varying in believability."
McClelland (1961)	Secondary research	Examination of the variations in achievement patterns amongst different cultures, particularly between Far Eastern and Western cultures	Cross-cultural differences in the levels for the need for achievement were attributable to differences in personality, which in turn, was attributed to child-rearing practices and to eco-cultural forces that are likely to generate socialization practices and instil varying levels of need for achievement
Niles (1995)	Primary research	Compared the motivation patterns and learning strategies of Asian and Australian students enrolled at an Australian university	(1) There are both similarities and differences when it comes to motivation patterns and learning strategies; (2) While the Australian students were largely motivated by competition, the Asian students, on the other hand, were found to be more motivated by the need for social approval; and (3) The Asian students were not rote learners as claimed in prior literature
Rogers & Spitzmueller (2009)	Primary research	Examined the impact of goal orientation and *individualism-collectivism* construct on the learning processes and performance outcomes of a technical training programme	The individualism-collectivism construct can potentially serve as a key moderator of the influence of goal orientation on learning and motivation during training
Li et al. (2014)	Secondary research	Conducted a meta-analysis of the influencing factors on knowledge transfer with a particular emphasis on cultural factors	The following factors affect the knowledge transfer process: "transfer willingness, trust, tie strength, credibility of the source, network centricity, and network density" (Li et al., 2014, p. 292).

			"In knowledge transfer activities, first, the knowledge seeker evaluates and subjectively locates the potential knowledge source, and the process of doing so is affected by power" (Li et al., 2014, p. 284)

Source: Created by the Researcher

2.3 The SSM Concept

If one accepts that training exists as a 'system' in Qatar, it is important to methodically evaluate it within a proper framework such as the Soft Systems Methodology (SSM) (Checkland and Scholes 1990). This will compel the student too look at the bigger picture within which the 'system' must develop (and often, is forced to develop). This bigger picture comprises the geo-political/socio-economic and above all, cultural/multi-cultural dimensions within which the 'system' is called upon to operate and/or develop. This bigger picture is what determines the development of the 'system' and as such, needs to be at the forefront of any propositions for the future development of this 'system'. This 'bigger picture' moreover, is often missing from much of the research, studies, reports, etc., as well as the discourses that define the 'system'. To adopt a systems approach will allow a more holistic view and better-grounded view of the 'system' (Jackson 2006).

As a methodology, Hindle (2011) argued that SSM is inherently multipurpose and flexible in nature. As such, it has been interpreted by practitioners in a diverse number of ways (Ledington & Donaldson, 1997; Checkland, 2000; Jackson, 2006; Rodriguez-Ulloa & Paucar-Caceres, 2005; Hindle, 2011). In the same vein, results of the literature review relevant to the SSM concept highlighted the existence of different working definitions of the term 'soft systems methodology'. Thus, finding a standard definition from the reviewed literature proved to be difficult. However, a key finding that emerged from the review is that working definitions were anchored primarily on the functional dimension of SSM.

For instance, most practitioners considered SSM as a learning process. Specifically, Tsoi (2004), considered SSM as "*a learning process* which aims at improvement and tries to solve a complex and problematical human situation." This perspective was supported by Rodriguez-Ulloa and Paucar-Caceres (2005) who described SSM as "*a learning process* which takes the form of an enquiry process in a situation that people are concerned." Rodriguez-Ulloa and Paucar-Caceres (2005) further explained that such process results in action "in a never ending learning cycle."

However, for Stowell (2009) and Hindle (2011), SSM is not a learning process, but rather an experiential learning activity. According to Stowell (2009, p. 883), SSM focuses on "seeking *understanding through experience and learning* as this kind of approach to investigation makes the process of learning itself prime rather than seeking a solution." In the same vein, Hindle (2011) emphasised that SSM is particularly useful in "tackling complex situations through the *experiential learning* of a group of participants." This experiential learning perspective places emphasis on the involvement or participation of stakeholders during the conduct of the SSM and is thus more applicable to learning within social contexts such as group learning. This is also applicable in action research and in project management. In contrast, the learning process

perspective is limited to the involvement of the researcher in trying to solve a problematical human situation.

Other practitioners see SSM as a tool used in determining the problem and subsequently arriving at a solution. This view of SSM as a tool has led to the formulation of several connotative meanings associated with the use of SSM as a tool, such as: (1) 'a way of analyzing' (Kayrooz & Trevitt, 2005); (2) 'a systematic framework' (Checkland & Poulter, 2006); (3) 'a problem-solving tool' (Leitch & Warren, 2008); (4) 'a process for managing' (Hardman and Paucar-Caceres, 2011); and (5) 'a problem-structuring method' (Montevechi & Friend , 2012). Kayrooz & Trevitt (2005) defined SSM as "*a way of analysing* the context of the research study. It comprises a range of interactions involving the context, the ideal envisaged and the interaction between the context and the ideal." Checkland and Poulter (2006) considered SSM as *a systematic framework* that is used to deal with problematical social situations. Leitch and Warren (2008) asserted that SSM is "often not referred to as a methodology but *a problem solving tool*, which makes it suitable for a variety of situations." According to Hardman and Paucar-Caceres (2011), SSM pertains to the application of systems principles to "structured thinking about things that happen in the world." They explicated that in a broader sense, *SSM is a process for managing and for arriving at organised action*. For Montevechi and Friend (2012), SSM is fundamentally, a *problem-structuring method* that provides a structured series of phases that are aimed at guiding the "qualitative process involved in complex problem definition." The diversity of these connotations attests to the earlier claims of Hindle (2011) about the disparate views and interpretations of practitioners regarding SSM.

Table 2.4 below presents the literature review matrix relevant to the various working definitions and connotations of SSM found in extant literature.

Table 2.4 Literature Review Matrix of the Definitions and Connotations of SSM

<table>
<tr><th>Main Themes Found in Working Definitions of SSM</th><th colspan="5">Authors</th></tr>
<tr><td rowspan="2">SSM as a learning process</td><td colspan="2">Tsoi (2004, p. 1027)</td><td colspan="3">Rodriguez-Ulloa and Paucar-Caceres (2005, p. 308)</td></tr>
<tr><td colspan="2">SSM is "a learning process which aims at improvement and tries to solve a complex and problematical human situation."</td><td colspan="3">SSM is "a learning process which takes the form of an enquiry process in a situation that people are concerned."</td></tr>
<tr><td rowspan="2">SSM as an experiential learning activity</td><td colspan="2">Stowell (2009, p. 883)</td><td colspan="3">Hindle (2011)</td></tr>
<tr><td colspan="2">SSM focuses on "seeking understanding through experience and learning as this kind of approach to investigation makes the process of learning itself prime rather than seeking a solution."</td><td colspan="3">SSM is particularly useful in "tackling complex situations through the experiential learning of a group of participants."</td></tr>
<tr><td>Connotative meanings of SSM</td><td>Kayrooz & Trevitt (2005, p. 341)</td><td>Leitch and Warren (2008)</td><td>Checkland and Poulter (2006)</td><td>Hardman and Paucar-Caceres (2011)</td><td>Montevechi and Friend (2012)</td></tr>
</table>

	"*A way of analysing* the context of the research study."	*A problem-solving tool* rather than a methodology	*A systematic framework* that is used to deal with problematical social situations	*A process for managing* and for arriving at organised action	*A problem-structuring method* that provides a structured series of phases

Source: Created by the Researcher

The present study adopts the definition formulated by Tsoi (2004) and by Rodriguez-Ulloa and Paucar-Caceres (2005) who defined SSM as a learning process "which aims at improvement and tries to solve a complex and problematical human situation" (Tsoi, 2004); and which "takes the form of an enquiry process in a situation that people are concerned" (Rodriguez-Ulloa & Paucar-Caceres, 2005). Thus, taken together, the present study alludes to SSM as *a learning process that follows an enquiry approach aimed at improving and addressing a problematical social situation.* The adoption of the aforementioned definition of SSM is underpinned on the focus of the study, which is the training system in IAD, and which places the emphasis on the training courses offered rather than on the organisational context of IAD. As such, this consideration excludes the experiential learning dimension of stakeholders since the design of the improved versions of the courses will be undertaken by this researcher, based on the results of data analysis.

Furthermore, in terms of the connotative meaning, the present study adopts the connotation put forward by Kayrooz & Trevitt (2005) which considers SSM as "a way of analysing the context of the research study. It comprises a range of interactions involving the context, the ideal envisaged and the interaction between the context and the ideal." Such connotation is deemed well- suited for the present study which intends to analyse the context of the study (training system of IAD), the ideal envisaged (improved versions of training courses), and the interaction between the context and the ideal (evaluation of the real-world view and the conceptual model of the training system of IAD).

2.3.1 Purpose of SSM

A dominant theme that emerged from the literature review centres on the purpose of SSM.claimed that SSM is aimed at dealing with real-world problems of management. As such, several authors have documented its utility for learning and systems design (Checkland & Scholes, 1990; Reid 1999; Hindle, 2011; Hardman and Paucar-Caceres; 2011). In addition, Steinfort (2010) emphasised that SSM is helpful for understanding the determinants of project management.

A significant body of research has also highlighted the evaluatory nature of SSM that enables it to improve problematical situations by assessing the current situation and subsequently bringing about changes. For instance, Kayrooz & Trevitt (2005) asserted that the major purpose of SSM is to distinguish the extant system as well as its interrelated conditions so that the hindrances and opportunities for change can be identified and the potential for improvement, systematically examined.

Rodriguez-Ulloa and Paucar-Caceres (2005) claimed that SSM effectively separates the 'real- world' from the 'systems thinking world', which ensures that 'systems', considered as abstract concepts, are not seen in the 'real-world'. This consideration eventually facilitates the achievement of improvements to the situations under scrutiny. This view of SSM was later

buttressed by Kotiadis and Robinson (2008) who referred to it as a problem structuring method; and by Baskerville, Pries-Heje and Venable (2009) who argued that SSM effectively "distinguishes thinking in the real world from thinking in an abstract, systems world." Similarly, Hardman and Paucar-Caceres (2011) supported this inherently evaluatory nature of SSM and claimed that SSM differentiates conceptual models of "potentially realizable systems with each other and the real world, and derives systematically desirable and culturally- feasible improvements."

From a pragmatic viewpoint, Checkland (2000) asserted that the purpose of SSM is to provide "management tools for considering chaos and advances forward thinking agreements for action, opening up novel and elegant proposals for change." Watson (2012) explained that the goal of SSM is to "bring about changes" that are aimed at improving problematical situations. Such changes, according to Watson (2012), can take the form of actions such as structural or process changes, or the form of attitudinal changes such as changes in outlook or perspective. In essence therefore, SSM, according to Montevechi and Friend (2012), aims to "transparently structure the understanding process undertaken by researchers." Table 2.2 presents the summary of the results of the literature review relevant to the purpose of SSM. As shown in Table 2.2, SSM has many purposes or goals which can be categorized into the following: (1) SSM is used for dealing with real-world problems of management, with learning and systems design, and with project management; (2) SSM is used in the evaluation of extant systems; and (3) SSM is used in bringing about changes and improvements to the problematical situation. Table 2.5 shows the findings from the review of literature related to the purpose of SSM.

Table 2.5 Literature Review Matrix Relevant to the Purpose of SSM

Dominant Themes Relevant to the Purpose of SSM	**Authors**		
Utility of SSM	Montevechi and Friend (2012)	Checkland & Scholes (1990), Reid et al. (1999), Hindle (2011), Hardman and Paucar-Caceres (2011)	Steinfort (2010)
	Real-world problems of management	Learning and systems design	Project Management
Goal of evaluating extant systems	Kayrooz & Trevitt (2005)	Rodriguez-Ulloa and Paucar-Caceres (2005), Baskerville, Pries-Heje and Venable (2009)	Kotiadis and Robinson (2008), Montevechi and Friend (2012)
	SSM distinguishes current systems	SSM separates 'real-world' from systems thinking world	SSM structures the problem
Goal of bringing about changes and improvements	Checkland (2000)	Watson (2012)	
	SSM advances forward thinking agreements for action	SSM's goal is to change and improve problematical situations.	

2.3.2 The SSM Paradigm

Numerous scholars have asserted that SSM follows an interpretive paradigm (Checkland, 2000); Checkland & Scholes, 1990; Brocklesby, 1995; Rodriguez-Ulloa & Paucar-Caceres, 2005; Checkland & Poulter, 2006; Pollack, 2007; Hindle, 2011). For instance, Brocklesby (1995) claimed that SSM helps improve the understanding of situations under study by means of "participants' self- reflective enquiry." In addition, Brocklesby (1995) maintained that SSM follows the interpretive tradition and is commonly employed as an epistemological tool that enables a greater understanding and appreciation of the problematical situation.

Rodriguez-Ulloa and Paucar-Caceres (2005) elucidated that various actors involved in the given problematical situation tend to evaluate and perceive the changing flux of events and ideas associated with the situation - subsequently constructing problems that must be addressed. This view buttressed Brocklesby's (1995) self-reflective enquiry argument regarding SSM. Thus, as Pollack (2007) has asserted, SSM is closely associated with "an interpretive epistemology, inductive reasoning, and exploratory, qualitative techniques, which emphasise contextual relevance rather than objectivity." Indeed, various practitioners such as Checkland (2000), Checkland and Poulter (2006), and Hindle (2011) have demonstrated that SSM considers any perceived problems to be always inherently subjective. This has been attributed to the importance of the concept of Weltanschauung and the multiple perspectives of a problematical situation (Mingers & Taylor, 1992; Checkland & Poulter, 2006).

But perhaps the more solid underpinnings of the SSM interpretive paradigm can be found to be deeply rooted in its intrinsic features. Checkland (2000) provided a detailed description of the general features of SSM that fortify its interpretive foundation, namely: (1) SSM posits that due to the autonomy of individuals and groups, widely varying evaluations are often generated eventually leading to different actions; (2) it assumes that "in consciously articulating the process of perceiving, evaluating and deciding to act, system ideas would be helpful"; (3) it takes consideration of the requirement for describing "any human activity in relation to a particular image of the world"; (4) it compares pure models of human activity systems with perceptions of real-world situations; and (5) it is a participative process since it is essentially "an articulation of a complex social process in which assumptions about the world – the relevant myths and meanings as well as the logics of achieving purposes which are expressed in the system models are teased out, challenged and tested" and hence proceeds via debate.

It is therefore clear that these intrinsic features of SSM result in subjectivity. This subjectivity/ interpretivism argument was strongly supported by many authors such as Mingers & Taylor, 1992; Crowe, Beeby and Gammack (1996), Jackson (2006), and Stowell (2009) who all claimed that SSM falls within the phenomenological tradition, which is in turn, linked with qualitative research methods (Patton, 1990). Thus, there is virtually an absence of neither debate nor disagreement as to the interpretivist paradigm of SSM.

SSM has been successfully applied in various learning environments such as in undergraduate teaching and learning in the design of an education programme (Tsoi, 2004); in module development (Hindle, 2011); and in managed learning (Hardman & Paucar-Caceres, 2011). Tsoi (2004) has highlighted the usefulness of SSM in establishing a new methodology for designing an education programme. In the same vein, in the study conducted by Hindle (2011), the utility of SSM in the development of a case study and a teaching module has been documented. Furthermore, results of the literature review have identified the following key themes relevant to SSM: (1) one of its key goals is to evaluate extant systems by distinguishing current systems (Kayrooz & Trevitt, 2005), by separating 'real-world' from the systems

thinking world (Rodriguez-Ulloa and Paucar-Caceres, 2004; Baskerville, Pries-Heje & Venable, 2009); and by structuring the problem (Kotiadis & Robinson, 2008, Montevechi & Friend, 2012); and (2) it brings about changes and improvements to extant systems by advancing forward thinking agreements for action (Checkland, 2000, Watson, 2012).

2.3.3 The Seven Stages

The resilience of the seven stages version of SSM has been highlighted by Checkland (2000) who asserted that it can be readily understood since the stages unfold in a logical sequence. Additionally, Rodriguez-Ulloa & Paucar-Caceres (2004) assert that the seven stages version of SSM "is still the most convincing and helpful account of the SSM enquiry." The seven stages version is closely linked with the Mode1 type of enquiry which has been described by Turner (2008) in the following manner:

Mode 1 is seen as an 'intervention' into the problem situation, and the underlying intentions are to provide those coming from outside the organisation carrying out the 'enquiry' with further insight into SSM itself and those from within the organisation who own the problem with a good idea of how to go about improving the 'problem situation'. (Turner, 2008, p.39).

Although this researcher comes from within the MOI, the Mode 1 type of enquiry is considered appropriate for the present study due to the following reasons: (1) it is applicable for undertaking a study and is "more accessible to the novice, with more specific activities in the stages and less generalized iteration" than the latter (Baskerville, Pries-Heje & Venable (2009); and (2) it is typically undertaken by novice researchers as opposed to systems practitioners.

Basically, the SSM concept is hinged on the use of two features, namely: (1) *the problem* as it is understood in the 'real world'; and (2) *the problem* as it is analysed in the 'systems world'. Results of the analysis and conclusions drawn "from the latter are then brought back into the 'real world' with a more substantial understanding of the problem and thus, possible routes to solutions" (Cassidy & Cassidy, 2012). Figure 3.1 presents the conceptual framework of the present study, which is comprised by the seven stages version of SSM. As seen in Figure 3.1, stage 1 and 2 of SSM involve finding out about the problem situation (stage 1) and subsequently expressing it in rich pictures (stage 2). Stage 3 of SSM involves naming relevant human activity systems in 'root definitions' which is guided by a technique called CATWOE Analysis. Stage 4 involves building conceptual models from root definitions. Stage 4 consists of comparing the conceptual models with the perceived reality. Stage 6 involves making feasible, desirable changes based on the results of chapter 4. Finally, Stage 7 involves taking action to improve the problematical situation (Baskerville, Pries-Heje & Venable, 2009). Figure 2.1 presents the conceptual framework of this study which is basically comprised by the seven stages version of SSM.

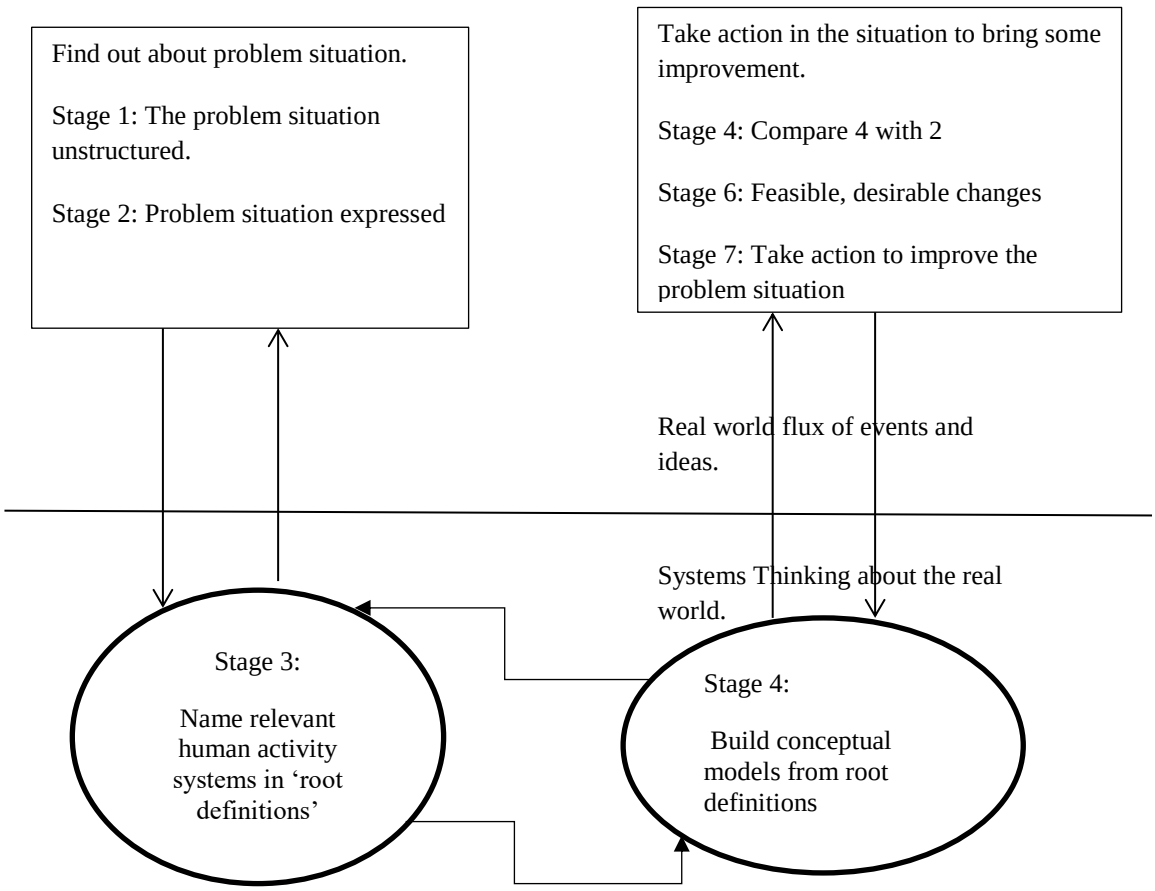


Figure 2.1 Conceptual Framework of the Present Study – Seven Stages Version of SSM

Source: Rodriguez-Ulloa & Paucar-Caceres (2004)

The seven stages version of SSM is discussed in more detail in the succeeding paragraphs.

2.3.3.1 Stage 1: Finding Out About the Problem Situation

The first stage involves acknowledging and defining the problematical situation and subsequently assessing why it is particularly important (Ramadhan, Sensuse & Arymurthy 2012). Levy & Williams (2004) explains that stage 1 requires an initial collection of relevant literature and other resources such as focus groups or whatever is appropriate to gain a comprehensive understanding and initial explanation of the problem. Levy &Williams (2004) further elucidates that stage 1 is a preliminary evaluation and may change as the problematical situations becomes better understood. Checkland (2000) recommends that the researcher bear in mind that "the personality traits, experience, knowledge, and interests of" the investigator will impact on "what is noticed and what is taken to be significant."

2.3.3.2 Stage 2: Problem Expression Expressed

Stage 2 of SSM involves the expression of the problem in rich pictures. This is required in order to examine the problem situation in a holistic manner. The expression of the problem in rich pictures is a powerful step to gain an understanding of the phenomena and events occurring in a particular system of reference where "something is not working well and something needs to be done to improve the problem situation" (Rodriguez-Ulloa and Paucar-Caceres, 2005). Cassidy and Cassidy (2012) explain that "rich pictures are cartoon like

drawings or sketches, illustrating the different aspects of the problem to be analysed." Rich pictures are considered epistemological tools that help capture the real situation more vividly (Rodriguez-Ulloa and Paucar-Caceres, 2005).

2.3.3.3 Stage 3: Problem-Oriented Root Definitions

Stage 3 of the SSM involves the formulation of *root definitions* which describe the purpose of the different systems or the processes of the system- in- question (Ramadhan, Sensuse & Arymurthy, 2012; Staadt, 2012). The 'root definitions' afford an ideal mental construct of what the system- in -question must attain Platt and Warwick (1994) and Ramadhan, Sensuse & Arymurthy (2012) elucidate that these root definitions are formulated with the use of six key elements that are represented in the CATWOE analysis which is a mnemonic code for the following: (1) 'C', which stands for *customers,* pertains to those who are the people affected by the system- in -question, who could either be beneficiaries or victims of said system; (2) 'A', which stands for *actor,* pertains to those people participating in the system- in- question; (3) 'T', which stands for *transformation,* pertains to the core of the root definition- the transformation carried out by the system in -question; (4) 'W', which stands for *weltanschauung or world view* — which is responsible for the actual sense making of the root definition being developed for the system- in -question; (4) 'O', which stands for *ownership,* pertains to the persons with the authority to decide on the future of the system- in -question; and (6) 'E', which stands for *environment,* pertains to the wider system or the wider environment in which the system- in -question operates. Cassidy and Cassidy (2012, p. 41) further define the environment as "the world that surrounds and influences the system, but has no control over it." Checkland (1990, cited in Cassidy & Cassidy, 2012, p. 41) points out that "the environment lies outside the system boundary and the constraints are the assumed impositions." In addition, Platt and Warwick (1995) recommend the incorporation of the often diverse views of individuals regarding the system- in -question since such views often lead to the formulation of inferences which are not explicit.

2.3.3.4 Stage 4: Creation of Conceptual Models

The fourth stage of the SSM involves the formulation of a conceptual model, which must be designed, with the primary purpose of identifying the minimum required activities for the system-in-question or human activity system (HAS). It must represent the relationships between the activities and must be based solely on the root definition (Platt & Warwick, 1995). The conceptual model must also be able to show "all the necessary components of the transformation of input to output as described in the root definition" and subsequently present the subsystems that can be drawn from the model in a process called 'decomposing' which will show how "sub systems can then be developed individually" (Cassidy & Cassidy, 2012). In addition, the activities must be expressed to show "what is being done as opposed to how it is done. How an activity is achieved can be used within the root definition as a constraint of the system, such as how a particular activity will be controlled" (Platt and Warwick (1995) recommend the inclusion of all the elements of the CATWOE mnemonic in the conceptual model, but at the same time, the exclusion of the knowledge of the 'real world.'

2.3.3.5 Stage 5: Comparison between the Conceptual Model and the Real World

The fifth stage of the SSM involves comparing the conceptual model with the real world (Cassidy & Cassidy, 2012; Staadt, 2012; White, 2012). The purpose of such comparison is to determine if there are potential changes or modifications in the real world since it is likely that

activities represented in the conceptual model "do not exist in the real world (Platt & Warwick, 1995). Thus, this particular stage of the SSM is represented by a shift back form systems thinking to the real world flux of events and ideas (Baskerville, Pries-Heje & Venable, 2009).

2.3.3.6 Stage 6: Identification of Desirable Changes

The sixth stage of the SSM involves making modifications to the conceptual model in order to incorporate the interests of the actors (Ramadhan, Sensuse & Arymurthy, 2012). Any disparity arising from the comparison between the conceptual model and the real world (stage 4) will serve as the recommendation for change. However, differences between the conceptual model and the real world must not "never result" in the modification of the conceptual model since the conceptual model already represents the activities for the emergent properties of the system- in -question (Platt & Warwick, 1995). In addition, this stage should also take into consideration whether or not the identified areas for improvement are acceptable and thus, can be eventually integrated into the new model (Baskerville, Pries-Heje & Venable, 2009). In addition, modifications should follow the desired model and be informed by historical, cultural and political aspects whenever feasible. These modifications "may include changes in attitudes, structures or procedures" (Ramadhan, Sensuse & Arymurthy, 2012, p. 149).

2.3.3.7 Stage 7: Taking Action to Bring About Improvement

The seventh stage involves taking action in order to bring about improvement by implementing the model and fixing the identified problem (s) (Platt & Warwick, 1995; Checkland, 2000; Baskerville, Pries-Heje & Venable, 2009; Ramadhan, Sensuse & Arymurthy, 2012). Ramadhan, Sensuse & Arymurthy (2012, p. 149) assert that "in this step, the conclusions are drawn and long-term solution is formulated."

2.3.4 Strengths and Weaknesses of SSM

According to Mingers & Taylor (1992), SSM's strength rests on its consideration of the social, political and historical aspects of the problematical situation. This has been buttressed by the claims of Hardman and Paucar-Caceres (2011) who elucidated that one of the key strengths of SSM with reference to measuring system performance rests on its ability to explicitly cope with the diverse perspectives of stakeholders through the Weltanschauung or the world-view concept. This subsequently results in the reflection of the needs of the different stakeholders within the context of the system in question (Hardman & Paucar-Caceres, 2011). Indeed, many authors considered this interpretive paradigm of SSM as its key strength (Doyle & Wood, 1991; Flood & Jackson, 1991; Flood & Ulrich, 1991; Crowe, Beeby & Gammack., 1996; Stowell, 2009). As Stowell (2009) asserted, SSM's mode two type of enquiry is "the clearest example of interpretive systems that exists in a practical form."

On the other hand, Mingers & White (2010), Flood and Jackson (1991 (Jackson, 2006), uncovered the limitations associated with SSM. They all argued that SSM, in essence, could not be considered a problem-solving methodology due to its interpretive foundation but asserted that SSM is a methodology that is based on the examination of the 'real-world' perspective whose models are not accurate representations of the real-world and are thus, not normative. SSM from the viewpoint of a framework of ideal situations. Moreover, they argued that due to the very subjective character of SSM, it bears the tendency to lead to regulatory, as opposed to "radical agendas for change." In addition, they maintained that SSM is time consuming and was considered predominantly prescriptive in its early days of use. In addition, Rodriguez-Ulloa and Paucar-Caceres (2005) found the that the modelling stage particularly

limits the intervention due to its failure to afford a technological tool that can be used to help grasp the consequences of the suggested models, resulting in the lack of realization of the impacts of the proposed changes by the analyst. To enrich and further appreciate the intervention, Rodriguez-Ulloa and Paucar-Caceres (2005) suggested the incorporation of system dynamics modelling features.
Table 2.6 shows the summary of the results of the literature review relevant to the strengths and weaknesses of SSM.

Table 2.6 Literature Review Matrix of the Strengths and Weaknesses of SSM

Main Theme	Authors		
Strength of SSM	Doyle & Wood (1991); Flood & Jackson (1991); Flood & Ulrich (1991); Crowe at al. (1996); Stowell (2009)	Mingers & Taylor (1992)	Hardman and Paucar-Caceres (2011)
	Interpretivist paradigm of SSM	SSM considers the social, political and historical aspects of the problem	SSM's Weltanschauung or the world-view concept
Weakness of SSM	Mingers (1984), Flood and Jackson (1991	Platt & Warwick, 1995	Rodriguez-Ulloa and Paucar-Caceres (2005)
	Interpretivist paradigm of SSM	SSM is time consuming and prescriptive	The modelling stage limits the intervention and needs to be complemented with system dynamics modelling features

Source: Created by the Researcher

As shown in Table 2.6, the interpretive paradigm of SSM is considered its key strength as well as its major weakness. Perhaps this dilemma can best be resolved by careful consideration of what is understood by the term 'interpretive' within the SSM context, such as 'interpretive' as in the case of the Weltanschauung or the world-view concept (strength) or 'interpretive' as in the case of non-normative frameworks of ideal situations (weakness).

2.3.5 SSM Applications in Learning Environments

Although by meaning making, the term 'vocational training' has often been construed to be somewhat "narrow and function-specific, such practical or experiential knowledge nevertheless shares prestige with "the scientific disciplines and constituted fields". Thus, a review of literature relevant to the application of SSM in academic fields and in learning systems in general is required – since knowledge acquisition, is also a key feature of vocational training systems. However, there seems to be a lack in studies that are relevant to the utility of SSM in training systems and only a few studies that focused on the applications of SSM in learning environments were found in extant literature. These studies focused on the examination of the effectiveness of SSM in evaluating the process of teaching and learning at undergraduate education in designing an education programme (Tsoi, 2004), in module development (Hindle, 2011), and in evaluating systems performance in a managed learning environment (Hardman & Paucar-Caceres, 2011).

2.3.5.1 Teaching and Learning at Undergraduate Education

To gain a deeper understanding of the process of teaching and learning at undergraduate education in general, Patel (1995) used SSM to conduct an audit of the teaching and learning

strategies employed in the delivery of academic subjects to undergraduate students. In particular, Patel (1995) monitored relevant teaching and learning activities and subsequently compared them to a set of predetermined performance measures. In addition, Patel (1995) provided a detailed discussion of the manner by which SSM can be used to identify the problem and "to generate recommendations for improving the expressed problem area." In conclusion, Patel (1995) highlighted the usefulness of SSM in analysing real-world concerns pertaining to the field of educational practice. Although the focus of Patel (1995)'s study is on a type of formal education, it remains relevant to the present study because it specified the different steps employed to carry out SSM to evaluate the performance of an educational practice against a set of performance criteria – which is the main thrust of the present study. As such, this study offers a sound methodological insight to the present study. However, this study was very descriptive in nature and was more of a reflective work, thereby lacking in critical analysis of the information presented. Moreover, it failed to discuss the data collection method used, the types of data gathered and the results of data analysis.

2.3.5.2 Designing an Education Programme

Tsoi (2004) investigated the effectiveness of applying SSM to establish a new methodology for designing an education programme within a Computer Science Department of a medium-sized, private, post-secondary, catholic college in Hong Kong. Tsoi (2004) modified the 'Checkland methodology', which consisted of seven stages to conduct the study. Tsoi's (2004) version of the SSM consisted of eight basic stages and was named Soft Systems Programme Planning Methodology (SSPPM). The eight basic stages were as follows: (1) environmental scoping and analysis; (2) analysis of the programme design issues from a social perspective; (3) analysis of the programme design issues from an organisational perspective; (4) analysis of the different perceptions of stakeholders regarding the issues affecting the programme; (5) formulation of root definitions; (6) comparison between the conceptual model and the real-world views of the programme; (7) debate with the stakeholders regarding the final programme structure; and (8) modifying the programme based on the results of the debate. Tsoi (2004) found SSPPM effective in considering all related information and limitations before the design of the new programme.

Whilst this contribution is a modified version of the standard, widely-used 'Checkland methodology', it nevertheless included the fundamental stages of the 'Checkland methodology' such as problem structuring, which, in this case, involved stages 1 to 4; formulation of root definitions; comparison between the conceptual model and the real-world views; evaluation of the models; and taking appropriate action based on the evaluation. Furthermore, this contribution is relevant to the present study because the focus of the investigation is on an education programme which is essentially a form of knowledge acquisition. Although the focus of the present study is on vocational training, as opposed to academic, formal education – it is still deemed relevant to the present study since "practical intelligence and occupational skills and know-how are recognized as forms of knowledge just as noble as academic forms." In addition, SSM was used by Tsoi (2004) as the overarching approach in designing an education programme, which is also the proposed methodology of the present study. However, this contribution did not present the results of the evaluation and did not provide a discussion on the performance measures used in assessing the effectiveness of the design of the new education programme.

2.3.5.3 Module Development

Hindle (2011) discussed the teaching of soft systems methodology (SSM) to selected undergraduate, postgraduate, and executive students in the UK and suggested a blueprint for a module. The research procedures employed by Hindle consisted of the following: (1) situation mapping; (2) systems modelling; and (3) action planning. In situation mapping, the study participants created a freehand representation of the situation to identify its main elements that include the "basic structure, stakeholder views, and environmental constraints" and to determine the major issues or problems In systems modelling, a range of systems models relevant to the situation were developed resulting in three options. Finally, in action planning, ideas and action plans were developed to address the problems. In this particular stage, each developed model was compared with existing modules to determine the differences between them. Such comparison enabled each participant to assess the viability and desirability of implementing new ideas and module designs. In conclusion, Hindle considered "SSM as an all-purpose approach to tackling complex situations, which can be conceived as an experiential learning cycle."

This contribution is helpful for the present study because it helps illuminate the required actions necessary to deal with a complex learning situation, to come up with the most appropriate solution, and to use systems modelling to structure discussion between stakeholders. The overall research methodology employed by Hindle is very similar to that proposed by this researcher. Hindle used SSM in developing a case study and a teaching module that were actually improvements of their previous versions. Similarly, the proposed methodology of the present study involves the following steps, namely: (1) an accurate identification of the problem through the use of SSM; (2) development of a set of performance measures to assess the effectiveness of the training courses offered by IAD prior to the actual conduct of the research and after improvements or changes are incorporated with the courses, with the use of SSM; and (3) designing new courses based on the results of the evaluation undertaken in step 2. However, a key limitation of this study is that students with little experience of the real world are likely to find developing the set of performance measures and subsequently designing new courses based on the evaluation results particularly daunting and difficult. In addition, this study was conducted in the UK setting and the results may not be applicable to the specific context of IAD.

2.3.5.4 Managed Learning

The utility of SSM in evaluating systems performance in the field of managed learning has been demonstrated by Hardman and Paucar-Caceres (2011) who used the seven-step version of the SSM to evaluate the managed learning environment at Manchester Metropolitan University (MMU). Hardman and Paucar-Caceres (2011) justified the use of the seven-step version of the SSM by asserting that it closely depicts "a real-world and a purely conceptual world." Furthermore, Hardman and Paucar-Caceres (2011) used the following performance measures developed by Checkland and Scholes (1990), namely: efficacy (E1); efficiency (E2); effectiveness (E3); ethicality (E4); and elegance (E5). These performance measures, as explained by Checkland 2000) are specifically designed to assess the success or failure of the system's transformation process.

Hardman and Paucar-Caceres (2011) found that SSM effectively coped with the evaluation framework based on the criteria set within the MMU context. The criteria were based on stakeholder expectations across two iterations, namely: availability of the system (hard issues),

and the impact of culture on the students (soft issues). However, one important issue that emerged from the study was that by contextualising SSM to the evaluation requirements of a managed learning environment, a need to adjust the performance measures suggested by SSM surfaced.

With reference to the current study which focuses on IAD's training system, Hardman and Paucar-Caceres' (2011) study can help illuminate the methodological approach that would be deemed most appropriate for the current study in terms of the following considerations, namely: (1) the particular version of the SSM that must be adopted; and (2) the performance measures that should be used to assess the current training system being used by IAD. These considerations are anchored on the similarity of the current study with the study conducted by Hardman and Paucar-Caceres (2011) in terms of the evaluation of the impact of culture on the students or trainees.

Table 2.7 below shows the literature review matrix of the summary of results of the review relevant to studies that focused on SSM Applications in learning environments.

Table 2.7 Literature Review Matrix Relevant to SSM Applications in Learning Systems

Main Themes	**Authors**			
Main Thrust of the Study	Patel (1995)	Tsoi (2004)	Hindle (2011)	Hardman and Paucar-Caceres (2011)
	Teaching and Learning at Undergraduate Education	Designing an Education Programme	Module Development	Managed Learning
Specific Application of SSM	Audit of the teaching and learning strategies at an undergraduate level	Evaluation of current education programme and design of an improved version	Identification of issues and development of a case study and a teaching module	Evaluation of systems performance of a managed learning environment
Version of the SSM Used	Seven Stages	Eight Stages (Modification of the Seven Stages Version)	Four Stages	Seven Stages
Key Findings	SSM was useful in assessing real-world concerns of educational practice	SSM was effective in considering all related information and limitations prior to the design of the new education programme	SSM is a multi-purpose approach to addressing complex situations. It is an 'experiential learning cycle.'	SSM effectively coped with the evaluation framework based on the criteria set within the context of a managed learning environment
Limitations	More of a reflective work, lacking in critical analysis	Failed to provide a discussion on the performance measures used in assessing the effectiveness of the design of the new education programme	Students with little experience of the real world are likely to find developing the set of performance measures difficult	There was a need to adjust the performance measures suggested by SSM

Source: Created by the Researcher

The aforementioned studies revealed the utility of SSM in problem-structuring, in the development of performance measures that will be used to assess the performance of the system in question, and in building conceptual models to improve the system in question. As such, they are all deemed relevant to the present study. However, all of these studies were within the context of academic teaching and learning. Hence, there is a lack in studies that focus on training systems in general, and on vocational training, in particular.

2.4 Systems Thinking and the Learning Organization

This subsection will discuss the results of the literature review related to the systems thinking concept and its application and utility in training.

2.4.1 The Concept of Systems Thinking

2.4.1.1. Working Definitions of Systems Thinking

The presence of numerous definitions of *systems thinking* and conversely, the lack of a univocal definition has been highlighted in extant literature (Frank & Waks, 2001; Cabrera, Colosi & Lobdell, 2008; Kiani, Mirzamohammadi & Hosseini, 2010, Ferrat, 2014). For instance, Senge (1990) defined systems thinking as "a framework for seeing interrelationships rather than things, for seeing patterns rather than static snapshots. It is a set of general principles spanning fields as diverse as physical and social sciences, engineering and management." In essence, therefore, Senge (1990) regarded systems thinking also as a skill that helps an individual: (1) look at feedback and processes of change instead of taking snapshots; and (2) consider interrelationships rather than linear cause -effect chains. Similarly, Richmond (1993) defined systems thinking as a set of skills needed for the competent use of simulation software to facilitate dynamic thinking, closed-loop thinking, generic thinking, structural thinking, operational thinking, continuum thinking and scientific thinking.

Within the context of organizational learning, Senge (1990) elucidated that systems thinking involves "a shift of minds from seeing parts to seeing wholes, from seeing people as helpless reactors to seeing them as active participants in shaping their reality, from reacting to the present to creating the future." Senge (1990) explained that the differences in mental models explained the rationale behind the subjectivity involved in looking at the same thing, yet interpreting it differently. These mental models are "deeply ingrained-assumptions, generalizations, or even pictures and images that influence how we understand the world and how we take action." As a result, mental models place a limit on the ability of an individual to change due to the likelihood of most people to become "drawn to take in and remember the information that reinforces existing mental models" Systems thinking affords individuals a flexible language that enables the expansion and reshaping of our ordinary ways of thinking insofar as complex issues are concerned

In O'Connor & McDermott's (1997) viewpoint, systems thinking can be described in the following manner:

> Our normal pursuit from a cause and effect perspective is to try and find where the fault lies. A systems thinking perspective, however, enables us to understand…why simply fault finding is such a futile activity. Systems thinking enables one to progress beyond simply seeing events to seeing patterns…Systems thinking looks at the whole, and the parts, and the interconnection among the parts, studying the whole in order to understand the parts. It is the opposite of reductionism.

In the same vein, Oosterwal (2010) defined systems thinking as an approach that is aimed at investigating "complex problems by understanding the dynamic interdependencies and causal relationships associated with systems issues." Ferrat (2014) explained that in the context of information systems teaching, systems thinking is viewed as an approach that students as 'systems analysts' could use when undertaking systems analysis and design. Ferrat (2014) elaborated that such approach involves gaining an understanding of the general systems theory which posits that "a system consists of interacting subsystems, a system with its subsystems exists within a larger environment, and systems seek multiple goals."

Similarly, Mingers and White (2010) also considered systems thinking as an approach which involves the following:

- Vieing the situation holistically, as opposed to reductionistic, as a set of diverse interacting elements within an environment.
- Recognising that the relationships or interactions between elements are more important than the elements themselves in determining the behaviour of the system.
- Recognising a hierarchy of levels of systems and the consequent ideas of properties emerging at different levels, and mutual causality both within and between levels.
- Accepting, especially in social systems, that people will act in accordance with differing purposes or rationalities.

Despite the diversity in working definitions of *systems thinking* found in extant literature, they can nonetheless be circumscribed under certain dominant attributes which include the following ascriptions to systems thinking: (1) a framework (Senge, 1990); (2) a skill (Senge, 1990; Richmond, 1993); (3) an approach (Mingers & White, 2010; Ferrat, 2014); (4) a holistic view (Senge, 1990; O'Connor & McDermott, 1997); (5) an analytical tool that looks at interrelationships amongst subsystems (Senge, 1990; Mingers & White, 2010; Oosterwal, 2010; Ferrat, 2014); and a paradigm shift (Senge, 1990; O'Connor & McDermott, 1997; Mingers & White, 2010). Table 2.8 presents a summary of the results of the literature review related to the various working definitions of *systems thinking.*

Table 2.8 Summary of the Results of Literature Review Related to the Systems Thinking Concept

Author	Working Definition	Ascriptions Made to Systems Thinking
Senge (1990)	"A framework for seeing interrelationships rather than things, for seeing patterns rather than static snapshots. It is a set of general principles spanning fields as diverse as physical and social sciences, engineering and management."	• A framework • A skill • A holistic view • An analytical tool that looks at interrelationships amongst subsystems • A paradigm shift
Richmond (1993)	A set of skills needed for the competent use of simulation software to facilitate dynamic thinking, closed-loop thinking, generic thinking, structural thinking, operational thinking, continuum thinking and scientific thinking	• A set of skills • An analytical tool that looks at interrelationships amongst subsystems
O'Connor & McDermott (1997)	"[…] Systems thinking looks at the whole, and the parts, and the interconnection among the parts, studying the whole in order to understand the parts. It is the opposite of reductionism."	• A holistic view • A paradigm shift
Oosterwal (2010)	Investigates "complex problems by understanding the dynamic interdependencies and causal relationships associated with systems issues."	• An approach
Mingers and White (2010)	Involves "viewing the situation holistically, as opposed to reductionistically, as a set of diverse interacting elements within an environment."	• An approach • An analytical tool that looks at interrelationships amongst subsystems • A paradigm shift
Ferrat (2014)	An approach that is based on the general systems theory which posits that "a system consists of interacting subsystems, a system with its subsystems exists within a larger environment, and systems seek multiple goals."	• An approach • An analytical tool that looks at interrelationships amongst subsystems

Source: Created by the Researcher

Due to the comprehensiveness of the scope of the working definition put forth by Senge (1990) as evidenced by his various ascriptions to systems thinking (see Table 2.8), as well as its applicability to organisational learning, the present study therefore adopts Senge's (1990) definition of systems thinking.

2.4.2. The Concept of Systems Dynamics (SD)

Central to systems thinking are the core concepts of: (1) Soft Systems Methodology (SSM); and System Dynamics (SD). SSM has been covered in Sections 2.2, 2.3, 2.4, 2.5 and 2.6 of this chapter. Thus, this subsection will be devoted to the discussion of SD. Results of the review related to SD point to its lack of a univocal definition since various researchers have formulated different working definitions of the term. This may be attributable to ongoing academic debate regarding the core nature of SD —whether SD is a quantitative or a qualitative paradigm. For instance, there is a stream of literature that considers SD a purely quantitative paradigm (Forrester, 1971; Coyle, 1977; Roberts, 1978; Meadows, 1982; Coyle, 1997; Linder, 2008; Kiani, Mirzamohammadi & Hosseini, 2010; Riccucci, 2010; Wang, Wang and Chen, 2012). On the hand, there is another stream of literature that associates SD to a qualitative paradigm (Senge, 1990; Pollack, 2007)

Sanderson and Gruen (2006) maintained that SD is basically a combination of flow and influence models. Linder (2008) claimed that SD is a quantitative approach that focusses on the use of mathematical models that was developed by Jay Forrester during the 1950s. Linder (2008) explicated that SD models that were based on engineering feedback concepts were used by Forrester to diagnose complex managerial problems. Burandt (2011) supported this claim and elucidated that SD's association with the quantitative perspective has been attributed to Forrester's (1971) concepts of industrial dynamics and system dynamics. Burandt (2011) argued that the application of Forrester's (1987) concepts require the use of simulation software and are anchored on a strictly quantitative paradigm. In the same vein, Riccucci (2010) elucidated that SD is primarily underpinned by mathematical reasoning; and requires the use of computer-based modelling methods and information-feedback structures, or loops. Wang, Wang and Chen (2012) argued that SD is "a quantitative method for studying complex systems based on feedback control theory."

On the other hand, Vester (1989, cited in Burandt, 2011) circumscribed SD under the qualitative paradigm. Vester's (1989) concept of SD as explained by Gomez and Probst (1995, cited in Burandt, 2011) is employed as a methodological approach used to model and evaluate systems by relying solely on the use of flowcharts to identify relevant feedback loops and system components without the help of a simulation software. According to Wolstenholme (1991) SD is a "rigorous method for qualitative description, exploration and analysis of complex systems in terms of their processes, information, organizational boundaries and strategies." Pollack (2007) also explained that SD is "associated with an interpretive epistemology, inductive reasoning, and exploratory, qualitative techniques, which emphasize contextual relevance rather than objectivity." Pollack (2007) pointed out that SD is anchored on facilitated exploration, participation and on learning. Wolstenholme (1991) considered SD a "rigorous method for qualitative description, exploration and analysis of complex systems in terms of their processes, information, organizational boundaries and strategies."

It has been argued that the quantitative nature of SD is better when it comes to gaining a deeper understanding of the system under investigation, compared to the qualitative paradigm. Within the context of policy analysis, Coyle (1977) viewed the quantitative perspective as highly capable of simulating the dynamics of a problematical situation since it facilitates an appreciable understanding of the system in question. In his more recent contribution, Coyle (1997) highlighted the importance of a quantified simulation within the context of policy analysis. On the other hand, Besiou, Stapleton & Van Wassenhove (2012) argued that prior to conducting a quantitative simulation modelling; the use of qualitative methods in obtaining

data about the system in question would result in more rigorous data gathering. Coyle (1997) also admitted that a key limitation of the quantitative SD paradigm is that the researcher has to resolve quantification difficulties when modelling hard variables. Thus, in reconciling the arguments of the academic debate, Richardson (1999) argued that each paradigm has its own advantages and limitations; and the decision as to whether to map or to model is left to the researcher to make, depending on the goals of the SD investigation. Table 2.9 summarizes the results of the literature review relevant to the SD concept.

Table 2.9 Summary of the Results of the Literature Review Related to the Concept of SD

Author	Working Definition of SD	Paradigm
Wolstenholme (1991)	"Rigorous method for qualitative description, exploration and analysis of complex systems in terms of their processes, information, organizational boundaries and strategies."	Qualitative
Sanderson and Gruen (2006)	A combination of flow and influence models	Quantitative
Linder (2008)	Primarily underpinned by mathematical reasoning; and requires the use of computer-based modelling methods and information-feedback structures, or loops	Quantitative
Gomez and Probst (1995, cited in Burandt, 2011)	Employed as a methodological approach used to model and evaluate systems by relying solely on the use of flowcharts to identify relevant feedback loops and system components without the help of simulation software	Qualitative
Pollack (2007)	"Associated with an interpretive epistemology, inductive reasoning, and exploratory, qualitative techniques, which emphasize contextual relevance rather than objectivity."	Qualitative
Riccucci (2010)	A quantitative approach that focusses on the use of mathematical models	Quantitative
Wang, Wang and Chen (2012)	"A quantitative method for studying complex systems based on feedback control theory."	Quantitative
Wolstenholme (1991)	"Rigorous method for qualitative description, exploration and analysis of complex systems in terms of their processes, information, organizational boundaries and strategies."	Qualitative

Source: Created by the Researcher

2.4.2.1 Applications of SD

The utility of SD in various situations have been documented in extant literature. In policy formulation and analysis, Kiani, Mirzamohammadi & Hosseini (2010) and Kennedy (2011) claimed that SD is well- suited for use in the design of corporate and public sector policies.

Several authors have highlighted the utility of SD in ascertaining the impacts of decisions because of its ability to identify "vicious or virtuous circles of cause and effect" that often lead to "stable or unstable behaviour of the system as a whole – or parts of it" (Sanderson & Gruen, 2006). Trailer and Garsson (2005) noted that SD modelling enables the separation of single variable adjustments for evaluation, and hence affords "policy-makers a means of testing alternative policies to determine their potential impact." SD has also been applied in: (1) project management (Godlewski, Lee & Cooper, 2012); (2) organisational management (Besiou, Stapleton & Van Wassenhove, 2012) and (3) business management (Oosterwal, 2010).

Extant literature hence highlights the utility of SD in many disciplines. For instance, Kiani, Mirzamohammadi and Hosseini (2010) stressed that SD is well-suited for dynamic systems in general and is widely used in various domains such as theory development in the natural and social sciences, public management, energy and environment, biological and medical disciplines, corporate planning, etc. Similarly, Mingers and White (2010) claimed that SD has many contributions in various areas that include the following: strategy, information systems and knowledge management, organisations and corporate social responsibility, production, TQM, project management, agriculture, ecology and the environment, medicine and health, operational research, and management science. Indeed, in an earlier contribution, Sterman (2000) asserted that SD has been proven helpful in a diverse range of industries — from aircraft to zinc. Thus, results of the review suggest the utility of SD in a wide range of disciplines, making it a useful framework that can be applied in both private and public-sector organizations, particularly in the fields of human resources management and knowledge management.

In his seminal work on systems thinking entitled *The Fifth Discipline*, Senge (1990) highlighted the importance of applying systems thinking and the key principles of SD in the attainment of the goals of the 'learning organization.' In this contribution, Senge (1990) introduced his systems thinking model as well as the allegories that characterise system thinking principles. Senge (1990) identified five disciplines that often characterise learning organizations, namely: personal mastery, mental models, a shared vision, team learning, and systems thinking. Systems thinking, Senge (1990) explicated, is the fifth discipline which is important for organisations wishing to undertake organizational change or seek to continuously improve. According to Senge (1990), the following allegories limit the usefulness of systems thinking: (1) Today's problems come from yesterday's solutions; (2) The harder you push, the harder the system pushes back; (3) Behaviour gets better before it gets worse; (4) The easy way out usually leads back in; (5)The cure can be worse that the disease; (6) Faster is slower; (7) Cause and effect are not closely related in time and space; (8) Small changes can produce big results; but the areas of highest leverage are often the least obvious; (9) You can have your cake and eat it too - but not all at once; (10) Dividing an elephant in half does not produce two small elephants; and (10) There is no blame.

Senge and Sterman (1990) asserted that the 'learning organisation' imbibes a central dogma that is anchored on "vision, values and mental models." De Gues (1988) defined the term 'learning organisation' as an organisation that relies on *institutional learning* to be able to survive over an extended period. De Gues (1988; cited in Senge & Sterman (1990) further elaborated that institutional learning pertains to the process whereby management teams change their shared mental models of their company, their markets and their competitors. Linard and Aretz (2000), on the other hand, enumerated the following salient characteristics of the 'learning organisation', namely: (1) addresses future practice; (2) has unbounded

knowledge; (3) promotes debate; (4) has outward focus; (5) encourages reflection; and (6) empowerment. It is in this context that Senge and Sterman (1990), and Linard and Aretz (2000), and Thornton, Peltier and Perreault (2004) regarded systems thinking as a tool that facilitates the attainment of goals related to organisational change and continuous improvement. Table 2.10 presents a summary of the results of literature review related to the applications of SD.

Table 2.10 Summary of Literature Review Results Related to the Different Applications of SD

Authors	Function of SD	Area (s) of Application
Sanderson and Gruen (2006)	Identifies "vicious or virtuous circles of cause and effect" that often lead to "stable or unstable behaviour of the system as a whole – or parts of it"	Policy making
Trailer and Garsson (2005)	Affords "policy-makers a means of testing alternative policies to determine their potential impact."	Policy making
Godlewski, Lee & Cooper (2012)	Helps resolve important issues or problems in project management	Project management
Besiou, Stapleton & Van Wassenhove (2012)	Addresses key issues in organisational management	Organisational management
Trailer and Garsson (2005)	Addresses concerns related to strategic management Helps identify how decision making can promote dynamics	Strategy
Oosterwal (2010)	Helps simplify interdependencies of complex business systems	Business Management
Kiani, Mirzamohammadi and Hosseini (2010)	Useful in a wide variety of areas that include theory development in the natural and social sciences, public management, energy and environment, biological and medical disciplines, corporate planning, etc.	Multidisciplinary
Mingers and White (2010)	Useful in various disciplines : strategy, information systems and knowledge management, organisations and corporate social responsibility, production, TQM, project management, agriculture, ecology and the environment, medicine and health, operational research, and management science	Multidisciplinary
Sterman (2000)	Has been proven helpful in a diverse range of industries — from aircraft to zinc	Multidisciplinary
Senge (1990); Linard & Aretz (2000); Thornton, Peltier and Perreault (2004)	Facilitates the attainment of goals related to organisational change and continuous improvement	Organisational learning

Source: Created by the Researcher

2.5 New methods of Delivery of Training Courses

This subsection will discuss the role of ICT in learning in general and vocational training in particular.

2.5.1 The Role of ICT in Learning and Vocational Training

Extant literature pertaining to the use of information technology tools and devices (ICT) in teaching and learning is considerably robust and substantive. The acronym *ICT* stands for information and communications technology (Toomey, 2001; Plowman & Stephen, 2005; Totter, Stütz & Grote, 2006; Garrido, Sullivan & Gordon, 2012; Wang & Zhou, 2013). Toomey (2001) defined ICT as technologies that are used for "accessing, gathering, manipulating and presenting or communicating information." This definition was later expanded by Plowman and Stephen (2005) who enumerated the different types of ICT devices. According to Plowman and Stephen (2005), ICT encompasses the different "audio-visual resources, 'smart' toys […] remote control devices, photocopiers, telephones, fax machines, televisions, and computers, […] toys that simulate appliances such as mobile phones, laptops, cash registers, microwave ovens, and barcode readers as well as computers […]." On the other hand, the definition put forth by Wang and Zhou (2013), classified these ITC devices into key types of technology. Thus, they defined ICT as "a diverse set of technological tools and resources used to communicate, and to create, disseminate, store, and manage information. These technologies include computers, the internet, broadcasting technologies (radio and television), and telephony."

Extant literature points to the increasing ubiquity of ICT devices in educational settings, as many researchers have documented the benefits of ICT use in teaching and learning (Totter, Stütz & Grote, 2006; Clark et al. 2009; Garrido, Sullivan & Gordon, 2012; Wang & Zhou, 2013). Indeed, ICT use in educational settings is now being regarded as transformative and enabling (Clark et al. 2009).

Within the context of course delivery in vocational training, Podhradsky et al. (2010) highlighted the benefits of using ICT devices in the delivery of vocational training courses. Podhradsky et al. (2010) asserted that modern ICT, infrastructure of converged technologies, and Next Generation Networks (NGN) "offers new possibilities, tools and functionalities which can be effectively used in the processes of e/m learning (electronic and mobile learning, respectively) also in the vocational training of companies and institutions staff [sic]. He maintained that the following e-learning forms are applicable to vocational training: Face-to-face, distance and blended learning.He further explicated that amongst these three e-learning forms, blended learning is the most suitable e-learning method for vocational training, since "the knowledge, new skills, expertise and experience acquired in this way" will help secure "the position of employees in the labour market." Furthermore, he stressed that it is the new generation of ICT, which features a new set of tools, functionalities, forms and approaches in e/m learning that is considered an effective vocational training platform. This new generation of ICT is an integration of the standard e-leaning platform and the NGN platform. The standard e-leaning platform consists of: (1) the hardware (LMS server, database server, Web server, SMTP server); (2) the software (LMS/LCMS system, OS, database system, software for the development of courses), and (3) internet connection. On the other hand, the NGN platform consists of the standard e-learning platform and the NGN (mobile) architecture.

Wang (2012) buttressed the claims of Podhradsky et al.that e-learning and m-learning are effective in educational settings which include training. However, Wang (2012) added

another method of course delivery — *mobile cloud learning* which is considered by Hirsch and Ng (2011) as a newly- emerging concept of cloud computing that is built on three service models namely: (1) "Infrastructure as a Service - IaaS"; (2) "Platform as a Service- PaaS"; and (3) Software as a Service –SaaS."

The distinction between mobile learning and mobile cloud learning has been explored by various authors. For instance, Harris (2011) defined *mobile learning* as "learning with mobile devices." Wang (2012) on the other hand, defined *mobile cloud learning* as a "shared pool of learning courses, digital assets, and resources, which instructors and learners can access via computers, laptops, IP-TVs, mobiles, and other portable devices." Although the principle behind these modes of learning is very similar — facilitation of learning through mobile devices such as laptops and mobile phones, the distinction lies on the amount of available learning resources and on the economics of mobile data exchange (network costs). Wang, Chen and Khan (2014) enumerated the drawbacks associated with mobile learning which include: "high device and network costs, low network transmission rates, and limited education resources available." Kitanov and Davcev (2012) and Wang (2012) argued that *mobile cloud learning* addresses these drawbacks by combining the benefits of mobile learning and cloud computing. According to Weber (2011), "greater connectivity between centralized server-side applications and low cost/low processor capacity mobile devices could provide better access, more control, and greater freedom for e-learners." Table 2.11 summarizes the results of the literature review related to the role of ICT in learning and vocational training.

Table 2.11 Summary of Literature Review Results Related to the Role of ICT in Learning and Vocational Training

Author(s)	Key Ideas
Totter, Stütz & Grote (2006); Clark et al. (2009); Garrido, Sullivan & Gordon (2012); Wang & Zhou (2013)	Documented the benefits of ICT use in teaching and learning
Podhradsky et al. (2010)	• Highlighted the benefits of using ICT devices in the delivery of vocational training courses • Modern ICT, infrastructure of converged technologies, and Next Generation Networks (NGN) "offers new possibilities, tools and functionalities which can be effectively used in the processes of e/m learning […] (p. 163) • The following e-learning forms are applicable to vocational training: Face-to-face, distance and blended learning.
Wang (2012)	• E-learning and m-learning are effective in educational settings which include training • *Mobile cloud learning* is a "shared pool of learning courses, digital assets, and resources, which instructors and learners can access via computers, laptops, IP-TVs, mobiles, and other portable devices" (p. 17)

Wang, Chen and Khan (2014)	• Drawbacks associated with mobile learning which include: "high device and network costs, low network transmission rates, and limited education resources available" (p. 257)
Weber (2011)	• Enumerated the advantages of *Mobile cloud learning* over *mobile learning*

Source: Created by the Researcher

2.5.2 Use of mobile Apps in Teaching

One of the results of the SSM analysis was that there was discontent with the method of delivery that is currently being used in the public sector training of Qatar. Technology was rarely used and if so, it was simply power-point presentations using an overhead projector. The recent advances in technology, coupled with the popularity of social networking, has opened up new ways of delivering training and this is the substance of this subsection – to explore the use of the mobile App.

Ubiquitous ownership of mobile devices by young people and the rise of Internet and mobile network infrastructure in the Middle East and North Africa (MENA) region are now considered as a means of resolving current access and consumption challenges to training and at the same time improving training effectiveness. Thus, it was investigated how a mobile application that can make multi-media training courses available through digital devices that trainees are very familiar with and use regularly in their everyday lives. Research on how an App could be designed and developed with a consideration for more training content and wider use across the MENA region.

2.5.2.1 The Population and Technology Environment MENA (Middle East and North Africa) Region.

Much of the content of this section is taken from a number of up to date digital digests published on the 'Digital Qatar' website (http://www.digitalqatar.qa). Digital Qatar was launched in 2009 with the purpose of providing a platform for genuine thought and conversation in Qatar around everything ICT. These conversations have produced important information regarding the penetration of technical infrastructure and devices that have in turn changed social interaction, access to and sharing of information.

Due to 50 years of rapid population growth, youths under the age of 24 now make up 50-65% of the population of the Middle East. Countries such as Qatar, Kuwait, Bahrain and the UAE had internet penetration rates of over 50% in 2012, while penetration rates in countries such as Morocco, Yemen and Sudan are much lower. All countries displayed rapid internet growth. Additionally, the Middle East also has one of the highest mobile penetration rates in the world and leads when it comes to smartphone adoption with the UAE leading the world with the highest smartphone penetration of 73.6% (Statista BBC Nov., 2013). The growth rate of Internet users continues to increase by over 30% on average each year. Tablet devices are also becoming increasingly popular in the Middle East (Saudi Arabia 63%, UAE 61%), according to 2013 research by the Internet Statistics Compendium.

In terms of mobile broadband, the Middle East still lacks considerably behind the Americas and Europe, with a penetration rate of 18.9%. In 2014, some of the most advanced markets in the region include Israel, where mobile broadband networks account for 63% of total mobile connections (as of Q2 2013), Turkey (59%), United Arab Emirates (55%) and Saudi Arabia (54%).

These penetration rates are higher than many developed countries and markets. Western Europe has about half its connections on mobile broadband networks and in Northern Europe around three in five connections are mobile broadband. *(The rise and use of mobile Internet in the Middle East:* http://etc-digital.org/digital-trends/mobile-devices/mobile-smartphones/regional-overview/middle-east/)

2.5.2.2 Mobile and General Technology Usage in the Middle East

Figure 2.2 below shows a picture of mobile usage in MENA at October 2013. The statistics show that mobile usage is embedded within the social and work habits of a major percentage of the population.

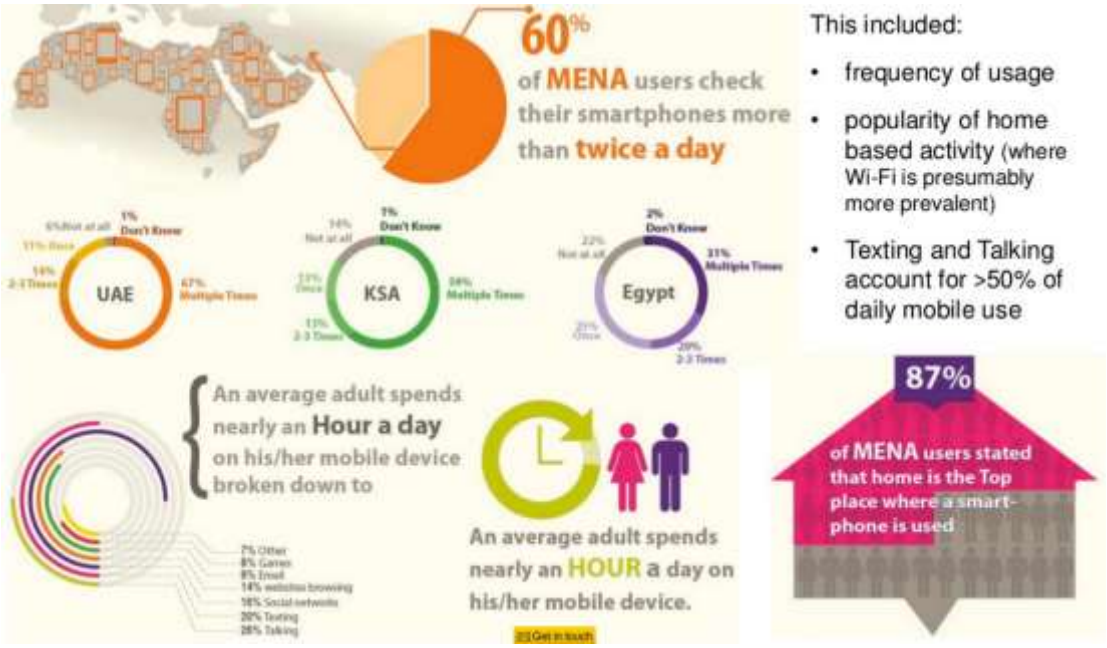


Figure 2.1 Mobile Usage in MENA Source: FrootApps (2013)

Note that 'Training' is not specifically identified as an activity performed online. It would be interesting to do a specific study within the region, relating to the consumption of training and informal learning.

2.5.2.3 Social Networks

Social networks have also gained a high level of penetration and continue to be one of the fastest growing technology platforms used in everyday life in the MENA region. Later in the study of technology trends one can see a general move away from one to many social networks to smaller interacting social groups. Our application and approach is based on this concept to get small groups that have similar learning targets to interact and share experiences.

The image below shows the highlights of a snapshot of technology service usage in MENA Q2 2014. Technology adoption starts from a very early age which opens up many opportunities for improved training and educational services that are location and time independent.

Figure 2.3 Snapshot of Technology Service Usage in MENA Q2 2014

Source: Middle East Digital Digest – Q2 2014: http://www.slideshare.net/ictQATAR/digital-digest-q2-2014?related=1

2.5.2.4 Choosing a Device for Training Delivery

To deliver a rich training experience, it is needed to take advantage of all of all the media channels available, such as video, sound, still and animated graphics and text. This media may be pre-recorded and compiled or streamed live. The training needs to be delivered when the user needs it most or when they have the time available to consume it. The smart tablet and ultra-mobile (lightweight laptops) fulfil this requirement more fully than a smartphone or a desktop PC. The obvious advantage over a desktop PC is the portability and touch screen; whilst the bigger screen size, processing power, storage and battery life make the tablet and ultra-mobiles a better choice than a smartphone.

Historically tablets and ultra-mobiles have been relatively expensive and lacking in application software. This is changing rapidly as completion and the number of large companies enter more products into the market. This has fuelled a rapid growth specifically in tablet penetration, especially in wealthy nations.

As the penetration and sales figures grow the major software companies are adapting and producing versions of their software that run as native application on a tablet. This enables the tablet to compete with the ultra-mobile and desktop as the digital everyday working device of choice. The predictions are for tablet sales to approach PC sales globally by 2015.

Table 2.12 Tablet Sales Predictions for 2013, 2014 and 2015

Device Type	2013	2014	2015
Traditonal PCs (Desk-Based and Notebook)	296,131	276,221	261,657
Ultramobiles, Premium	21,517	32,251	55,032
PC Market Total	317,648	308,472	316,689
Tablets	206,807	256,308	320,964
Mobile Phones	1,806,964	1,862,766	1,946,456
Other Ultramobiles (Hybrid and Clamshell)	2,981	5,381	7,645
Total	2,334,400	2,432,927	2,591,753

Source: Gartner (June 2014) - Worldwide Device Shipments by Segment (Thousands of Units)

Figure 2.4 shows that Qatar is leading the world in both desktop PC and tablet adoption.

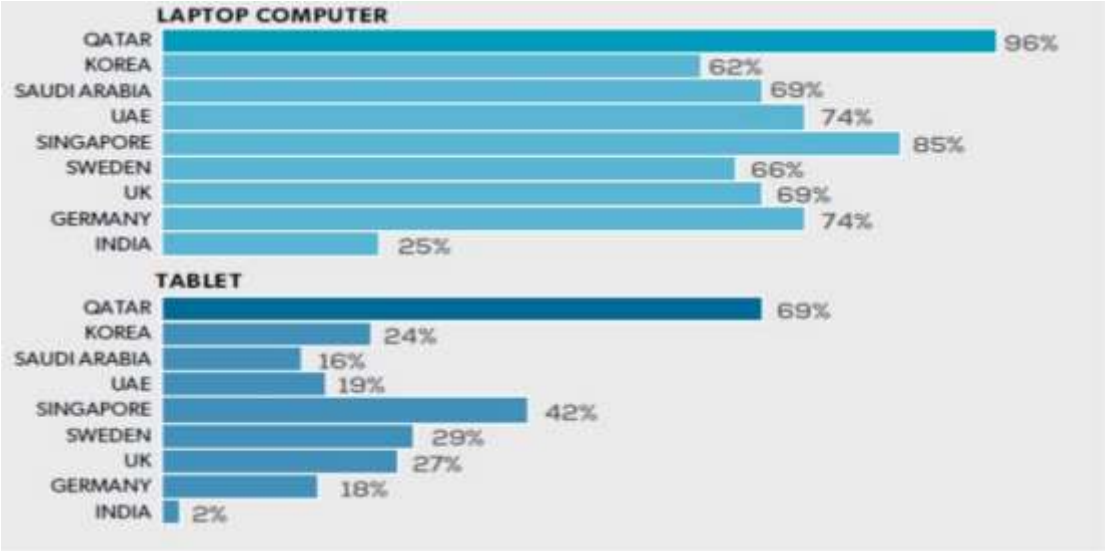


Figure 2.4 Tablet Adoption Rates for Desktop PC and Tablets in Selected Countries

Source: Middle East Digital Digest – Q2 2014 –
http://www.slideshare.net/ictQATAR/digital-digest-q2-2014?related=1

However Figure 2.5 below shows that smartphones will out strip all other digital device sales in the coming years, particularly in developing countries. It was therefor decided that the training application design will initially be targeted for both tablets and smartphones.

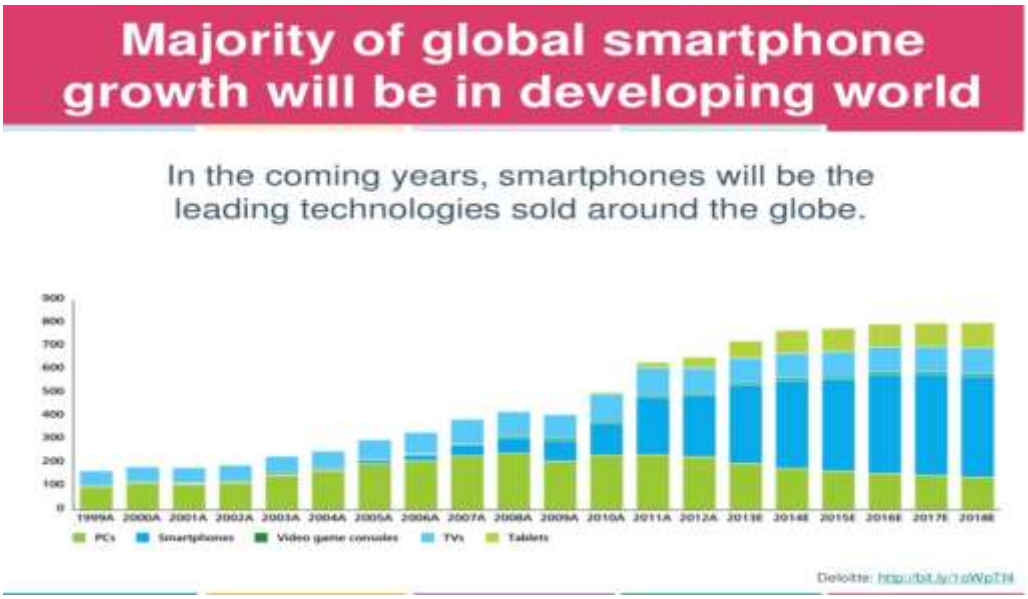


Figure 2.5 Smartphone Adoption Rates Around the World

Source: Middle East Digital Digest – Q2 2014
http://www.slideshare.net/ictQATAR/digital-digest-q2-2014?related=1

Price will continue to be a major influence in the sale of all devices. But the need for one integrated device to serve all needs (especially voice) will be the dominating factor and will drive to a hybrid device that can serve all 'on the move' requirements, including training consumption. Already there is also a blurring of the lines between smartphones and tablets with the rise of the 'phablet', which is basically a big phone (5.5 inch is the current definition).

2.5.2.5 2014 Technology Trends

Mary Meeker - Kleiner Perkins Caufield & Byers, in her recent presentation on technology trends highlighted the rise of data produced by individuals because of the increasing number and proliferation of digital devices (see Figure 2.6 below).

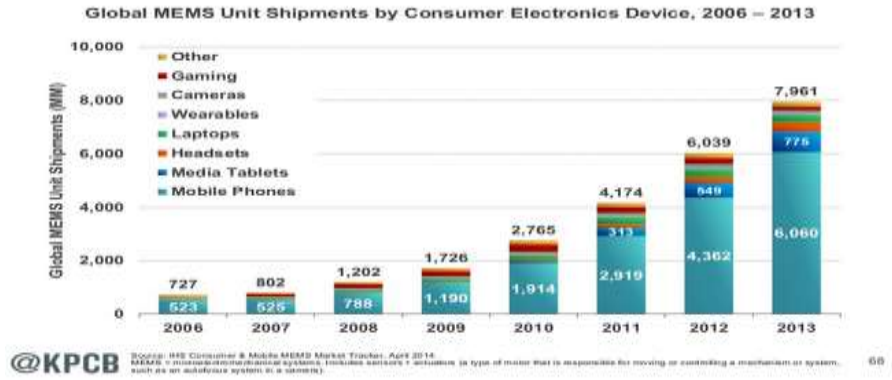


Figure 2.6 Global MEMS Unit Shipment by Consumer Electronics Device, 2006-1013 Source: Forbes (2014) - http://www.forbes.com/sites/jeffbercovici/2014/05/28/the-most-important-technology-trend-of-2014-according-to-mary-meeker/

This rise in data proliferation enforces the need for the App design to provide a mechanism for getting the user to the information and training services need in the context they find themselves in. Additionally, Meeker highlighted a move to communicating in smaller and more focused groups and away from the current one to many models such as Facebook.

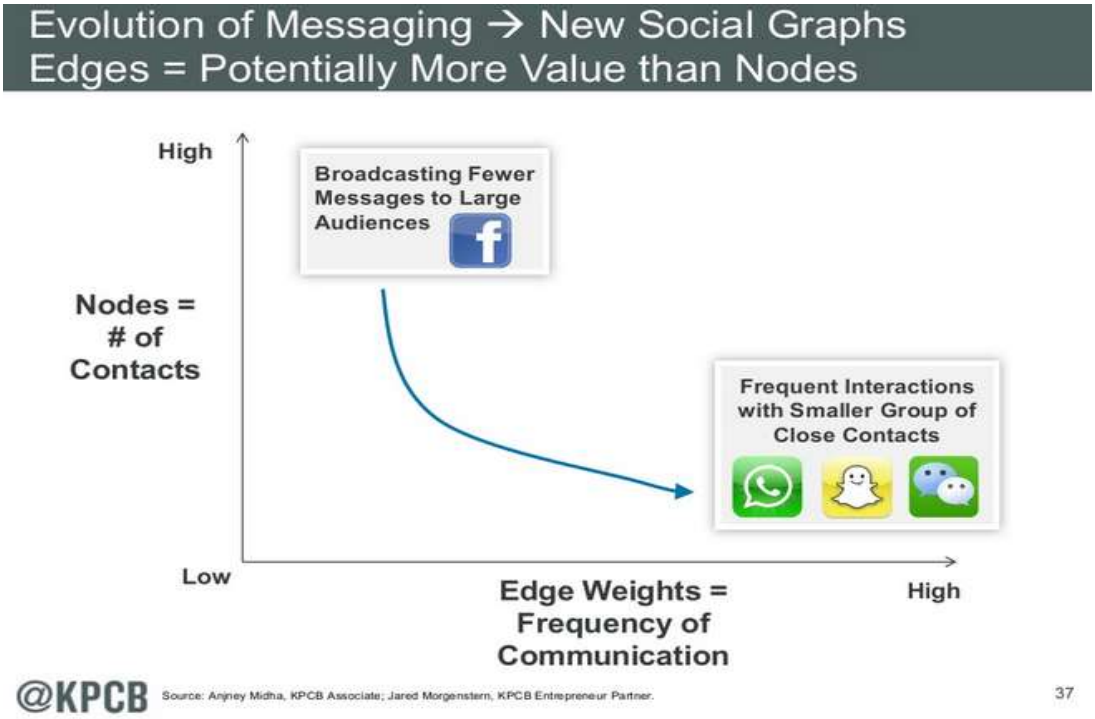


Figure 2.7 Projected Move to Communicating in Smaller and More Focused Groups

These trends indicate that a to move towards more closely integrated training groups that are independent of time and location, but tightly focused on content and interaction is likely to produce positive learning experiences in line with the digital activity expected from future employees and learners. This also aligns nicely with the cultural preferences within

Arabic Culture in respect of relationships and group interaction. There were other key underpinning technology trends identified in Meeker's presentation, that inform the decision making regarding designs for the training application: -

- **Internet Users:** <10% Y/Y growth & slowing;
- **Smartphone Subscribers:** +20% strong growth though slowing...fastest growth in underpenetrated markets like China / India / Brazil / Indonesia;
- **Tablets:** +52% early stage rapid unit growth;
- **Mobile Data Traffic:** +81% accelerating growth...video is a strong driver;

All of these trends further support the strategy to provide rich multi-media on demand digital training services delivered to personal devices across mobile networks. Specifically, there is the potential for a large growth in the ownership and everyday use of tablets and ultra-mobile devices within the MENA region.

2.6 Developments in Training Technologies and Approach

Training and development of employees is commonly recognised as a must for all organisations to build a better business. Companies need employees who have the skills and knowledge necessary to do their jobs increasingly faster and better. "A business is ultimately driven by human capital. Training and development frequently determine which organizations succeed and which fall short," says Aaron Olson, vice president, global head of Talent Management, Aon. http://one.aon.com/using-latest-technology-bolster-employee-training

In recent years, many jobs and roles have become far more complex and require increasingly specialized knowledge. Traditional classroom instruction and even computer-based learning modules frequently do not address the unique learning requirements organizations and their employees face. In many cases, "organizations are realizing that most learning takes place outside the classroom and that it needs to be part of the organization's culture," says Veronica Harvey, partner, performance, reward and talent practice, Aon Hewitt. "While instructor-led training is important, it should be one part of an overall learning strategy." Approximately 70% of professional development comes from experiences on the job. 20% occurs through coaching or mentoring. Formal training accounts for only 10% of all learning. However many organizations still see classroom and on-line formal training as the main focus of their training effort" https://apac.aonhewitt.com/home/resources/thought-leadership/talent-2021

The standard ways of disseminating knowledge such as books and lectures by experts to a group of learners has been in existence for hundreds of years. The advances in technology and the different attitudes today in society means that new pedagogies are possible and should be discussed. Distance learning in various forms has been in existence for around for many years. The answer to society's needs is not simply to expand these the number of these offerings. although this would help. Rather, we must search for completely different methods of delivery which fully utilises the advances in modern technology. Teachers should to embrace new collaborative and social models of learning that will change existing pedagogy in more fundamental ways. Nobody can predict the future with certainty, but some of the most important trends for education over the next five years, could include: E-Textbooks, Blended learning, MOOCs, peer-to-peer learning and M Learning (learning via mobile devices). These are just tools. This research examines the thinking behind these new methodologies.

Amazon has just announced plans to spend $700 million (£569 million) in retraining 30% of its US workforce over six years. Even for a company as rich as Amazon, this is a major expense. https://www.businesswire.com/news/home/20190711005341/en/ It is interesting that the pioneer of online retailing, famed for its use of automation, considers that the skills of their existing workforces need replacing. To quote the Director of the Division for Policies and Lifelong Learning Systems at UNESCO. "The nature and pace of technological changes mean that it is not enough simply to retrain or upskill workers. We need to foster in workers the ability to adapt, to be creative and, most importantly, to learn throughout their lives" (Atchoerena 2009).

Social media is a prime example of how knowledge transfer can take place in a more organic and systematic way. Enterprise social media systems are redefining learning and interaction, enabling employees to post everything from presentations to audio and video files that others in the organization might use. An exchange of information can take place as a result of a question that's displayed online or an organization can create a data repository that allows employees to search and share on topics of interest (Tapscott, & Williams 2006).

The goal must be to build an environment that encourages and supports learning and delivers the necessary incentives for acquiring skills and knowledge. Research shows that about 10% of employees post and share with others simply because they feel it's worthwhile and important. Rewards can push the number up to 80% or higher. The effectiveness of new methods is still under debate as exemplified by the arguments against the flipped classroom (Setren 2019) "for many people, purely online learning is not the best solution" because the classroom experience is still valuable. The researcher agrees with views such as expressed by Latchman - "Combining it with online teaching: that's the way of the future," (Latchman 2019) A possible solution is to offer courses that are mostly taught online, but whose students "come in for periods of intensive study with academics, go back online and then come back later".

Learning is always evolving with a trend to a more tailored individualised learning experience to the individual where the learner shares and consumes when and where they feel comfortable. Trainers should put more emphasis on helping individuals create their own personal learning portfolios and develop learning habits that fit in with their all-round interaction with technology and social and news media. Learning will increasingly become part an important and often informal part of the everyday digital interaction of employees inside and outside of the work environment (Rosset and Frazer 2006).

As the world becomes more interdependent, learning to learn" becomes more important. Specialised knowledge about a particular, individual item is not enough. There must be an ability to learn and explore new horizons, what is needed is a common language or way of thinking. A strong candidate is "Systems Thinking" (see section 2.4.1) Without it, the evolutionary trajectory that we've been following since we emerged from the primordial soup will become increasingly less viable. The need for such thinking arose in the 1950's and there is extensive literature in the area, (Meadows, 2008, Senge, 2006; Sterman, 2003, Capra 2014). "Many educators believe that the need for general public capable of understanding systems and complexity is now more pressing than ever. Many more assertions like this can be found throughout the literature. If these field leaders and researchers are to be believed, it would seem that systems thinking is extremely important for our future" (Research Report 2017).

2.7 New approaches

Any new pedagogy must be able to respond to the following comments:

1. There are certain fixed and determined facts that the new generation need to know. A pedagogy cannot be too free, else one does not know where it will lead.

   One must ask if there are any such incontrovertible facts. Let us consider research into Dinosaurs, Over the past fifty years, the "facts" have changed, such as: they did not exist; they were slow -moving, cold-blooded reptiles; they were hot -blooded, fast-moving reptiles; they were smooth skinned; they were feathery; they could not adapt to a changing environment or they were wiped out by a meteorite crashing into the earth. The same could be said about that most logical of all subjects- mathematics. In the 1960's non-linear behaviour was classified as "pathological" and now it is the cornerstone of modern mathematics. Since the arrival of the computer, mathematics has changed out of all recognition and most of the mathematics taught in UK universities in the 1960's is no longer used. What is important is the way mathematics can be applied and used to model phenomena. The same comments could be made about architecture, (it is impossible to build the 829.8-metre-tall Burj Khalifa in Dubai with classical architectural techniques); medicine, economics and the biological sciences. Much knowledge is quickly out of date. It is very difficult to decide what "facts" should be put into learner's heads. Part of the new learning include past knowledge, so the learner would not be ignorant of the "accepted facts" but the new pedagogy would allow further exploration. As Donald Rumsfeld famously said "it is the unknown unknowns that are interesting".
2. Every pedagogy cannot be applied to all areas of knowledge.

   This is possible a valid comment. Certainly, dentists and doctors need to know what current best practice is, and the time for exploration and creative experimenting is best left to the research laboratory. But this thesis is not dictating precise formats for a new pedagogy, only general principles. It is not suggested that it should be applied to every situation.
3. Competition v Co-operation.

   The researcher believes that the ability to work alone is not a bad thing, but it is more important to learn to work cooperatively. Margulis (1970) in her work on biological symbiosis and Lyn Ostrom who received the Nobel prise for her work on cooperatives (Ostrom 1998), both advocate the evolutionary and social need for cooperation. The Netherlands is currently trying to change its university funding system to reduce competition between academics for research grants, cutting the time spent on largely unsuccessful funding applications Changes proposed in a major review of the sector mark a turn away from a competitive philosophy, reflecting growing Dutch concerns that the costs of pitting academics against each other in pursuit of funding have begun to outweigh the benefits (Myklebust 2014).
4. Credible assessment must be possible.

   The idea of measurement and assessment is ingrained. Systemic thinking (backed by the quantum theory) shows that what is measured is greatly influenced by the measurer. They are not independent. The question is – what is one trying to assess? The emphasis of any new pedagogy is to teach learners how to learn. This is cannot be assessed by traditional methods. If assessment is desired, then new ways of doing it must be created. The learners could even be assessed on their mistakes, in the sense of what they have learnt from making them.
5. How can learners know what they should study? They need experienced teachers.

It is true that a novice will not have the same holistic view of the subject as an expert. But this is one of the roles of the teacher – to guide the learners. Thus, the teachers can use their experience and knowledge to guide not to direct. If the learners make mistakes, these will become obvious and the teacher can in a mon-judgemental way enable to learner to learn from these mistakes.

Technology is a relatively new vehicle for learning, but the way that we process information remains the same. Research evidence highlights that the learning process and instructional method of technology is strongly related to positive outcomes, as they are with offline learning (Bernard et al 2004, Sitzmann et al 2006). As the rate of technological change is swift, outpacing research and practice, how can learning and development practitioners choose the right technology?' The future of technology and learning is in identifying digital tools that deliver the ability for practice, feedback and interactivity. Lastly, technology use is likely influenced by the perception that today's learner is self-directed and adept at using digital sources for information-gathering. However, research cautions that self-direction and digital literacy differs between individuals and across contexts, which in turn can affect the uptake of digital content (Bennett and Maton, 2010). In addition, technology alone cannot address barriers such as lack of time to access learning. Practitioners should be clear on the purpose of technology and implement initiatives that can address learner barriers to achieve success with learning technology

Because of cultural differences and an inherent resistance to change at the Police Academy, it is not easy to change the pedagogic approach. To do so means a major restructuring. Despite these difficulties, the researcher believed it could be done and this was the purpose of the research.

2.8 Conclusions from Literature Review

The results of this literature review related to training, highlight the use of bespoke vocational training courses for both of Qatar's private and public sectors. Extant literature related to training stressed the dominance of the following theoretical frameworks: learning, cognitive, education and educational design theories. To instil quality into the training programme, various authors have documented the utility of Kirkpatrick's (1959) model in evaluating the success of training programmes using four levels of analysis: (1) level 1 – reaction or feedback of participants; (2) level 2 – learning or learning success of participants; (3) level 3 – behaviour or learning transfer/application on the job; and (4) level 4 – results as measured by business success. Despite criticisms against Kirkpatrick's (1959) training evaluation model, it has nonetheless received recognition and was later expanded by other researchers to include other metrics.

The results of this literature review related to course content highlight the existence of certain features of an effective course content. These features or characteristics include the following: (1) meets the needs of trainees (Rudestam & Schoenholtz-Read, 2002; Pohl et al., 2005; Chan et al., 2006): (2) keeps pace with the latest technological trends and international product markets (Godfey, 1997); (3) is interesting and engaging to the trainees (Pohl et al., 2005; Nkirina, 2009); (4) is practical as opposed to being theoretical (Pohl et al., 2005; Nkirina, 2009); (5) addresses trainees' workplace problems (Pohl et al., 2005; Chan et al., 2006); and

(6) is flexible and adaptable to labour market changes (Godfey, 1997; Federal Ministry for Economic Cooperation and Development, 2012).

This study has decided therefore to use Trompenaars' as it is applicable to training and looks at the global aspect of learning.

The following dominant themes emerged from the review of literature related to SSM: the SSM concept, the purpose or goal of SSM, the SSM paradigm, the strengths and weaknesses of SSM, and the applications of SSM in learning systems. Results of the literature review related to the SSM concept highlight the existence of numerous working definitions of SSM and the lack of a single, univocal definition. Such diversity in the working definitions of SSM has been attributed to its multipurpose and flexible nature. Most of the denotative meanings of SSM consider it either as a learning process or an experiential learning activity. In addition, results of the literature review suggest the existence of several connotations of SSM which consider it: (1) as a way of analysing; (2) as a problem-solving tool; (3) as a systematic framework; (4) as a process for managing; and (5) as a problem-structuring method.

The results of this literature review related to the purpose or goal of SSM indicate that several practitioners have identified the goals of SSM from a more pragmatic viewpoint that highlighted its utility in facilitating changes to address problematical situations; while others have identified the goals of SSM from a more functional viewpoint that emphasised its utility in evaluating extant systems. Still others have highlighted its applicability in dealing with real-world problems of management, with learning and systems design, and with project management.

Results of the literature review related to the SSM paradigm suggest that SSM follows an interpretive paradigm that lends itself to subjectivity. In addition, results of the review indicate the absence of disagreement as to the interpretive paradigm of SSM, as a significant body of literature has demonstrated that SSM falls within the phenomenological tradition, is linked with qualitative research methods, and has deeply rooted interpretive intrinsic features.

The results of the literature review related to the strengths and weaknesses of SSM suggest that SSM's interpretive paradigm serves as both its key strength as well as its weakness. This dilemma is attributable to the manner by which the term 'interpretive' is understood by practitioners. In addition, another key strength of SSM is its consideration of the social, political and historical aspects of the problem. Other weaknesses identified in the literature point to its tendency to be time consuming and prescriptive in nature, as well as the need to be further complimented by systems dynamics.

The results of the literature review related to the applications of SSM in learning systems highlighted its utility in the following areas: (1) in the audit of the teaching and learning strategies at an undergraduate level; (2) in the evaluation of a current education programme and design of an improved version; (3) in the identification of issues and development of a case study and a teaching module; and (4) in the evaluation of systems performance of a managed learning environment. The reviewed contributions revealed the applicability of SSM in identifying the problematical situation affecting the learning system in question, as well as in the development of performance measures that will be used to evaluate system performance, and in creating conceptual models that are aimed at bringing about changes and improvements to the learning system. Although the reviewed studies lean toward the academic discipline, as opposed to vocational training which is the focus of the present study, both disciplines are nevertheless anchored on one feature – knowledge acquisition. As such, the reviewed studies have the potential to afford sound methodological insight to the present study. However, results

of the review highlight the lack in studies that focus on vocational training. Hence, the present study can be considered a novel research undertaking in this respect.

The results of the literature review related to the concepts of systems thinking and the learning organization indicate the lack of a univocal definition of the term 'systems thinking'. Extant literature ascribes many attributes to it — it is considered a framework (Senge, 1990; Richmond, 1993); a set of skills (Senge, 1990; Richmond, 1993); an approach (Oosterwal, 2010; Ferrat, 2014); a paradigm shift (Senge, 1990; O'Connor & McDermott, 1997; Mingers & White, 2010); or an analytical tool that looks at interrelationships amongst subsystems (Senge, 1990; Richmond, 1993; Mingers & White, 2010; Ferrat, 2014).

In the same vein, the results of the review reveal the lack of a univocal definition of the term 'system dynamics'. Furthermore, there is an academic debate regarding the type of perspective or paradigm that underpins the SD construct. While some authors argue that SD is anchored on a quantitative paradigm (Forrester, 1971; Coyle, 1977; Roberts, 1978; Meadows, 1982; Linder, 2008; Kiani, Mirzamohammadi & Hosseini, 2010; Riccucci, 2010; Wang, Wang and Chen, 2012), others assert that it is based on a qualitative paradigm (Senge, 1990; Pollack, 2007). Nevertheless, despite the debate, SD has been applied in a wide range of discipline such as : policy formulation (Trailer & Garsson, 2005; Sanderson & Gruen, 2006), project management (Godlewski, Lee& Cooper (2012); organisational management (Besiou, Stapleton & Van Wassenhove, 2012); business management (Oosterwal, 2010); organisational learning (Senge, 1990; Linard & Aretz, 2000; Thornton, Peltier and Perreault, 2004); and in many other disciplines (Sterman, 2000; Kiani, Mirzamohammadi & Hosseini, 2010; Mingers & White, 2010).

The results of this review related to SD also indicate the importance of SD in the 'learning organisation' and claimed that SD in this context is considered an effective tool for organisational change and continuous improvement (Senge & Sterman, 1990; Linard & Aretz, 2000; Thornton, Peltier & Perreault, 2004). This stream of research thus highlights the suitability of SD and systems thinking as course offerings in vocational training.

The results of this review related to the delivery of training courses indicate the important role that ICT plays in educational settings that include vocational training. Extant literature highlight the usefulness of ICT, infrastructure of converged technologies, and Next Generation Networks (NGN) (Podhradsky et al., 2010); mobile learning platform (Harris, 2011); and the newly-emerging mobile cloud learning (Weber, 2011; Kitanov & Davcev, 2012; and Wang, 2012) in facilitating learning. Thus, within the context of the present study, vocational courses can be delivered through the following methods: e-learning; m-learning; or mobile cloud learning.

CHAPTER THREE. RESEARCH METHODOLOGY

3.1 Introduction

This chapter discusses the following methodological considerations of the present study, namely: the research philosophy, the research design, and the research procedures. It also discusses the ethical considerations relevant to the present study.

According to Fossey et al. (2002), "sound research requires a systematic and rigorous approach to the design and implementation of the study, the collection and analysis of data, and the interpretation and reporting of findings." Furthermore, Cohen et al. (2000) assert that the notion of 'fitness for purpose' should guide the design of any research undertaking. This means that "the purposes of the research" should determine the methodology and the research design hence, the overall methodological approach should be adopted in the light of achieving the aims and objectives of the study. It is in this context that this researcher considers SSM as a well-suited methodological approach to use in achieving the aforementioned aim and objectives of the present study, as underpinned by the results of the literature review in the preceding chapter which have highlighted the importance of SSM in analysing problematical situations and subsequently improving them (Kayrooz & Trevitt, 2005; Rodriguez-Ulloa & Paucar-Caceres, 2005; Kotiadis & Robinson, 2008; Baskerville, Pries-Heje & Venable, 2009).

The structure of this chapter is as follows: First, a discussion of the research philosophy adopted by the present study which is underpinned on phenomenology and interpretivism, is presented. This is followed by a discussion of the research design, wherein the usefulness of a pluralistic approach in increasing the rigour, breadth and depth of the research will be justified. Then, the research procedures adopted by the present study will be enumerated and subsequently explained one by one. This will be followed by the presentation of the research aims and objectives of the present study and a discussion of the originality of the present study. Next, a discussion of the ethical considerations relevant to the present study and how they were addressed by this researcher will be presented. Finally, the summary of the chapter and the conclusions drawn from the discussion of the aforementioned salient points will be discussed.

3.2 Research Philosophy

The selection of an overall research philosophy is typically made between two dominant alternatives, namely: the positivist philosophy and the phenomenological philosophy (Easterby-Smith, Thorpe & Lowe, 1997). While the positivist philosophy is circumscribed under the objectivist approach, the phenomenological philosophy on the other hand, falls under the subjectivist approach (Hussey & Hussey, 1997). Easterby-Smith et al. (1997) discussed the different features of each research philosophy (see Table 3.1).

Table 3.1 Various Features of the Positivist and Phenomenological Paradigms

	Positivist Paradigm	**Phenomenological Paradigm**
Basic Beliefs	The world is external and objective.	The world is socially constructed and subjective.
	Observer is independent	Observer is part of what observed.
	Science is value-free	Science is driven by human interests.
Researcher should	Focus on facts	Focus on meanings
	Look for causality and fundamental laws	Try to understand what is happening
	Reduce phenomenon to simplest elements	Look at the totality of each situation
	Formulate hypotheses and then test them	Develop ideas through induction from data
Preferred methods include	Operationalising concepts so that they can be measured	Using multiple methods to establish different views of phenomena
	Taking large samples	Small samples investigated in depth or over time

Sources: Created by the Researcher and Adapted From Easterby-Smith, Thorpe & Lowe (1997)

Given the aforementioned research aim and objectives of the present study, this researcher deems the phenomenological paradigm as the appropriate research philosophy to follow since based on the results of the literature review, SSM is heavily anchored on an interpretive paradigm by supporting the self- reflective enquiry of the participants (Brocklesby, 1995). By evaluating the dynamically- changing events of the problematical situation and identifying the specific problems that must be addressed, the participants therein undertake such self-reflective enquiry (Rodriguez-Ulloa and Paucar-Caceres, 2005).

Moreover, the phenomenological paradigm (1) "tends to produce qualitative data" which fits "well with the case study approach"; (2) is associated with rich, subjective data; and (3) is applicable in a natural setting (Hussey & Hussey, 1997). Due to the level of involvement of the participants in the present study, the data gathering process is thus rendered subjective. In addition, the setting of the study, which is considered a natural location is the MOI in Qatar.

According to Brocklesby (1995), SSM is closely linked with phenomenology and interpretivism which serve as epistemological tools that are useful in gaining an understanding of the problem in question. As pointed out by Stowell (2009), SSM is philosophically orientated towards phenomenology. Several researchers have also highlighted that SSM is also philosophically based on hermeneutics (Baskerville, Pries-Heje and Venable, 2009; Alaca, 2011; Poage, Donohoe & Lee, 2011; Ramadhan, Sensuse & Arymurthy, 2012; Staadt, 2012) which deals with *Verstehen* or the development of interpretive understanding (Boell & Cecez-Kecmanovic, 2014). In the same vein, various researchers have also claimed that SSM follows an interpretive tradition (Checkland, 1981, 1986; Chekland & Scholes, 1990; Jackson, 2006). In fact, a significant body of literature has attributed the strength of the SSM to its interpretive paradigm (Doyle & Wood, 1991; Flood & Jackson, 1991; Flood & Ulrich, 1991; Crowe, Beeby

& Gammack., 1996; Stowell, 2009). As pointed out by Checkland (1990) cited in Rodriguez-Ulloa & Paucar-Caceres (2005):

> Life world is an ever changing flux of events and ideas and 'managing' means reacting to that flux. We perceive, evaluate, take actions (s) which itself becomes part of this flux which lead to next perceptions and evaluations and more actions and so on. It follows that SSM assumes that different actors of the situation will evaluate and perceive this flux differently, creating issues that the manager must cope. Checkland (1990, cited in Rodriguez-Ulloa & Paucar-Caceres, 2005).

Furthermore, Pollack (2007) asserts that SSM is oriented towards "an interpretive epistemology, inductive reasoning, and exploratory, qualitative techniques, which emphasise contextual relevance rather than objectivity." In the same vein, Johnson et al (2007) argue that SSM regards people as active participants in the creation of the elements of the conceptual model of the system- in-question and is heavily anchored on epistemology. In the final analysis, it becomes clear that SSM adopts epistemological principles which highlight the involvement of interpretivist, phenomenological and hermeneutical claims resulting in the description of the real world in epistemological terms and the separation of the 'real world' and 'systems thinking world' (Rodriguez-Ulloa & Paucar-Caceres, 2005). Therefore, insofar as the collection of data for the present study is concerned, the research philosophy that is deemed well suited for the present study is one that is aligned with the phenomenological, hermeneutical and interpretivist paradigms since SSM is used as the overarching methodological approach in this case.

3.3 Research Design - Use of a Pluralistic Approach

3.3.1 SSM with Case Study and Action Research

Research design, as explained by Hernon and Schwatz (2009), is a complex research consideration that requires researchers to possess a solid understanding of the options available and the choices that need to be made about the various aspects of research design such the research instrument used, the sources of sample, the data collection method and the tools used in analysing collected data. This subsection therefore discusses the aforementioned aspects of the design of the present study.

The present study combined SSM as the guiding methodology with case study and action research. The effectiveness of using SSM in combination with other methodological approaches has been demonstrated in prior studies (Delbridge, 2008; Poage, Donohoe & Lee, 2011; Staadt, 2012; and White, 2012). The present study follows from the methodology and methods adopted by Staadt (2012) who used SSM as the overarching research methodology in conjunction with case study and action research in determining the impacts of negative socio-political factors on the development of a public housing organisation in France. Although the main thrust of the current study which is on public sector training, is different from that of Staadt's (2012) study, the latter was able to demonstrate the usefulness of systems thinking in suggesting a "purposeful activity model" that is anchored on "constant improvement and collaborative learning for the ongoing intervention" .

Moreover, in order to achieve the aim of the present study, which is to investigate vocational training at the ministries in Qatar, it is required that the training system itself be studied in its

natural setting, which is the MOI in Qatar. This further necessitates the use of the case study approach. A case study pertains to "an investigation using multiple sources of evidence to study a contemporary phenomenon within its real-life context" (Yin, 1984; cited in Kaplan & Duchon, 1988). Thus, a case study approach is considered well-suited for the present study because "the starting point and arguably the defining characteristic of the case study approach is its focus on just one instance of the thing that is to be investigated" (Denscombe, 2007). In this study, the main focus of the investigation is the identification of problems besetting the vocational training system offered to Qatar's public sector employees, so that it may be subsequently improved.

In addition to SSM and case study, action research was also used in the present study. Greenwood and Levin (2007) point out that action research is not to be regarded solely as a research approach, but also as a way of working cooperatively "to enhance liberating social change processes." Action research (AR) is closely linked with SSM since "SSM itself was developed through an interpretative AR project looking into situations existing in the real world" (Sankaran, Tay & Orr (2009, p. 186). Indeed, important elements of AR serve as "a collaborative process between researchers and people in the situation; a process of critical inquiry"; which "focus on social practice and a deliberate process of reflective learning" (Argyris et al., 1982; cited in Checkland & Holwell, 1998). However, since conventional AR is typically lacking the desired "in-advance intellectual framework of ideas" which negatively affects the rigour of AR, then its integration with SSM is projected to ameliorate such issue of rigour.

3.3.2 Qualitative and Quantitative Research Strategies

The use of a pluralistic approach has been considered an effective technique to fully address the various research phases involved in any given study (Staadt, 2012). Indeed, there has been a demonstrable interest in other disciplines toward "combining qualitative and quantitative methods to provide a richer, contextual basis for interpreting and validating results" (Light & Pillemer, 1982, Van Maanen et. al, 1982; 1983a; cited in Kaplan & Duchon, 1988). These methods need not be regarded as mutually exclusive since "it is possible to integrate quantitative and qualitative methods" (Maxwell, et. al, 1986; cited in Kaplan & Duchon, 1988).

Researchers refer to such triangulation of research methods as a 'mixed-methods' approach. Johnson, Onwuegbuzie, and Turner (2007) define mixed-methods research as an integration of "elements of qualitative and quantitative research approaches (e.g., use of qualitative and quantitative viewpoints, data collection, analysis, inference techniques) for the purposes of breadth and depth of understanding and corroboration." Klingner and Boardman (2011) elucidate that "mixed-methods research can help to establish cross-context patterns of regularity and determine unique within-site variables." Silverman (2006) suggests the use of a combination of quantitative and qualitative research methods since it "increases the effectiveness of addressing the research questions." Additionally, Greene (2007) argues that the use of mixed-methods further strengthens the rigour of the research process. Riccucci, (2010) explains that the mixed- methods approach is well suited for applied fields since it provides flexibility in resolving practical, real-world problems. Mixed- methods, thus, has been deemed well suited for the present study since it is focused on the exploration of the real-world problems affecting public sector training in Qatar which is essentially a practical enquiry in itself.

According to De Vaus (2002), “qualitative methods are often regarded as providing rich data about real- life people and situations and being more able to make sense of behaviour and to understand behaviour within its wider context.” Furthermore, Denscombe (2007) maintain that qualitative data are closely linked with “strategies of research such as ethnography, phenomenology and grounded theory, and with research methods such as interviews, documents and observation.” The use of qualitative research in the present study is hence justified by the use of the SSM as the guiding methodology in combination with case study and action research. The present study used qualitative techniques to fulfil the various stages of the SSM and which consisted of the use of researcher notes for the participant – observation and semi-structured interviews.

In addition, the present study also used a quantitative research approach in collecting and analysing data from a five -point Likert -type scale type of survey questionnaire. In addition to semi-structured interviews, survey questionnaire was used for the present study because as Bell (2010) asserts, it affords a fast yet economic way of determining information from a relatively large sample. In terms of the analysis of statistical data, Likert scales “fall within the ordinal level of measurement” which require the use “of the median or the mode as the measure of central tendency” and of non-parametric tests such as chi squared, Spearman’s Rho, or the Mann–Whitney U-test since parametric tests require data of interval or ratio level” (Jamieson, 2004) – thereby necessitating the use of a quantitative approach.

Figure 3.1 below summarizes the research methodology of the present study.

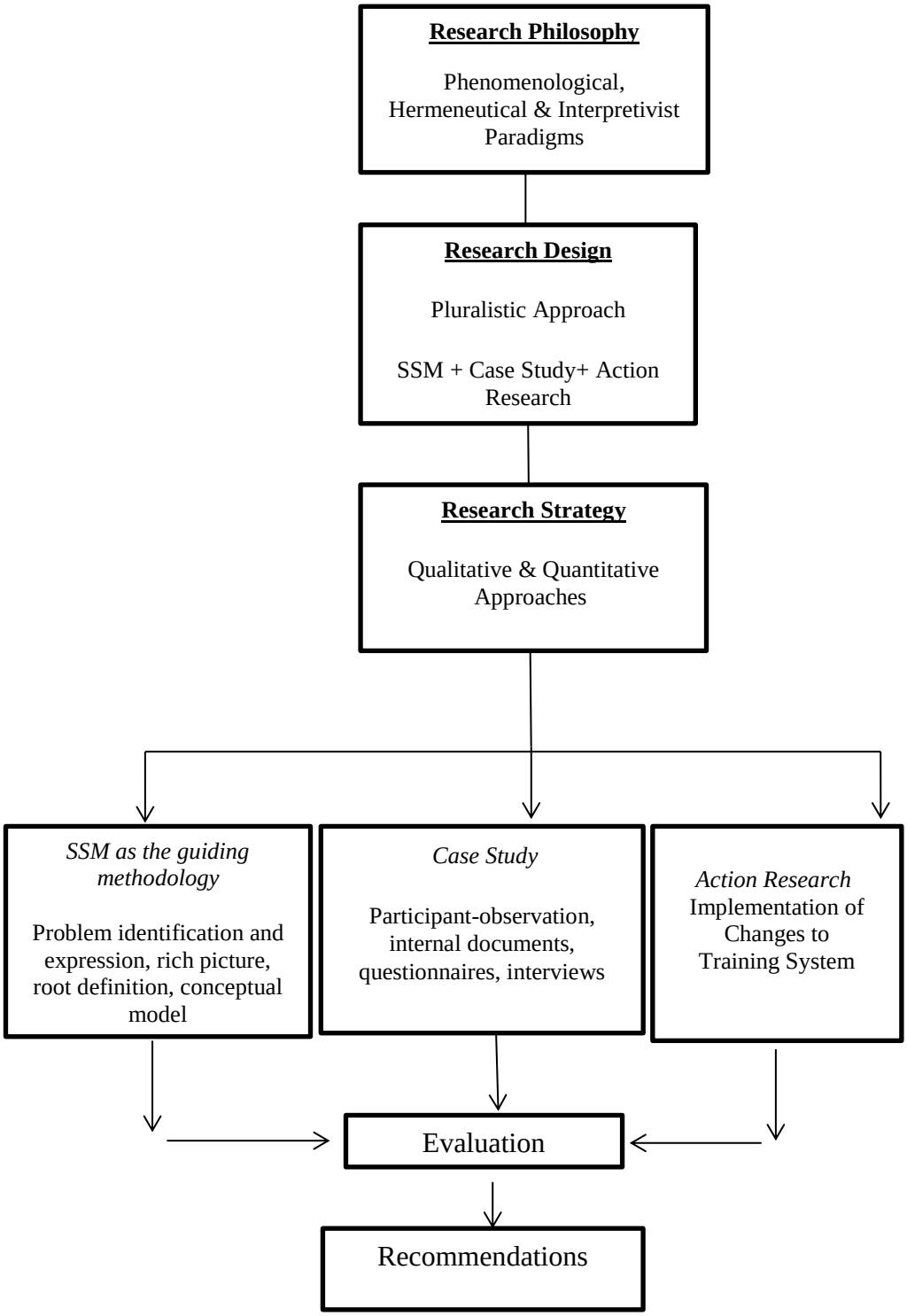


Figure 3.1 Research Methodology of the Present Study

Source: Created by the Researcher

3.4 Research Methods for this study

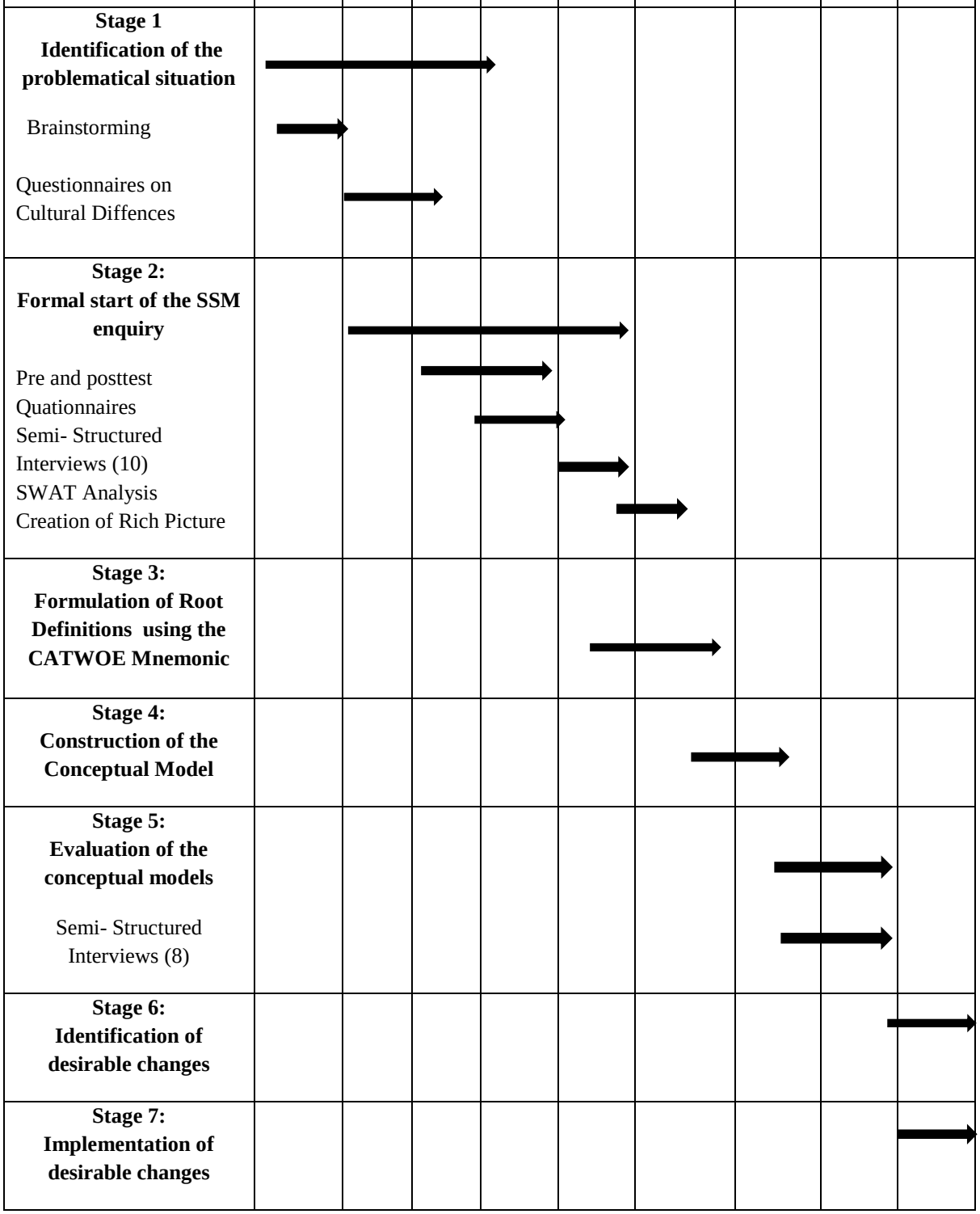
3.4.1 The SSM

Using SSM as the overarching methodological approach, the research procedures employed in the present study can be grouped into the following key stages, namely: (1) stage 1 which involves the identification of the problematical situation relevant to vocational training in Qatar's public sector; (2) stage 2 which involves the expression of the problem in rich pictures;(3) stage 3 which involves the formulation of the root definitions relevant to the aforementioned vocational training system; (4) stage 4 which involves the construction of conceptual models; (5) stage 5 which involves the evaluation of the models; (6) stage 6 which involves the identification of desirable changes; and (7) stage 7 which involves taking action in order to bring about improvement by implementing the model and fixing the identified problem . These key stages were adopted sequentially such that the analysis of the results obtained for each stage also are presented in the same manner — that is, in sequence also. In this case, the results of the data analysis for the first stage were used for the preparation of the succeeding research stage. Such research approach supports the view of Miles and Huberman (1994) which highlights the iterative nature of the qualitative research process. According to Miles and Huberman (1994), analysis in qualitative research follows an iterative process wherein analysis is undertaken before, during and after data have been collected.

The first stage of the research procedures began in April 2011 with some preliminary work with the police trainers. This consisted of a brainstorming session. The formal start of the SSM enquiry began on July 2012 and lasted until May 2013 where data were collected. This was in the form of three questionnaires given to trainees: one on perceived cultural aspects of any courses they had previously taken, a pre-test survey questionnaire focussing on participants' expectations on the training course they were enrolled in and a post-test survey questionnaire focussing on the participants' experiences after they have finished the course, A semi-structured interview which further dissected the findings generated through the questionnaires was then administered to 10 participants.. Stage 2 was the building of a Rich Picture based on this primary data which is fully documented in the Appendices. Stage 3 involved the formulation of root definitions based on the CATWOE mnemonic based on the Rich Picture and the analysis of the primary data. This was followed by Stage 4, which involved the construction of the conceptual model based on the results of stages 1-3. Next, the conceptual models were evaluated using a set of performance measures. This was followed by the identification of desirable changes. Finally, the desirable changes were implemented by taking action. Table 3.2 below presents the Gantt chart of research activities involved in the methodological evaluation of public sector training in Qatar.

Table 3.2 Gantt Chart of Research Activities Involved in the Methodological Evaluation of Public Sector Training in Qatar

Research Procedures Involved in the Methodological Evaluation of Public Sector Training in Qatar	April 2011	June 2012	July 2012	May 2013	June 2013	January 2014	March 2015	April 2015	May 2015
Stage 1 Identification of the problematical situation Brainstorming Questionnaires on Cultural Diffences									
Stage 2: Formal start of the SSM enquiry Pre and posttest Quationnaires Semi- Structured Interviews (10) SWAT Analysis Creation of Rich Picture									
Stage 3: Formulation of Root Definitions using the CATWOE Mnemonic									
Stage 4: Construction of the Conceptual Model									
Stage 5: Evaluation of the conceptual models Semi- Structured Interviews (8)									
Stage 6: Identification of desirable changes									
Stage 7: Implementation of desirable changes									



Source: Created by the Researcher

3.4.2 The Case Study

Past studies indicate that using Case studies in research permits the researcher to obtain a more thorough understanding of a complex situation. It can be considered a robust research method particularly when a holistic, in-depth investigation is required (Zainal, 2007). Its role is more pronounced in educational studies. This is because of the perceived limitations of quantitative methods especially their inability to provide holistic explanations (Gulsecen & Kubat, 2006). A researcher using case study methods is able to go beyond the quantitative statistical results and understand the behavioural conditions through the actor's perspective. Also, by including both quantitative and qualitative data, a case study approach helps explain both the process and outcome of a phenomenon through complete observation, reconstruction and analysis of the cases under investigation (Tellis, 1997). There are many educational examples where evaluative applications were conducted to assess the effectiveness of educational programmes and initiatives. In these types of study, limiting to only quantitative method would obscure some of the important data that need to be uncovered.

Some advantages of using a case study are that the examination of the data is most often conducted within the context of its use (Yin, 1984), both quantitative and qualitative analyses of the data is permitted and it is possible to see the complexities of real life situations which may not be captured through experimental or survey research. Despite these advantages, case studies have received criticisms. Yin (1984) notes that "too many times, the case study investigator has been sloppy, and has allowed equivocal evidence or biased views to influence the direction of the findings and conclusions". Second, case studies do not provide a basis for scientific generalisation since they use a small number of subjects. The question of generalisation then occurs (Yin, 1984), Hamel et al. (1993) and Yin (1994). However, objective setting of the research is far more important than a big sample size.

3.4.2.1 Data Collection Methods

The methodological evaluation of public sector training in Qatar used primary data consisting of questionnaires and interviews plus brainstorming and SWOT analysis. These contributed to the first three stages of an SSM enquiry, which consisted of identifying the problem, the rich picture and the formulation of root definitions.

(1) Data Collection

The main data collection methods used for this stage consisted of participant-observation, note-taking, evaluation of internal documents and an informal interview with MOI employees who have undergone vocational training. Since this researcher has been working for many years in the MOI of Qatar — initially as a civil servant in a training role, and currently as the Director of Training — profound insight into the issues related to the training of civil service personnel taking up low-grade administrative training courses and of police officers taking up specialist technical courses were obtained right from the start. The researcher essentially explored the weaknesses of the MOI's training system through personal experience and braining storming sessions with the staff ending with a SWOT Analysis

The data collection methods employed in this stage consisted of the administration of the following research instruments, namely: (1) a Likert rating scale type of questionnaire; and (2) semi-structured interviews.

(1) Likert Rating Scale Type of Questionnaire

Study participants were requested to indicate their responses to the items in the questionnaires based on the five-point Likert rating scale: (1) Strongly Disagree; (2) Disagree; (3) Neutral; (4) Agree; and (5) Strongly Agree. To ensure the reliability of the items in the questionnaire, a Cronbach's Alpha analysis was conducted. To ensure the accuracy of the items in the questionnaire, pilot- testing was also conducted prior to the administration of the survey.

Several questionnaires were issued to various trainees which are discussed in section 4.2 and are part of the methodological evaluation stage of the SSM leading to the production of the Rich Picture.

Semi-structured Interviews

Semi-structured interviews were conducted at the same time, to validate and further explore the results of the survey questionnaire. The interviewees were requested to respond to a total of 12 questions. Seven open-ended questions explored the manner by which training expectations were not adequately met, as well as the key problems of public sector training in Qatar; while five open-ended questions revolved around the CATWOE mnemonic for the SSM root definitions.

Another round of semi-structured interviews was conducted in March 2015 after the offering of Systems Thinking and Systems Dynamics as the new vocational training courses. The interviews revolved around a total of six questions that were asked to eight high- ranking officers in the Qatar Police Training Institute who attended the training. The interview questions were as follows: (1) Did the course challenge you? Please state how; (2) Has the course changed the way that you think? If so state how you thought before and how you think afterwards; (3) Did the course relate to Qatar and its Culture? (4) What did you learn from the course? (5) Are such courses useful? Please state why; and (6) Did the course meet your expectations?

Overall, a case study approach was adopted for both stages of the methodological evaluation of public sector training in Qatar. In particular, a single, holistic case study design with embedded units using cross-case analysis was adopted for the above-mentioned research stages. Eisenhardt and Graebner (2007) point out that a single, holistic case study design is a powerful research design since it enables the setting of enquiry at sub-units that are circumscribed within a larger case. Within the context of the present study, the sub-units were the questionnaire respondents and interviewees comprised by civilian and police trainees, while the larger case is the training system itself.

3.4.2.2 Brainstorming and SWOT Analysis

Due to his position in the Police Academy, the Researcher had access to all participants used this opportunity to conduct several brainstorming sessions at various stages of the research. These were to further investigate the findings to date. As part of the methodological evaluation in 4.2, several brainstorming sessions and a SWOT analysis was conducted.

There are many problems when dealing with groups. A major one is disruptive behaviour which can prevent progress. Also, if the approach is too structured, the ideas generated can be limited and unimaginative. In contrast, brainstorming provides a free and open environment

that encourages everyone to participate. Quirky ideas are welcomed and built upon, and all participants are encouraged to contribute fully, helping them develop a rich array of creative solutions. When used during problem solving, brainstorming brings team members' diverse experience into play. It increases the richness of ideas explored, which means that better solutions are found. Group members are likely to be more committed to the result as they have been a part of its development and above all, brainstorming can be fun which helps with team bonding and cooperation (https://www.mindtools.com/brainstm.html).

Brainstorming is not always the solution. Some people are not team players and contribute when working by themselves. Also, in larger meetings they may just drift and let others do the work. People worry about other people's reaction to their views. If they are introverted or lack self-confidence, they might perceive in their minds that other people in the group are better of have more expertise then they might just keep quiet. There is also the danger of regression to the mean where quality settles at the average level (https://hbr.org/2015/03/why-group-brainstorming-is-a-waste-of-time).

Knowing a problem is half-way to solving it so if brainstorming is conducted in the right way with an open mind and free from a value-judgements, it can be a useful tool to gather views and ideas. It is seen as a democratic tool which involves everyone, and this makes it an attractive tool.

A literature search was conducted on the use of SWOT analysis. Most research concerns understanding how to conduct a SWOT session and analysis but not its usefulness. SWOT Analysis is considered most effective when the environment is constant. For this reason, it is not always a valid technique in today's world based change and competition (Thomas et al 2007) but is relevant to vocational training in Qatar.

Using SWOT Analysis requires experience and training (Mintzberg,1990). It also has a problem in terms of quality and quantity. In applying SWOT Analysis, many factors can be identified. However, quantity does not mean quality. It is not possible to determine the priorities of the factors identified in SWOT Analysis, focus on them in detail, solve the developments and conflicts in different dimensions, and include views and suggestions based on different data and analyses (Gurel 2017). In this research, the researcher concentrated on the construction of a SWOT matrix as a summary of the state of vocational training in Qatar. This could then then contribute, with all the other evidence (both primary and secondary data) to the production of a Rich Picture.

Despite the limitations mentioned in this section, the researcher favoured the use of these techniques and the results generated from the brainstorming sessions and the SWOT analysis were of great help to this research.

3.4.2.3 Action Research

Action Research was first defined by Lewin (Adelman 1993) evolving from the Post-Modernist philosophy when the ontological beliefs and epistemology of social scientists were changing. It was realised that people/participant/s experiences were subjective. Thus, a research methodology should reflect this. The Action Research paradigm became very popular in educational research and was used to improve professional practice. There are several definitions: "research orientated towards direct practice" (Alrighter 2002) while Carr (2006)

defines Action Research as "a form of self-reflexive enquiry" carried out by practitioners whose purpose is to "improve the rationality and justice of their practice" (Carr & Kemmins 1986). Action Research can involve a variety of qualitative methods, these can include one-to-one interviews, focus groups and participant observation.

There is a problem in the objectivity of the selection of the participants. There is always the risk that the researcher will choose participants who are expected to co-operate or whose views are perceived to be similar to that of the researcher. This is a problem of bias which is addressed fully in chapter four (https://crow1234.wordpress.com/2010/10/29/pros-and-cons-of-action-research-and-participant-action-research-par/).

The action research consisted of designing and delivering three courses which dealt with the three results of the SSM study. These were then analysed to complete the research.

3.5 Research Aims and Objectives

This subsection will discuss the research aims and objectives of the present study. It will also present a justification of the originality of the present study.

3.5.1 Research Aim

To fulfil the adaptive demands of a dynamically-changing environment, organisations take advantage of learning, training and other relevant developmental activities and use them as key strategies for both employee and organisational growth (Bates, 2001). Organisations are required to possess "the processes, the systems, and the culture to facilitate effective knowledge sharing" (Gary, 1996; cited in Harvard Business School, 2007).

Indeed, extant literature on the 'learning organisation' highlights the increasing interest of organisations to pursue learning, as evidenced by their rising investments in training (Bates, 2001). In addition, the direct relationship between "an organisation's ability to learn" and the extent by which employees are willing to "learn, change and succeed at work" has been documented in knowledge management literature. Hence, there is an urgent requirement for HRD managers and practitioners to understand both individual and organisational factors that influence training participation (Bates, 2001).

Together with the problem of an ageing workforce, the public sector has been beset with different challenges that include talent shortages, restructuring problems, and cost-effective service delivery (McCracken, Brown & O'Kane, 2011). As a result, more business like approaches have been adopted within the context of organisational management due to the premium placed on cost efficiency (Argyriades, 2010). Moreover, the global economic crisis marked by substantial budget cuts in the US, UK and Canada further fortified such trend towards public management that is anchored on efficiency and effectiveness (Nygaard & Bramming, 2008; cited in McCracken, Brown & O'Kane, 2011). However, research findings have highlighted the inadequacy of trained public sector professionals who can operate in such complex scenario (McCracken, Brown & O'Kane, 2011). Hence, as pointed out by Coxhead et al. (2010), "it is not surprising that government departments and other public service organisations are constantly looking for ways to develop the skills of their managers and future leaders."

Similarly, in Qatar, despite the recognition of the need for a highly-skilled and capable workforce for its public sector, the highest proportion of public sector employees remains largely comprised by unskilled and semiskilled workers (Qatar General Secretariat for Development Planning, 2011). According to the report, "this skill mismatch, along with other features of public sector employment (particularly the social benefits), has reduced incentives for Qataris to improve their skills and education." The report further elucidates that:

The lack of adequate skills in the labour force is a challenge that must be addressed through skills upgrading for Qataris designed and implemented primarily through public and private institutions. Because not all Qataris will pursue an academic education, they need opportunities to develop technical skills through vocational training. The share of enrolment in technical education and vocational training at the secondary level is below that of international benchmarks.

Indeed, it was highlighted in its National Development Strategy for 2011-2016 that investments in technical education and vocational training (TEVT) remains inadequate, thereby requiring the creation of basic infrastructure for future course offerings that includes "a coordination mechanism to maintain the quality of institutions and programmes, ensure that course offerings meet labour market needs and student demand, and establish clear links between TEVT courses and labour market requirements" (Qatar General Secretariat for Development Planning, 2011).

Thus, a key component of Qatar's National Development Strategy for 2011-2016 related to public sector training is circumscribed under the government's plan to "upgrade skills in the public sector to improve institutions and administration for the country" by enhancing long-term training opportunities for public sector employees through the provision of more vocational training programmes (Qatar General Secretariat for Development Planning, 2011). However, as pointed out in the literature review, public sector training in Qatar involves the use of bespoke training courses that are heavily anchored on Western concepts. Furthermore, the IAD is the only training institution mandated by the Qatari government to provide public sector training. Thus, the premium placed on the vocational training of Qatar's public sector coupled by the challenges faced by its training system serve as the impetus for the examination of the current state of the country's vocational training system.

To summarise, this research aims is complete a thorough analysis of the present training in Qatar and produce verifiable recommendations for the Ministry of Interior.

3.5.2 Research Objectives

To achieve the aforementioned research aim, the present study has the following set research objectives:

(1) to conduct a relevant literature review;

(2) to conduct a methodological evaluation of public sector training in Qatar using Soft Systems Methodology (SSM);

(3) to implement the results of the Soft Systems Analysis;

(4) to evaluate results and

(5) to produce recommendations for Qatar related to its public sector's vocational training system.

It was decided to choose SSM as the overarching approach for the methodological evaluation of public sector training because of its proven record, its usefulness in addressing real-world

problems of management, its utility for learning and systems design (Checkland & Scholes, 1990; Hindle, 2011; Hardman and Paucar-Caceres; 2011) and its evaluatory nature which helps improve problematical situations by assessing the current situation and subsequently bring about changes. Within the context of the present study, SSM is considered a methodological tool that can help evaluate the current state of the Qatar's vocational training system for its public sector and subsequently bring about the desired changes. In addition, there is a need to devise a set of performance measures for assessing the quality of a course offered by one of the ministries in Qatar in order to objectively ascertain the quality of vocational training that the said ministry provides. These performance measures will then be used in evaluating the quality of a vocational training course offered by the chosen ministry through the design and subsequent administration of a survey questionnaire. Based on the findings generated from the survey questionnaire, new courses will be delivered across the ministries in Qatar and will then be evaluated. Finally, an investigation into new delivery methods will be carried out. The completion of these objectives will allow recommendations to be developed which will set the priorities and define the strategy and direction of Qatar's vocational training system for its public sector.

3.5.3 Originality

The present study is a novel research undertaking considering that most studies related to vocational training were conducted in Western settings (McCracken, Brown & O'Kane, 2011). In addition, findings from the review of related literature highlight the dearth or paucity in studies that are relevant to the utility of SSM in training systems as only a few studies focused on the applications of SSM in academic learning environments, as opposed to vocational learning environments. Such studies aimed at testing the effectiveness and utility of SSM in the following areas: (1) the teaching and learning process at undergraduate education (Patel, 1995); (2) education programme design (Tsoi, 2004); (3) module development (Hindle, 2011); and (4) managed learning environment (Hardman & Paucar-Caceres, 2011). Whilst the abovementioned studies clearly recognized the utility of SSM in problem-structuring and in building conceptual models to improve the system in question, they were still within the scope of academic teaching and learning. Hence, there is a lack in studies that are germane to SSM applications that focus on training systems in general, and on vocational training, in particular. Furthermore, findings from the present study is envisaged to inform the formulation of comprehensive recommendations for Qatar, as well as the production of "an operational and management model for the education and development of teachers for the technical education and vocational training system" (Qatar General Secretariat for Development Planning, 2011).

The new courses that will be developed will take into consideration cultural differences and the results of the SSM. As these courses are new, they will involve detailed research and study by the researcher and will be original both in content and in context. The investigation into new pedagogical delivery methods will also be original for Qatar which is still using delivery methods from the last century. The recommendations will therefore be a creative and constructive way ahead for the improvement of the vocational training programme in Qatar's public sector.

3.5.4 Contribution to Knowledge

The following contributions to **knowledge** have been identified:

1. Demonstrating the use of SSM in a new area of study;

2. Applying received theory in cultural differences in a new context**;**
3. Publishing new Data derived from interviews and evaluations;
4. Introducing Systems Thinking to Qatar;
5. Reporting on an experiment using a social media delivery method;
6. Redefining Western debate in an area of research.

By introducing new concepts such as System Thinking and using new technologies, the present study aims to contribute to the practice of teaching and learning for vocational training in Qatar.

These contributions are reviewed in section 7.3.

3.6 Ethical Considerations

This researcher made sure that ethical considerations related to this study which are centred on the issues of confidentiality and data protection, and on the involvement of human participants, were fully addressed. This researcher ensured the protection of participants from any form of physical or psychological danger during their participation in the study. In addition, this researcher ensured that the collection, storage, disclosure, and use of research data complied with the Data Protection Act of 1998, "which imposes certain obligations relevant to fair and lawful data collection and processing" (Matwyshyn, 2009). Fair and lawful data collection and processing require making certain that information or data obtained from study participants are fairly and lawfully used, and specifically for stated purposes only (Gov.UK, undated). This researcher therefore informed the participants about the nature and purpose of this study through an informed written consent and a covering letter which were provided to them. Moreover, study participants were informed about their right to refuse to participate or to withdraw from the study at any time they wish. The study participants were also debriefed after the administration of the survey questionnaires and after the semi-structured interviews. Furthermore, this researcher assured the participants that a copy of the results of the study will be provided to them if they would so require.

To further address the issues of confidentiality and data protection, after the administration of the survey questionnaires and the conduct of the semi-structured interviews, no further contact with the study participants was made in order to avoid intrusion and other ethical problems related to privacy from arising. The confidentiality and anonymity of all participants were upheld throughout the research study.

3.7 Summary of the Chapter

The choice of SSM as the conceptual framework of the present study is underpinned on the results of the literature review, which highlight the usefulness of SSM in evaluating learning environments and in designing education programmes. In the same vein, the choice of SSM as the conceptual framework is anchored on the overarching aim of the present study which is to evaluate the vocational training system in Qatar's public sector. In fact, SSM's evaluatory nature has been documented in prior literature. In particular, the conceptual framework of the present study is based on the seven-stage version of the SSM which is closely aligned with the Mode1 type of enquiry which is well-suited for undertaking research studies and is more accessible to novice researchers.

The research philosophy followed in the present is one that is hinged on phenomenology and interpretivism which serve as epistemological tools in understanding the problems of the

vocational training system in the public sector of Qatar. Indeed, extant literature has documented that SSM adopts epistemological principles involving interpretivist, phenomenological and hermeneutical claims. The present study used a pluralistic approach in its research design, wherein SSM is combined with a case study approach and action research. In this case, SSM is considered as the overarching methodological approach or the guiding methodological framework. The use of the case study approach is justified by its orientation with the aims of the present study, which is to investigate vocational training at the ministries in Qatar, thereby requiring that the training system itself be studied in its natural setting –the hallmark of the case study approach. In addition, action research was also used in the present study. Important elements of action research are considered to be actively involved in the process of critical inquiry whereby action research served as the collaborative process between the study participants and this researcher.

The present study used a combination of qualitative and quantitative research approaches – which is also called the 'mixed-methods' approach. The advantages of using a 'mixed-methods' approach have been highlighted in prior literature. For instance, a 'mixed-methods' approach increases the breadth and depth of understanding and corroboration (Johnson, Onwuegbuzie & Turner, 2007); as well as the effectiveness of addressing the research questions (Silverman, 2006). Moreover, a 'mixed-methods' approach fortifies the rigour of the research process (Greene, 2007), and is well-suited in applied fields (Riccucci, 2010). The use of the qualitative approach in the present study is underpinned on the use of the SSM as the guiding methodology. The qualitative approach is embodied in the semi-structured interviews. On the other hand, the quantitative research approach is embodied in the use of statistical tools in analysing the results of the Likert -type scale type of survey questionnaires (i.e. the pre-test and post-test).

CHAPTER FOUR. SOFT SYSTEM ANALYSIS OF THE PROBLEM

4.1 Introduction

This chapter describes the results of the soft system analysis of the problem related to public sector training in Qatar. In Chapter 3, a detailed description of the research methodology employed has been presented. In particular, it focused on the use of the Soft Systems methodology first formulated by Checkland and Scholes (1990).

The SSM explored the following stages: S*tage 1* which was to gain a deeper understanding of the problem; *stage 2* or *problem situation expressed*, which results in the expression of the problem as a rich picture; stage *3* or *problem-oriented root definitions*, which involves the formulation of root definitions; *stage 4* or *creation of conceptual models*, which designed the new course content with cultural differences and a new pedagogy using a mobile App. .These are all covered in this chapter.

Chapter five covers *stage 5* or *comparison between the conceptual model and the real world*, and chapter six covers *stage 6* or *identification of desirable changes*, which involves making modifications to the conceptual model in order to incorporate the interests of the actors. The final stage is discussed in chapter seven. The seven stages are shown pictorially in figure 4.1 below.

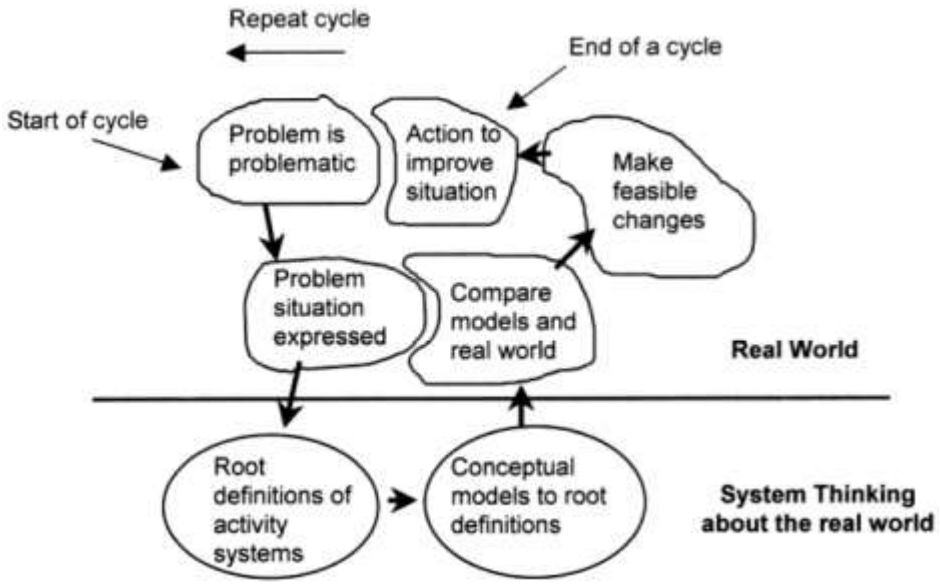


Figure 4.1 Stages in the SSM Source Images for SSM (google)

SPSS version 20 was used to input and analyse the data. The data analysis included pre-analysis checks to screen for data entry errors. Next, initial frequency distribution and descriptive statistics were computed to ascertain the perception of participants regarding their course expectations (pre-test) and whether or not these expectations were realised after finishing their respective vocational training courses (post-test). Following score measurement proposed by Jamieson (2004) for Likert scale items, the median as the measure of central tendency was obtained for each item.

Purposive sampling technique was chosen as this sampling technique is a type of non-probability sampling deemed well suited for investigating "a certain cultural domain with

knowledgeable experts within" (Tongco, 2007). Since "the choice of the purposive sample is fundamental to the quality of data gathered", then it follows that "reliability and competence of the informant must be ensured". To ensure that the selected participants would be reliable and competent within the context of the present study, the following selection criteria were established by this researcher: (1) participants should be about to take a vocational training course within two months of the receipt of the questionnaire; and (2) participants should belong to either the civilian or the police sectors of the MOI. The second criterion was necessary since the MOI's training department is responsible for the conduct of public sector training and the civilian or the police sectors of the MOI are thus considered to have first-hand knowledge of the activities relevant to the training system of the MOI. The consent form for all questionnaires is shown in Appendix A.

4.2 Stage 1 of SSM: Problem Identification

A brainstorming was organised for all teaching staff in April 2011 in order to discuss the state of the police training. Seventy five percent of the trainers attended which is a high figure. The brainstorming lasted one full day and was a lively affair. No notes were taken as it was stressed that all opinions were welcome however strange or unusual. The session confirmed the opinion (which led to this research) that there was a general dissatisfaction with the training provision, and something must be done. During the session, several reasons for the dissatisfaction were proposed including cultural differences, teaching styles and course content.

4.2.1 Cultural differences

4.2.1.1 Identifying the trainer's views on Cultural Differences

The realisation of how cultural differences affect the style of teaching first occurred during my MBA studies. Most training courses in Qatar are developed by Western experts and so it was of interest to analyse how these perceptions affect training.

As detailed in chapter two, a comprehensive reading programme was undertaken concerning cultural differences and it was decided to use the seven cultural dimensions postulated by Trompenaars. A questionnaire was devised to find where the Qatar trainers placed themselves on the spectrum It was written in Arabic and the English translation is shown Appendix B. The first block (questions 1-3) is to establish a position on the universalism – Particularism axis. This examines the attitude towards rules and relationships. The second block (Questions 4-9) looks at the Individualism – Communitarianism axis. This looks at the relationship between the group and the individual. The third block (questions 10-15) examines the attitudes on the Specific – Diffuse axis, this measures how far people regard their home life and the work life. The fourth block (question 16-20) looks at the Neutral – Emotional axis. This examines to what degree people allow emotions to govern their decisions. The fifth block (questions 21-24) looks at the Achievement – Ascription axis. This means roughly how your status is measured. The sixth block (questions 25-29) looks at the Sequential – Synchronous axis which examines the attitude towards time. The last section (questions 30-36) looks at how people relate to their environment – it is called the Internal – Outer axis.

4.2.1.2 Analysis

The questionnaire was issued to all Police trainers (50) in 2012 and there was an 80% return which was very satisfactory. The average responses are shown in bold type in Appendix B.

This is part of the primary data and the results are summarised according to the seven categories.

Research shows that, the US, UK and many northern European countries can be identified as universalist i.e. they place a high importance on rules and regulations. The results of the first set of questions in the questionnaire in Qatar is more biased towards the lower (particularist) end of the scale showing that Qataris place a high regard on relationships and are prepared to relax rules and regulations in order to do this (Trompenaars.& Hampden-Turner, 1998).

Research shows that, the US, UK, Scandinavian, Australian cultures veer towards individualism. The second set of questions in the questionnaire revealed that in Qatar there was a high regard for the group (tribe) (Trompenaars.& Hampden-Turner,1998).

Research shows that, the US UK, Scandinavian and Australian cultures, people tend to keep their work and personal lives separate. In Qatar many businesses are family businesses and the role of a family member is most important. This is shown in the answers to the third group of questions in the questionnaire (Trompenaars.& Hampden-Turner, 1998).

Typical Neutral cultures (i.e. those that make an effort to control their emotions) are the US UK, Scandinavian and Australian cultures. In contrast, the fourth set of questions in the questionnaire revealed that a Qatar will find ways of expressing their emotions even at work. They are this at the Emotional end of the scale (Smith, Dugan, & Trompenaars, 1996).

In the US UK, Scandinavian and Australian cultures, achievement is measured by what you achieve, your performance where the Qatar culture places more emphasis on who you are, your place in the tribe (Smith, Dugan, & Trompenaars, 1996). The fifth set of answers in the questionnaire reinforced this opinion.

The US UK, Scandinavian and Australian cultures tend to place high value on punctuality, planning and order which is called the Sequential end of the axis. The questionnaire shows that in Qatar, people are more flexible and the past, represent and future interweave into a continuum.
There is definitely a different concept of time amongst the Arabic nations and this is shown quite clearly by the answers to the sixth set of questions in the questionnaire
(Smith, Dugan, Trompenaars. 1996).

The US UK, Scandinavian and Australian cultures believe that they can control their environment to achieve their goals. This includes how they work with teams and within organisations. The opposite view believes that they must work with their environments. They avoid conflict where possible and need continual assurance that they are doing a good job. The answers to the seventh setoff questions in the questionnaire shows that Qatar is at this end of the scale (Smith, Trompenaars & Dugan. 1995).

This analysis of the questionnaire agrees with published research and has shown that are indeed cultural differences between Qatar, the US and UK. As many of the courses that are taught in Qatar emanate from the US and the UK, then this seems an area that merited further investigation especially in relation to training.

4.2.2 Identifying the trainee's perspective

Investigations into the perceptions of the trainees was now conducted. Pre and post questionnaires were devised for trainees who were about take a course at the Police Academy. The sampling frame for the pre-questionnaire consisted of a complete, up-to-date list of all civilian and police employees belonging to the Qatari public sector who were to carry out training after June 2012. A cohort of 150 trainees was identified, consisting of 117 civilian employees (78% of the sample population) and 33 police officers (22% of the sample population). The civilian participants took courses with moderate to high social content, while the non-civilian (police) participants took courses having a social rather than a purely technical content (for example, relations with the public). The questionnaire was issued to all 150 participants.

4.2.2.1 The Pre-Questionnaire

The first part of the questionnaires looked at the gender, age and educational attainment of the participants. The second part was to elicit the views on existing vocational training in the public service sector of Qatar. It asked 20 questions about the following: (a) expectations on learning (items 1-5); expectations on the transfer of skills acquired during training (item no. 6); (b) expectations on the ability and skills of the speaker or trainer (item nos. 7-11); (c) expectations about the training materials and modules (item nos. 12-15); and (d) expectations about the training environment (item nos. 16-20). The questionnaire is shown in Appendix C.

4.2.2.2 Analysis of the Pre-Questionnaires

Out of the 150 survey questionnaires that were distributed to participants on July 2012, a total of 142 questionnaires were accomplished and returned by the participants — thereby generating a response rate of 94.67 percent. Out of the 142 questionnaires analysed, 110 were from men (n=110; 77.5%), while 32 were from women (n= 32; 22.5%) The majority of the participants have ages ranging from 31-40 years old (n= 69; 48.9%), and most obtained a bachelor's degree (n=126; 88.7%)

Full analysis of the pre-questionnaire is shown in Appendix D and is summarised here

Participants considered these expectations to be 'very important':

(a) 'To learn the basics on the topic' (n=142; 100%);
(b) 'To learn advanced concepts on the topic'(n=105; 73.9%,);
(c) 'To be able to complete the course' (n=142; 100%,);
(d) 'To be able to apply the skills I've learned in training' (n=142; 100%,);
(e) 'To develop the skills in using the topics learned in everyday activities' (n=135; 95.1%);
(f) 'The speaker is able to share his/her knowledge well' (n=125; 88%,);
(g) 'The speaker is able to prepare his/her materials to make it easier to understand the concepts' (n= 13; 93%);
(h) 'The speaker is knowledgeable in the topic' (n=142; 100%,);
(i) 'The speaker provides sufficient examples to help participants understand the concept' (n=142; 100%,);
(j) 'The training is developed appropriately to match the needs of the participants' (n= 138; 97.2%);
(k) 'The training materials provided are interesting' (n= 137; 96.5%);

(j) ‘The training materials provided can be used independently’(n= 106; 74.6%); (l) ‘The training materials used can be used to share knowledge to colleagues’ (n=106; 74.6%);
(m) ‘The training environment is conducive to learning’ (n=142; 100%);
(n) ‘The training environment is open to sharing of experiences of participants’ (n=137; 96.5%,);
(o) ‘There is sufficient equipment to encourage sharing among participants’ (n= 106, 74.6%);
(p) ‘The training environment is helpful in encouraging participants to take notes, etc.’ (n=133, 93.7%).

These expectations were considered to be less ‘important’:
(a) ‘To be able to teach colleagues the skills learned from the training’ (n=83; 58.5 %); and
(b) ‘The speaker accommodates the questions of participants’ (n=76; 53.5%).

Over all, results of the data analysis obtained from the pre-test survey suggest that the participants have high expectations regarding the respective vocational training courses that they were enrolled in. The participants considered these expectations either as ‘very important’ or ‘important’. In particular, majority of the respondents considered 18 of their expectations on the vocational training course that they are enrolled in as ‘very important’, with each item generating a median of 5.00. These expectations are centred on: learning the basics and advanced concepts of the course; completing the course; applying the skills learnt from the course; fully developing the skills and using them in their everyday tasks; the ability of the speaker in sharing their knowledge, in preparing their materials and in providing sufficient examples to help participants understand the concepts; the suitability of the course in addressing the training needs of the participants; and the conduciveness of the environment for learning. Two items on expectations obtained a median of 4.00, which means that most of the respondents considered these two expectations ‘important’. These items were centred on skills transfer and on the ability of the speaker to accommodate the questions of the trainees.

4.2.2.3 The Post questionnaires

The post -questionnaires were issued within one week of completion of the course and are shown in Appendix E. The post-test questionnaire asked 20 questions about the actual experiences of the participants when they took their respective vocational training courses. The survey items revolved around the same considerations covered in the pre-test that examined the participants’ expectations. However, in the post-test, the survey was designed to test whether or not the training courses were able to meet the participants’ expectations.

4.2.2.4 Analysis of the post-questionnaires

Full analysis of the pre-questionnaire is shown in Appendix F and is summarised here

The responses averaged a mark of only 2.2 which is slightly less than neutral. Only three categories gat strong agreement: - the ability to complete the course, the knowledge of the trainer and the comfort of the training environment. They were better than average at learning the basics but strongly disagreed that they learnt advanced topics. Most of the other marks were between disagree and strongly disagree.
Going deeper into the figures it seems that although perceptions were high before the course, there was strong disappointment after the course. There was no transfer of skills and although

the trainers were acknowledged to be knowledgeable, they were not easy to understand and did not give enough examples. This indicates that the courses were not suited to the Qatar culture

The training was not thought to match the needs of the trainees which indicates that the content needs examining

Although the training environment was comfortable, there was a lot lacking which might indicate a new way of teaching.

This, out of the questionnaires, three possible areas of improvement were indicated – cultural differences, content and pedagogy. These would then be explored further in the semi-structured interviews.

4.2.3 The Semi-structured interviews

In order to gain more information about the expectations of the vocational training, semi-structured interviews were devised and given to a selected subset of the 150 participants

4.2.3.1 Sample Size

The 150 participants took 10 courses and one person was chosen at random from each course for interview making a smaller sample of 10: - 6 civilian employees and 4 police officers. Although this number is much smaller than the 142 who completed the questionnaire it represented each course and enabled the researcher, considering his busy schedule, to devote sufficient time for each interview.

4.2.3.2 Design of the Semi-structured interviews

The interviews were developed from the results of the questionnaires. They were designed to ease out opinions on the major issues that were highlighted there i.e. matching the needs of the trainees, the style of the delivery and any cultural differences.

The interviews were conducted in Arabic and the same questions were put to each candidate although the follow up questions varied according to the answer. The consent form is shown in Appendix G and the questions are tabled in Appendix H.

The researcher realises that with such a small ample to possibilities of interview bias is high. This is why, he conducted extensive research to discover the possible biases that could occur. Many problems were identified and the most common are listed below (Kahnman, 2011).

(a) Confirmation Bias: This is a tendency for humans to seek out information that supports a pre-conceived belief about the applicant that has been formed prior to the interview (Phillips and Dipboye, 1989). This means interviewers look to confirm a possibly shallow impression they may have formed of the candidate pre-interview, as opposed to having a more open outlook on the candidate's abilities in this area. This was recognised by the researcher as being a major opportunity for bias to enter the interview as the three factors of content, cultural differences and delivery mode were very prominent in the researcher's mind. This extra care was taken to guard against this bias.

(b). Affective Heuristic: This is where interviewer's decisions are influenced by quick and superficial evaluations, such as: the level of attractiveness of a candidate, race, gender, background, etc.—none of which are relevant to the candidate's suitability for the

role (Postuma et al, 2002). One study found that applicant obesity actually accounted for *35 percent* of the variance in hiring decisions. Studies have shown that **allowing enough time to do evaluations** increases accuracy and reduces gender bias (Bauer& Baltes, 2002). So, plenty of time was allocated to read interview materials and take notes.

(c). Anchoring: This is a tendency for interviewers to place an arbitrary anchor of expectation of a candidate, which then influences their evaluation of the candidate. For example, candidates who had a high anchor of expectation were evaluated more favourably than those with a low anchor scale (Peeters 1995). The researchers spent a long time explaining that there was no preferred answer and took care not to unintentionally indicate one

(d). Intuition: a huge part of the candidate evaluation process is based on intuition as there is not enough data to objectively test every area of the candidate's fit to the culture and demands of the job (Kahnman, 2011). The problem is that intuition is not reliable, as it is thought to be susceptible to factors not related to the hiring decision such as emotion, memory, etc. The researcher made a strong effort to damp down his intuition and relay solely on the answers to the questions.

Despite these dangers in using personal interviews to elicit information in survey studies, semi-structures interviews are still the most desirable method of data collection in certain situations. Face-to-face interviewing is a very common technique and therefore understanding important elements of the interview process is essential. A number of potential biases are now discussed. A common problem in the interview process is that respondents are not clear about the expectations of the interviewer (Cannell et al 1977). Interviewers, therefore, should emphasize clarification of the role and expectations of the respondent. (Enelow et al 1986) suggest several ways to avoid the direct biasing:

- Avoid using emotionally loaded words.
- When possible, use open-ended questions. In general, the more open-ended the question, the more accurate will be the response. Frequently interviews will begin with open-ended questions and then will become more focused.
- Be careful when summarizing since it can lead to bias as well. The interviewer may unthinkingly introduce an inference about the content of the summary, suggesting approval or disapproval.
- Be mindful of the timing of questions. The timing of questions and a shift of topics can introduce bias. One should not pursue a specific line of inquiry longer than necessary. Excessive or highly detailed concentration on one area of inquiry may convince respondents that this area is of special significance and they will treat it accordingly. Conversely, rapid shifts from a topic may convince them of its unimportance (Salazar 1990).

This advice was taken, and the researcher feels that great care was taken to eliminate bias

4.2.3.3. Analysis of the Semi-Structured Interviews

All of the 10 employees of the MOI whom this researcher requested to participate in the semi-structured interviews granted the request and participated, thereby generating a response rate

of 100 percent. Transcripts of the semi-structured interviews were coded and content-analyzed using Atlas Build 5 which is a qualitative analysis software. The interview transcripts are presented in Appendix I.

Results of the semi-structured interviews indicate that the problems of public sector training in Qatar involve the following issues, namely: (1) that the vocational training courses did not match the needs of the participants; (2) that the concepts taught were grounded on Western thinking, and were therefore not applicable in the context of the Qatari experience; and (3) that training equipment was traditional and outdated. As a result of these problems, study participants felt that they failed to acquire the skills that the courses were intended to help develop in them. Overall, results of the analysis of data obtained from the semi-structured interviews buttress the results of the survey (i.e. the pre-test and the post-test questionnaires), wherein the identified problems of public sector training in Qatar can be grouped into the following issues: *course content and course delivery*. In terms of the course content, findings from the semi-structured interviews suggest that the issue of cultural differences plays a central part, wherein the participants perceive that the courses were largely based on Western concepts and that such concepts were difficult to comprehend and apply to the context of the Qatari workplace. When asked about the possible solutions to address the identified problems, participants suggested the following: (1) changing the course content to resolve the issue of cultural differences; and (2) delivering the training courses through more interactive methods of instruction (e.g. using ICT tools). Table 4.1 below presents the results of the content analysis of the transcripts of the semi-structured interviews.

Table 4.1 Results of the Content Analysis of Interview Transcripts Showing the Codes Made and the Corresponding Quotations

Codes	Quotations
Training course did not match the needs of trainees.	1) The course was based on examples from the US. I can hardly understand the concepts. 2) They are Western-based. It was difficult to understand. 3) The training courses are not culturally responsive to the needs of the trainees. 4) They are more applicable in Western countries and not on Qatar. Western countries have more informal workplace traditions while Qatar has more traditional settings. 5) There are many cultural differences between the examples and concepts of the course and the Qatari workplace.
Training equipment was not sufficient to encourage sharing between training participants	1) Training equipment is only blackboard and modules. 2) No other hi-tech gadgets were used, such as computers etc. 3) Training equipment is very traditional. 4) They failed to make training appealing and interesting to trainees. 5) I find the equipment very traditional at does not keep pace with technological development.

Speaker failed to provide sufficient examples to help participants understand the concepts.	1) Maybe because the speaker cannot apply the examples in our country. Examples were about Western countries only. 2) It is because the concepts are very Western and not applicable to Qatar. 3) The speaker perhaps cannot apply examples that are relevant to Qatar because the course is focused on Western culture. 4) Because the speaker cannot relate the concepts to the Qatari experience. 5) There's a cultural disconnect between the concepts tackled in the course and the Qatari setting.
Effects of problems on skills acquisition	1) It is difficult to acquire new skills from the training. 2) Trainees do not learn effectively. 3) It is difficult for trainees like me to understand the course. 4) Trainees or employees cannot learn the skills being taught in the training. 5) It was difficult for me to learn or develop new skills from the training alone.
Solutions to the problems	1) Courses should be adapted to the Middle Eastern context, not Western. 2) The training equipment must be upgraded and be technologically advanced. 3) There should be new content of the course. 4) Offer more courses that are applicable to Qatar. 5) Make reforms in the training system itself…like new courses that are relevant to workers in Qatar and buy new training equipment.

Source: Created by the Researcher

To complete the evidence trail, a SWOT session was conducted with trainers from the set who attended the first brainstorming. Twenty of the original fifty trainers attended which was considered sufficient for purpose. At this stage, the researcher had both primary and secondary data which indicated that the three areas of cultural differences, content and delivery were areas where improvements could be made in the Qatar vocational training system. The purpose of this session was to test the veracity of these weaknesses in the Qatar system. The researcher was careful not to bias the session by detailing his own thoughts. The results of the session are shown in table 4.2 and are generally in line with previous evidence from the primary and secondary research. This gave the researcher confidence to proceed with the Rich Picture.

Table 4.2 The SWOT Matrix conducted at the Police Training Academy

Strengths	The PTI is an established entity with power in law to deliver vocational training. This means that any initiatives that it takes are backed by the government of Qatar and therefore will be implemented.

Weaknesses	A comprehensive analysis of Vocational training in Qatar has revealed that many of the courses did not meet the expectations of the participants. There were many reasons for this. The key criticisms were: The courses were biased culturally to the West The courses were not challenging The courses did not contribute to new skills or knowledge The courses were not perceived as useful The courses used outdated delivery techniques.
Opportunities	The opportunity exists to update the courses making them more relevant and challenging. Also, to use the new communication techniques such as Apps to complement the training. Short term goal To teach the new course on Systems Thinking every three months to different sections of the public service. To commission the completion of the mobile App for two courses and analyse the feedback Long term goal Over the next five years every course on the Police Training Institute agenda will be examined against the new performance indicators and updated. To extend the mobile App delivery to another ten courses
Threats	The only threat is inertia. The management at the Academy does nothing and continues with the present system.

4.3 Stage 2 of SSM: Problem Situation Expressed (Rich Picture)

This section identifies the issues that formed part of the Rich Picture that was constructed to show the problems of vocational training in Qatar. This constitutes the second stage of the SSM (Checkland, 2000; Staadt, 2012; White, 2012). The expression of the problem situation in a rich picture was based on the findings from the literature read, the brainstorming session, the three questionnaires and the semi -structured interviews. A SWOT session was conducted with the trainers who attended the first brainstorming as a final check on the research so far.

The results of the post-test questionnaire discussed in section 4.2, indicate that the abovementioned participant expectations were not met at the end of the respective vocational training courses. With specific reference to the manner by which training was delivered, study participants perceived that *the training course was not developed appropriately to match the needs of the participants.*

Moreover, study participants perceived that: (1) training materials provided cannot be used independently; (2) training materials cannot be used to share knowledge learnt with their colleagues; (3) training equipment was not sufficient to encourage sharing of knowledge amongst other trainees; and (4) the speaker failed to provide sufficient examples to help participants understand the concepts.

As a result of the perceived failure of the vocational training to meet the participants' expectations, majority of the participants felt that: (1) they were not able to learn the basics on the topic; (2) they were not able to learn advanced concepts on the topic; (3) they were not able to able to apply the skills they learnt in training; (4) they failed to develop the skills in using the topics learnt in everyday activities; and (5) they were not able to teach their colleagues the skills they learned from the training.

Nevertheless, despite the perceived failure of the vocational training system to meet the expectations of the participants, the majority of the participants felt that the speaker was knowledgeable in the topics and that the speaker effectively accommodated their questions. Moreover, the participants viewed the training environment to be conducive to learning and the sharing of their learning experiences. Thus, the problem of the vocational training system as perceived by the participants is rooted on the mismatch between the training needs of the participants and the vocational training courses, and on the delivery of these training courses.

These findings were further buttressed by the findings from the semi-structured interviews, which indicate that course content and course delivery are the key problems related to the provision of vocational training to Qatar's public sector. Moreover, circumscribed under the problematical issue of course content is the cultural disconnect between the Western-based concepts of the training courses and the context of the Qatari workplace. In such case, study participants felt that it was difficult for them to apply the Western-based concepts to the Qatari setting due to cultural differences.

The cultural difference aspect was also identified in the first questionnaire to the same 150 participants and the analysis in 4.1 confirmed that there was an issue here. Figure 4.2 depicts a Rich Picture that identifies the problems of vocational training in Qatar. The depiction starts with the importance placed on training by the Qatari government as it emphasises that training and development is one of the main pillars of the government for achieving its human development vision (Ministry of Development Planning and Statistics, undated).

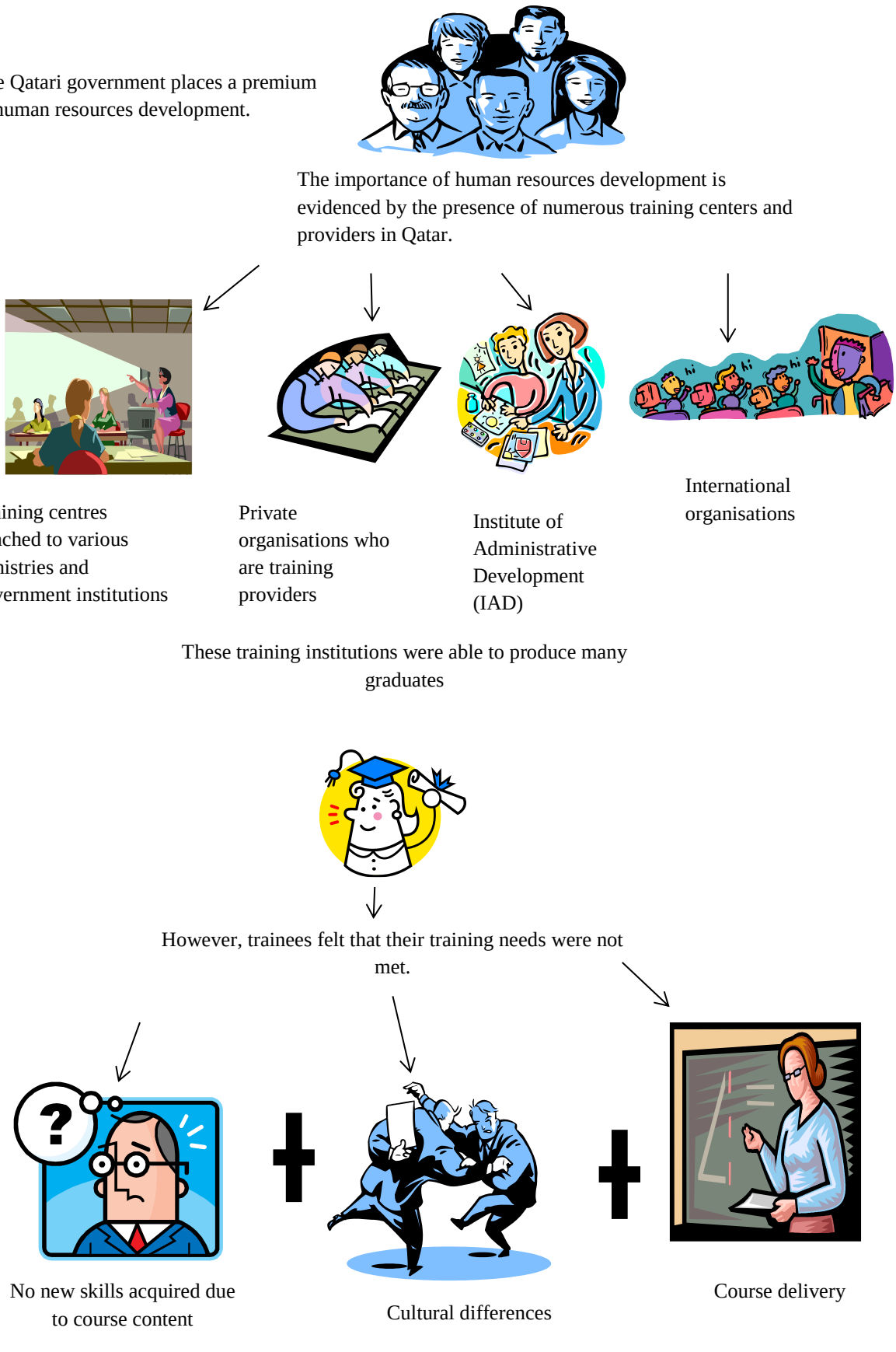


Figure 4.2 Rich Picture of the Problems of Vocational Training in Qatar's Public Sector

This premium placed on human development has been evidenced by the presence of: (1) numerous training centres attached to various ministries and government institutions which offer or facilitate internal training for their respective employees; (2) private training providers

which organise various bespoke and public training courses; (3) internationally known organisations that provide training to government officials; and (4) the Institute of Administrative Development (IAD) which is considered the official 'hub' of expertise in the State of Qatar. These training centres significantly contributed to the remarkable boost in the number of trainees in government centres and private institutions (Qatar Statistics Authority, 2009). However, although these institutions have produced many graduates of vocational training, problems relevant to vocational training in Qatar's public sector have nonetheless been identified by study participants. These problems are: (1) course content; (2) cultural differences; and (3) delivery of the training courses.

4.4 Stage 3 of SSM: Problem Orientated Root Definitions

This section involves the structuring of the problematical situations related to the provision of vocational training to Qatar's public sector. This consists of the formulation of the root definition of the vocational training system in Qatar's public sector using the CATWOE mnemonic, which stands for customers, actors, transformation, worldview or *Weltanschauung*, owners and environmental constraints (Checkland & Scholes, 1990). Moreover, performance measures were devised from the definition of transformations that explain how the vocational training system in Qatar's public sector works (input/output) or how it needs to change. In SSM, before one can think of a solution (transformation), one must arrive at a deep definition (called a root definition) of the activity that is to be modelled. Any activity can be posed in this form where the input is transformed into a different state so becoming an output. It is important to differentiate between inputs and resources. The latter are what are necessary for the transformation but the input to the transformation.

It is good system practice to always consider three layers or hierarchies of system – the system itself and then the one above (the bigger picture) and one level below (subsystem). All three together will give a complete picture as it is not possible to consider a system in isolation. This impacts on the CATWOE definitions especially for the Transformation. In the following discussion, the bigger picture (the top level) is taken to be the vocational training system in Qatar. The system under focus is the training at the PTI and a subsystem will be a particular training course. Let these levels be denoted as A, B, and C

4.4.1 Problem-oriented Root Definitions

Using the CATWOE mnemonic, the following root definitions have been derived:

(1) "C"- which stands for *customers* or the interest groups who are the beneficiaries and who are affected by the activities carried out the vocational training system. At level A, these are any public sector employees who take professional development courses offered by various training providers. At level B, it is the police who are being trained at the PTI and level C is police being trained on a particular course.

(2) "A" - which stands for *actors* or those who carry out the activities in Qatar's vocational training system. At level A, these are the people working at: (i) numerous training centres attached to various ministries and government institutions which offer or facilitate internal training for their respective employees; (ii) private training providers which organise various bespoke and public training courses; (3) international organisations that provide training to

government officials. At level B, these are all trainers at the Police Training Institute (PTI) and at level C, they are particular trainers who are taking particular courses.

(3) "T" - which stands for *transformation* or the manner by which inputs to the vocational training system are transformed into defined outputs. For all the systems, the inputs are the courses. If level A is considered, then the question is how Qatar trains its public servants i.e. how they are transformed (output) by the inputs (courses) the result of the literature search carried out in section 2 indicates that there are problems in Qatar with their courses. There is disquiet about the standard, usefulness, relevance and delivery of these courses. Cross cultural differences have not been respected and many feel that the courses are there so as to satisfy some quota rather than to improve the efficiency of the services. For the system in focus (level B), which is the Police Training Institute, more research was done (questionnaires and interviews) to discover more details of the transformation. This focussed on course content and delivery. In the bottom level © the transformation concerned a particular course (Systems Thinking) and again a more detailed transformation was revealed.

(4) "W" —-which stands for *Weltanschauung or Worldview* or the perspective from which the root definition is seen. Again, this can be discussed at three levels. At level A, the world view is that every country needs an efficient public sector and this in turn demands vocational training. This training should be focussed on the needs of the country and should employ up-to-date methods and deliver modern ideas. This research, is focussed on the PTI. Their world view must be a subset of that of level A but also it reflects particular needs to do with policing. The *Weltanschauung* to do with policing has changed over the years because of the global nature of the world and because of changing attitudes. It is still the prevailing view that criminal must be caught and appropriately dealt with but in the other hand there should be awareness of different cultures, of differing types of crime and altogether to have a more holistic view of crime and the criminal. This percolates down to level C where the suggestion is that a course in Systems Thinking or System Awareness would be suitable to transform an old worldview to a modern one.

(5) "O" - which stands for *owners* or those who have the authority over Qatar's vocational training system. At the top level, this is represented by the Emir of Qatar, H.H. Sheikh Tamim Bin Hamad Al Thani, who has control over everything that happens in Qatar. This power is delegated to the Ministries who then can deliver various forms of training and one particular part of one particular Ministry is the PTI which is *the owner* at Level B. At level C, the *owner* will be the trainer who gives the course.

(6) "E" – which stands for *environmental constraints* or the environmental constraints on Qatar's vocational training systems. At level A, this is the desire and the commitment of Qatar towards training. One aspect is also the resources that they are prepared to give to the various owners. At the level of this research, the resources are those that are available to the PTI. These do not just refer to equipment and manpower but also to the courses themselves which is the concern of this research.

Based on the analysis of the results the interview, internal documents, and participant-observation, the following root definition of the *vocational training system in Qatar's public sector* is hereby formulated as:

The vocational training system in Qatar's public sector which is a training system currently serviced by: training centres attached to various ministries and government institutions, private training providers, the Institute of Administrative Development (IAD), and international organisations that provide training to government officials was established and owned by the Qatari government as duly represented by the Emir of Qatar, to provide professional development courses to public sector employees to enable them to achieve their professional development goals— but which is currently being restricted by environmental constraints largely comprised by resource limitations such as the provision of training courses that are based on Western settings and the use of old training equipment.

At the system-in- focus, this translates into:

The training system for police officers, which is currently serviced by the Police Training Institute (under the control of the Minority of Interior) to provide, professional development courses to police officers to enable them to function efficiently in in a modern, global and changing— but which is currently being restricted by the attitude of the current trainers and the courses they deliver.

At the sub-system level, the root definition is:

The personal development courses for police officers given by trainers at the Police training Institute to provide, holistic or global thinking so as to respond and react to new security situations which is currently constrained by the understanding and ability of the trainers

4.4.2 Formulation of Performance Measures

One of the tasks of the SSM is to devise a set of performance measures for assessing the quality of a course offered by one of the ministries in Qatar. As was emphasized in Chapter 2 subsection 2.8, extant literature related to course content points to the characteristics or features that effective course content must possess. These characteristics include: (1) being able to meet the needs and expectations of trainees (Rudestam & Schoenholtz-Read, 2002; Pohl et al., 2005; Chan et al., 2006): (2) being able to afford new pedagogies and keep pace with the latest technological trends and international product markets (Godfey, 1997); (3) being able to challenge the trainees, pique their interests and actively engage them (Pohl et al., 2005; Nkirina, 2009); (4) being practical and useful as opposed to being theoretical (Pohl et al., 2005; Nkirina, 2009) and effectively addresses trainees' workplace problems (Pohl et al., 2005; Chan et al., 2006); (6) being able to change conventional or old ways of thinking and introduce novel ideas (Chan et al., 2006). In addition, findings of the literature review highlight the importance of considering cultural differences in the organisational learning framework of any organization (Bickerstaffe, 2002). This will require preparing course content that is culturally relevant and applicable to Qatar.

The aforementioned findings from the literature review were used to inform the formulation of performance measures upon which the pre-test and post-test questionnaires and semi-structured interview items were based. Table 4.3 below presents the performance measures developed from the results of the literature review. It shows the activity, the precise understanding of the said activity, the indicators of progress and how the indicators are to be measured.

Table 4.3 Performance Measures Devised to Evaluate the Quality of a Course Offered By one of the Ministries in Qatar

Activity	Precise identification and understanding of the activity	Indicators of progress	How the indicators will be measured
To meet expectations	All expectations of the participants were met.	The experience of the course encouraged participation in more courses	Motivation of the participants for more courses
Change ways of thinking	The training introduced new ideas	The participant left the course with a new way of thinking about issues	Interviews
To challenge	The course did not repeat old knowledge but challenged the participant	The participant 's knowledge was increased	Interviews
New Pedagogies	To change the delivery style using modern technology	Amount of use of modern IT equipment	Money invested in new equipment
Usefulness	The content was perceived as useful to the participant's employment	The frequency with which the new knowledge was used at work	Improved effectiveness at work
To Relate to Qatar	The material was deliberately related to the Qatar culture	All case studies and examples were related to Qatari or Arabic cultures	Inspection

Source: Created by the Researcher

4.5 Stage 4: Creation of a Conceptual Model

The root definition has defined what the system is. It was defined as an "entity" which had inputs and outputs and a transformative process to turn the former into the latter. Three levels are considered and the system – in – focus was the system that encompassed the Police Training Institute. The outputs required here were the worldviews of police officers which enabled them to have a modern, global understanding of the world and its problems and the inputs were the current worldviews. The transforming process was the courses offered.

The conceptual model is concerned with what the system must do in order to qualify as the desired system - in - focus.

It is in no sense a description of any part of the real world: it is simply the structured set of activities which logic requires in a notional system which is to be that defined in the root definitions. This is a hard point to grasp and once conceptual model building starts, there is a noticeable tendency for it to slide into becoming the description of actual activity systems known to exist in the real world. This needs to be resisted because it negates the whole purpose of the approach, which is to generate radical thought by selecting some views of a problem situation as possibly relevant to improving it, working out the implications of those views in conceptual models and comparing those models with what exists in the real world situation. (Checkland 1990)

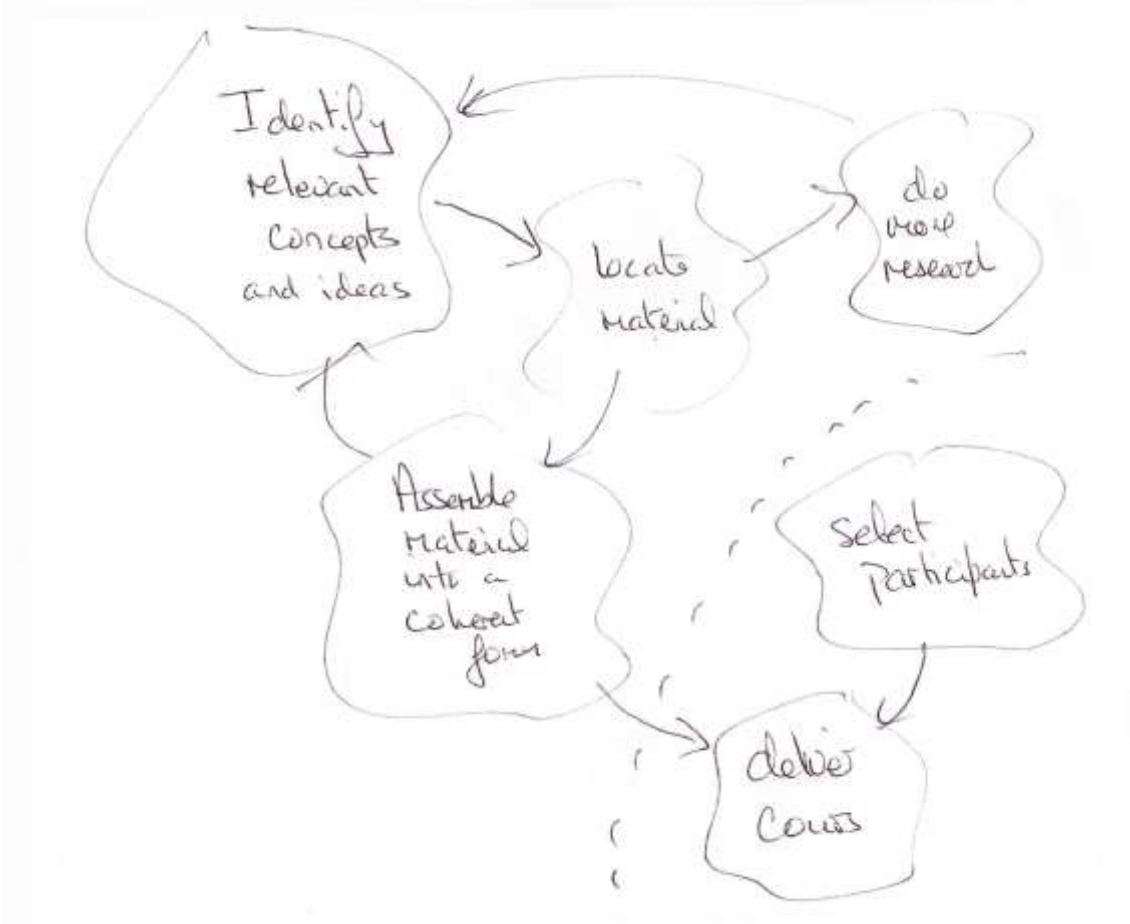


Figure 4.3 Conceptual Model by Researcher

4.6 Stage 5: Comparison with the Real World

4.6.1 Cultural Differences

In terms of cultural differences, results of the literature review indicate that cultural distance and cultural differences can affect the knowledge transfer process (Li et al., 2014). According to Li et al. (2014), "in knowledge transfer activities, first, the knowledge seeker evaluates and subjectively locates the potential knowledge source, and the process of doing so is affected by power." This implies that knowledge seekers — in this case, the participants/ trainees, who belong to a culture with highly collectivist nature and high power distance, will seek to evaluate and subjectively locate the potential knowledge source — in this case, courses based on Western settings, which is characterised by a culture with highly individualistic nature and low

power distance. This will result in difficulty in knowledge acquisition since knowledge transfer activities are thus negatively affected by cultural distance and cultural differences between the participants/ trainees and the orientation/ setting of the course.
In addition, as pointed out by Rogers & Spitzmueller (2009), the individualism-collectivism concept posits that individual differences can negatively affect the effectiveness of training for employees who are from different cultural backgrounds. Applying this in the context of the present study, the participants/ trainees who belong to a culture with highly collectivist nature will have difficulty in digesting information or acquiring knowledge from a course based on Western settings, which is primarily individualistic in nature. Furthermore, as pointed out by Cox, Lobel and McLeod (1991), cultural differences affect group activities whereby teams consisting of participants with collectivist cultural traditions tend to display greater cooperative behaviour compared to those teams with individualistic cultural traditions, who are in turn more likely to be more competitive. Within the context of the present study, the participants/ trainees who belong to a culture with highly collectivist nature would find it difficult to participate in or successfully complete team activities required to be undertaken as part of a vocational course that is largely based on Western settings and hence foster individualistic cultural attributes. Therefore, as suggested by Rogers & Spitzmueller (2009) organisations can create an optimum training climate by the careful consideration of the individualism-collectivism construct in shaping instructions and training overviews.

In general, results of the literature review confirm the impact of cultural differences on (1) group activities (Cox, Lobel & McLeod, 1991); (2) achievement motivation (McClelland, 1961); (3) learning motivation (Rogers & Spitzmueller, 2009); and (4) knowledge transfer (Li et al. 2014). A key implication of this when applied to course content is that courses should be designed in such a way that they reflect the cultural orientation of end-users or trainees. Hence, they should be designed with the national culture of the trainees in mind.

4.6.2 Course Content

Findings from the analysis of the results of the literature review enumerated the following characteristics or features of effective course content, namely: (1)) meets the needs of trainees (Rudestam & Schoenholtz-Read; 2002; Pohl et al., 2005; Chan et al., 2006): (2) keeps pace with the latest technological trends and international product markets (Godfey, 1997); (3) is interesting and engaging to the trainees (Pohl et al., 2005; Nkirina, 2009); (4) is practical as opposed to being theoretical (Pohl et al., 2005; Nkirina, 2009); (4) addresses trainees' workplace problems (Pohl et al., 2005; Chan et al., 2006); and (6) is flexible and adaptable to labour market changes (Godfey, 1997; Federal Ministry for Economic Cooperation and Development, 2012).

The importance of these above-mentioned characteristics is reflected in the results of the analysis of the pre-test and post-test surveys and semi-structured interviews. For instance, results of the pre -test indicate that participants expected that the course would be interesting and that they would be designed in such a way that they would match their training needs (see Table 3.3). However, results of the post-test indicate that the training courses failed to match the needs of the participants and that the training materials were not interesting (see Table 3.4). In addition, results of the semi-structured interviews point to course content as one of the key problems affecting the vocational training system. Hence, these findings and those from the literature review imply that the vocational training in Qatar's public sector must offer new

courses new courses that possess the previously- enumerated characteristics or features of effective course content. These new courses must be designed in such a way that they appropriately address the needs of the trainees and that they should be made interesting to the trainees.

4.6.3 Methods of Delivery of Training Courses

Findings from the analysis of the results of the literature review highlighted the critical role of ICT in learning in general and in vocational training in particular (Totter, Stütz & Grote, 2006; Clark et al. 2009; Garrido, Sullivan & Gordon, 2012; Wang & Zhou, 2013). As claimed by many researchers, the use of new technologies in the delivery of training courses offers new possibilities in e/m learning. These technologies include electronic and mobile learning, and mobile cloud learning platforms, which affords "better access, more control, and greater freedom for e-learners" (Weber, 2011). Corollary, results of the pre-test and post-test surveys (see Tables 3.3 and 3.4 respectively) highlight the importance of the use of appropriate training equipment in the promotion of knowledge sharing amongst trainees. In addition, results of the interviews suggest that methods of course delivery are another key problem of vocational training. Hence, within the context of the present study, the problem of vocational training in Qatar's public sector related to the methods of course delivery can be addressed with the introduction of more technologically-advanced learning platforms such as electronic and mobile learning, and mobile cloud learning platforms as emphasised in the results of the literature review. This will facilitate sharing of training materials amongst the trainees who can access them easily any time of day and enhance interactivity amongst them.

4.7 Stage 6 Identification of Changes

Results of the analysis of findings from the interviews, internal documents and participant observation highlight the failure of the vocational training to meet participant/trainee expectations. Most participants viewed that the vocational training courses offered did not meet their needs. In addition, analysis of the post-test results indicates that the problems of vocational training in Qatar are centred on course content and course delivery. Such findings were further supported by the results of semi-structured interviews, which suggest that the problems of vocational training system in Qatar's public sector heavily rest on course content and course delivery. In terms of course content, findings from the semi-structured interviews indicate that cultural differences hindered participants/trainees from acquiring new skills from the vocational training since they found it difficult to apply Western-based thinking onto the Qatari workplace. In terms of the methods of delivery of training courses, participants/trainees viewed that courses should be delivered through advanced methods that promote interactivity amongst them. Thus, overall, the three main problem areas have been identified through SSM are: (1) cultural differences; (2) course content; and (3) method of course delivery.

4.7.1 Action Plan

Table 4.4 summarizes the action plan that was developed based on the findings from the methodological analysis of public sector training in Qatar. The eight objectives of the action plan were derived from the three main problem areas which have been identified through SSM, namely: (1) the need to design new course content; (2) the need to take into account cultural differences in the design of the new course; and (3) the need to deliver the course through a new platform. In particular, the objectives of the action plan are enumerated as follows: (a) design new course content; (b) take into account cultural differences in the design of the new

course; (c) offer the new course; (d) evaluate the new course based on the devised set of performance measures; (e) modify the new course (if needed) based on the results of the evaluation; (f) determine the most appropriate platform to deliver courses on; (g) develop the most appropriate platform for course delivery; and (h) evaluate the effectiveness of the new platform.

Table 4.4 Action Plan Incorporating the Objectives, Relevant Tasks, Tome Frame and Success Criteria

Objective	**Tasks**	**Time Frame**	**Resources Needed**	**Success Criteria**
Design new course content	Undertake research on the most well-suited courses to offer	January 2014-February 2014	Secondary research data on new and interesting courses to offer to public sector employees.	Identification of the most appropriate course to offer – one that addresses the concerns identified in the post-test results and interview results.
	Design new course content that will be interesting to public sector employees based on research findings.	February 2014 – December 2014	Information on training module construction.	New course was created that incorporates the concerns identified in the post-test results and interview results.
Take into account cultural differences in the design of the new course	Incorporate concepts that reflect Arab culture in the design of new course content.	February 2014-December 2014	Information of key cultural issues that must be incorporated in the new course	New course incorporates concepts that feature Arab culture.
	Incorporate examples that are applicable in the Qatari workplace.			New course incorporates examples that are applicable in the Qatari workplace.
Offer the new course	Offer the new course to selected MOI employees	March 2015	Organisational and personal time commitment. Financial resources to cover trainer fees and expenses, food/refreshments for those attending training	New course is offered.

Evaluate the new course based on the devised set of performance measures	Conduct semi-structured interviews on selected MOI employees who took the course	March 2015	Personal time commitment. Financial resources to conduct the interviews. Content analysis software.	The new course is evaluated based on the devised set of performance measures.
Modify the new course (if needed) based on the results of the evaluation	Make modifications on the new course content if needed, based on the results of the evaluation.	March 2013	Personal time commitment. Information on the results of the course evaluation.	If needed, depending on the results of the course evaluation, the new course content is further improved.
Determine the most appropriate platform to deliver courses on.	Undertake research on the well-suited platform to deliver courses on.	April 2015	Personal time commitment. Information on the results of the research regarding the most appropriate platform to deliver courses on.	The well-suited platform to deliver courses on is determined based on secondary research findings.
Develop the most appropriate platform for course delivery.	Contact vendors/ developers who will design the platform or training delivery application.	May 2015	Financial resources to cover expenses related to the development of the platform or application.	The most appropriate platform or application for course delivery is developed.
Evaluate the effectiveness of the new platform.	Conduct semi-structured interviews with training participants to examine the effectiveness of the new platform.	June 2015	Personal time commitment. Financial resources to conduct the interviews. Content analysis software.	The new platform/ app for course delivery is evaluated.

Source: Created by the Researcher

4.8 Summary of the Chapter

Results of the SSM analysis of the problematical situations affecting public sector training in Qatar indicate the following: (1) the training failed to meet participant expectations because the respective training courses were not developed appropriately to match the needs of the participants; (2) course content and course delivery are the key problems related to the provision of vocational training to Qatar's public sector; and (3) the courses offered were based on Western settings and used Westernised concepts and examples. As a result, participants/ trainees had difficulty in learning the concepts of the course and in developing or acquiring

new skills. In addition, participants/ trainees had difficulty in applying Western-based concepts to the Qatari setting due to cultural differences. In particular, Western-based concepts are closely associated with high individualism /low power distance; whereas Arab culture is characterised by high collectivism/high power distance. Such cultural disconnect serves as a barrier that hinders the application of concepts learnt from the training to the Qatari workplace.

Next, these problems of vocational training in Qatar were then expressed in a rich picture (see Figure 4.1). The rich picture highlights the existence of the following problems affecting vocational training, namely: (1) course content; (2) cultural differences; and (3) delivery of the training courses.

Then, root definitions of Qatar's public sector training system were formulated using the CATWOE mnemonic based on the findings of the analysis of the data collected from the pre and post -test course surveys, semi-structured interviews, and internal documents of the Ministry of Interior (MOI), as well as secondary data and participant-observation.

Performance measures that were developed from literature review findings were then presented. These performance measures were centred on: meeting trainees' expectations; changing ways of thinking; challenging the trainees; possessing new pedagogies; being highly useful; and being relevant to the Arab culture and applicable to the Qatari workplace.

This was followed by a discussion of the creation of a conceptual model of the desired public sector training in Qatar, which incorporates the following considerations: (1) changing the course content to resolve the issue of cultural differences; and (2) delivering the training courses through more interactive methods of instruction. The conceptual model was then compared with the real world whose information was obtained from findings from the literature review. This was followed by a discussion of the desired changes. Then, an action plan which was developed based on findings from the methodological analysis was formulated.

CHAPTER FIVE. ACTION RESEARCH

The Rich Picture suggested that the training could benefit by:

1. modifying the teaching method to account for cultural differences
2. offering new courses with more modern content
3. using more technologically- advanced instruction tools.

The aim of this chapter is to discuss and examine innovative attempts to answer these

5.1 Changes to the teaching method

5.1.1 Introduction

Western practice has been exported around the world, including to the Gulf Region and Qatar. Often this is spread by training. Yet in the last thirty years, researchers have increasingly noted a strong influence of local culture on many areas of business and organisational practice.
There is no universally agreed definition of culture among social scientists. Various leading researchers have defined culture in different ways. In the GLOBE Project (Chhokar, *et al.* 2007), researchers from 38 countries came together to develop a collective understanding (Chhokar, *et al.* 2007: p3). They defined it as:

"Shared motives, values, beliefs, identities, and interpretations or meanings of significant events that result from common experience of members of collectives and are transmitted across age generations."

Well established cultural theory shows each group or category of people carries with it a set of common mental programs that create its national culture. Each of the major studies and many minor studies confirm this and are closely correlated (Hofstede and Hofstede 2005: 81).

Culturally, the Western world, represented by mainly Americans, British and Northern Europeans, and the Arab world are widely separated. This significantly complicates the interchange of ideas (Lewis 2006: 402). Importing essentially alien methods of management, education and training go a long way to institutionalising the effects of any westernisation of public services. The result is that pressures to conform to an alternative culture are creating strong resistance and an even stronger trend towards national cultural identity.

When studies exist, other states within the region, notably Kuwait, Saudi Arabia and UAE, have received far more specific attention than Qatar. Even so, the region has long been regarded as displaying a strong common culture (Lewis 2006: 406). This is because of a common history and the overwhelming influence of Islam in every facet of personal and organisational life in the region (Adler 2002). This has led to a strong Arab identity, especially in the Gulf, helped by institutions such as the influential Qatar based Al-Jazeera broadcaster. As a result, most significant cultural commentators such as Lewis (2006), Trompenaars and Hampden Turner (1997), and Hofstede (Hofstede 1980, 1991) and many other authors refer confidently to "the Arab World", rather than individual states. This allows the conclusions from other research in the region to be used to draw inferences.

Welsh and Raven (2006) note that in the Gulf region, family and religious values probably have a major influence on the way organisations are managed. This makes them fundamentally different from public services in the OECD countries. Yet the trend towards overseas education and training potentially widens the cultural gap between Qatari civil servants and the people they serve. This has become a matter of serious concern to people in Qatar and elsewhere in the Gulf. (Al Kaabi, 2007). Indeed, the Qatar National Vision 2030 (GSDP 2008: 4) is clear, stating:

"Preservation of cultural traditions is a major challenge that confronts many societies in a rapidly globalizing and increasingly interconnected world. ..... Qatar's rapid economic and population growth have created intense strains between the old and new in almost every aspect of life."

5.1.2 Identifying Cultural differences.

The research uses the work done over several years by Fons Trompenaars and Hamden-Turner and published in their book "Riding the Waves of Culture" in 1997. In this research they identified seven dimensions of cultural differences and looked at the attitudes of 4600 managers in more than 40 countries (but not Qatar). His research identified that cultural differences exist between Western perceptions and Arabic perceptions. Most training courses used in Qatar were developed by Western experts and so it is of interest to analyse which, if any, cultural differences affect the delivery of training. A questionnaire was designed to test this (discussed in section 4.2.1). The results of this questionnaire were used to design the delivery of a training course using a culture more suited to Qatar and analyse the response.

It was decided to obtain more information as to possible effects of these cultural differences by designing and giving a short course on "Personal Development Skills" This was for three reasons:

1. Such courses are now very popular in the West,
2. They would allow any cultural differences to be identified,
3. It would be useful information for the Qatar Police force who are dealing with Western people in this global world.

5.1.3 Course on Personal Development Skills

The investigation is on the delivery style not the content. The course was therefore assembled by using material from the internet (referenced). It is summarised by the following module descriptor

	Personal Development
1. Title of module	
2. Module Tutor	Hamad Alkaabi
3. Location(s) of delivery	Police Training Academy

4. Synopsis of the Module

The module is centered on learning and development. It aims help women police officers become effective, independent and confident self-directed life-long learners. Theory will be presented in lectures, and discussed in

seminars.
Participants will produce a portfolio of their best work showcasing their skills and abilities, which can be stored on their personal records. This will also enable them to record their personal objectives and evaluate their progress towards the achievement of these objectives, thus continuously developing their career plans. This portfolio will be summatively assessed, as well as being used to give formative feedback. By using reflective practice to understand how they are learning and how to prove what they have learned, and recording this in the portfolio, they will be able to relate their skills and capabilities to their employment.

5. Indicative reading list or other learning resources

Allen D (2001) Getting things done, London: Piatkus Books Ltd
Amos J-A (2004) Be Prepared! Getting Ready for Job Interviews: Have the Confidence to Succeed at Any Interview, Oxford: How To Books
Baase S (2009) A Gift of Fire 3rd edition, Pearson Education
Bright J (2001) Brilliant CV: what employers want to see and how to say it, London: Prentice Hall
Drew S and Bingham R (2006) The Students Skills Guide 2nd edition, Aldershot: Gower
Eggert M (2003) Perfect Interview, Random House Business Books
Heath C and Heath D (2008) Made to stick, London: Random House Books
The Writing Center (2005) Argument University of North Carolina [Online] Available at:
http://www.unc.edu/depts/wcweb/handouts/argument.html#what Accessed 27 April 2006

Further reading will be indicated at appropriate points in the module.

6. Outline syllabus

1) Introduction to the purpose and process of Personnel Development

2) Learning skills

- Critical thinking development: effective report writing; evaluating information resources; critical reading; presentation preparation (10%)
- Reflective thinking. (10%)
- Self-management: time management; task setting / prioritising; taking responsibility; self-motivation (20%)

3) Communication skills

- Self-presentation (10%)

- Academic debate: listening skills; giving and receiving feedback; reacting to grounded criticism (15%)
- Peer-to-peer Interaction (10%)
- Group work to produce a joint project (15%)

4. Professional Practice

- Time management
- Listening to others
- Working in groups

7. Aims of module

The module content is centered on learning and development. It seeks to motivate women police officers by helping them to become more effective, independent and confident self-directed learners by improving their capacity to understand what they have learned and how and when they are learning, and to encourage them to monitor, reflect on, evaluate, plan and take responsibility for their own learning. In particular, the module aims to develop and enhance:

- critical and reflective thinking
- self-management and self-awareness skills
- communication skills, including interpretation and use of feedback
- team working and peer support strategies.
- Improve professional practice

8. Learning outcomes

Participants will be able to;

- Apply reflective practice to understand their own learning processes and articulate and evaluate personal objectives and motivation
- Manage their own time prioritising tasks and construct personal strategies for independent learning
- Assume responsibility for their own learning and self-assessment
- Consider and respect others' points of view in offering constructive feedback to others
- Reflect on and react to, constructive criticism provided by others in order to enhance their own learning
- Retrieve and use information in an effective and efficient manner as relevant to their learning goals.
- Articulate and record personal development plans to make most efficient and effective use of their learning experiences

9. Learning and teaching strategy

This module will be delivered using a combination of lectures and practical seminars and discussions. Case studies will be used when appropriate to provide students with the opportunity of applying theory to practice, and guest lecturers will be brought in where possible.

Students will be expected to undertake a programme of directed and independent study to supplement the taught sessions
Students will construct a portfolio which will, in the first instance, be used as a repository for seminar exercises, work in progress, reflections on learning, etc. This portfolio will be shared with tutors from the beginning, so that formative feedback can be given whenever appropriate and student progress monitored.

Students will also be required to produce a 'showcase' portfolio for assessment. .

10. Assessment and feedback strategy

a **Summative assessment and rationale for tasks**

The final assessment which will be a reflective essay backed up by a PDP
A middle point assessment which is an academic debate featuring 'for' / 'against' and objective observation.

A Portfolio containing evidence of skills, achievements, self-evaluation and self-assessment, with clearly thought-out personal development planning. The aim of the portfolio and the learning environment provided is to enable students to effectively evaluate their own capabilities, to articulate them in response to the requirements of the recruitment process, and to provide appropriate and relevant evidence of these competences. The ability to provide evidence on which valid judgements can be made about progress and achievement is one of the key skills required by employers. A taxonomy developed for the assessment of PDP/Portfolios will be used for summative assessment.

The academic debate will offer students a 'real life' experience of engaging in a constructive debate whilst being observed by the peers and they will assessed based on the rigour of their argument, sufficient in-depth subject knowledge of the topic and their ability to engage.

b. **Additional formative assessment – detail of process and rationale**

Specific feedback on interview and associated paperwork to support placement application; advice and guidance on progress of personal and professional development planning. c. Indication of how students will get feedback and how this will support their learning Formative feedback will be given on the portfolio entries periodically during seminars or by e-mail/electronic comment.

11. Notional Student Workload

Activity type*	**Hours**
Lecture	8
Practical classes and workshops	6
Guided independent study	6
Total workload	20

5.2 Changes to Content

5.2.1 Choice of Course

The offering of new courses is based on the findings of the Soft Systems Analysis which highlight the following salient points: (1) many courses were considered routine by the participants; and (2) the participants felt that there is a need to offer a course that stretches them and relates to Qatar in the 21st Century especially the expectation that Qatar will become a modern hub in a global interconnected world.

As has been discussed in subsection 2.1.1 'Characteristics of Effective Course Content,' an effective course content should meet the needs of trainees (Rudestam & Schoenholtz-Read, 2002; Pohl et al., 2005; Chan et al., 2006) and it must be highly relevant to the trainees' work practice (Pohl et al., 2005). Also, the course itself should offer flexibility through the integration of the cultural and social conditions of a country (Bradley, 2002; Federal Ministry for Economic Cooperation and Development, 2012); (2) it and it should effectively address the trainees' workplace problems (Pohl et al., 2005).

Systems Thinking was chosen as the subject of a new course as it helps individuals gain an understanding of a flexible mindset that enhances the expansion and reshaping of ordinary ways of thinking within the context of complex issues (Senge, 1990). It has also been found that systems thinking interventions enhances basic cognitive processes which include "learning, memory, problem solving, decision making, and updating mental models" (Doyle et al, 1991).

Current thinking opines that the challenges linked with the dynamic and behavioural complexity of organizations can be well addressed through the acquisition of systems thinking skills, making such skills indispensable especially for public sector organisations (Staadt, 2012). However, systems thinking is not only well-suited for public sector organizations — it

is applicable to all types of organizations affected by problematical situations as once the key organisational problems have been identified, a choice of suitable methodologies must be made in order to address the said problem (Jackson, 2006). Staadt (2012) elucidated a deeper understanding of the "framework of ideas, the methodology and the area of interest" is hence gained through the use or application of systems thinking.

Hence, systems thinking is deemed very useful in solving workplace problems and is thus, highly relevant to the trainees' work practice. As explicated by Boyce and Pahl (2007), systems thinking facilitates knowledge acquisition about a particular subject. Furthermore, it less theoretical and more practical and is interesting to trainees. In preparing the course, great care was taken to suit it to the workplace conditions, to respect the cultural differences identified by the Soft Systems Analysis and tested in the previous course described in 5.1.

5.2.2 Plan of the Course

It was decided to run the course for ten weeks at three sessions per week. This is typical of the courses currently run by the Police Training Institute. It would be for high level police officers who are decision makers in Qatar**.** The course was divided into three sections: (1) how people think; (2) systemic principles; and (3) thinking tools. The researcher has had free and open access to the work of his supervisor, Professor Moscardini, and all the material used in the course has been researched, studied and assembled by the author and is new to Qatar. Details of the course plan are as follows:

1. *Title of Course: Systems Thinking;*

2. *Module Tutor: Hamad Al Kaabi;*

3. *Location(s) of Delivery: Police Training Institute.*

4. *Synopsis of the Module*

It is important that an efficient and organised police force has the ability to look outside its own boundaries and see problems in a holistic rather than in a nationalistic way. The course aims to teach the delegates that current methods of problem solving and analysis, which originated in the 18th and 19th centuries, are now out of date and that a much more pragmatic, flexible way of thinking and dealing with modern problems is needed. The course will consist of three modules: (1) How to think; (2) Paradigms and (3) Thinking Tools. The last section will present some formulated case studies and then the delegates will work in groups and be asked to create their own solution to some current policing problems in Qatar.

5. *Source Material*

Ackoff, R. (1994). "Systems thinking and thinking systems." *System Dynamics Review,* 10(2).
Ackoff, R. (2004). Transforming the Systems Movement. *Systems Thinking in Management*., Philidelphia. Philadelphia.
Ackoff, R. (2005). *On purposeful systems: an interdisciplinary analysis of individual and social behavior as a system of purposeful events*., Aldine Transaction
Capra, F. (1997). *The web of life*., Flamingo
Checkland, P. (1999). Systems thinking: Systems practice.)
Checkland, P. (1998). *Information systems.* J Wiley

De Bono, E. (2005). *The six value medals*. Vermilion Random House UK
Forrester, J. (1958). *Principles of systems*., Pegasus Communications
Jackson, M. (2002). *Systems thinking: Creative holism for management*. , Jon Wiley and Sons.
Moscardini, A. & Loutfi, M. (2001). The systems paradigm. *World Multiconference on Systems, Cybernetics and Informatics*., Orlando, Florida.
Moscardini, A., Molnar, I. (1995). System dynamics as a teaching tool for continuous training. *ESM Modelling and Simulation*., Budapest.
Voinov, A. (2008). *System science and modelling*: Academic Press

6. Reading List

De Bono, E. (2005). *The six value medals*. Vermilion Random House UK
Capra, F. (1997). *The web of life*., Flamingo

7. Outline of the Syllabus

a. How to think
i. Perception;
ii. Ways of thinking;
iii. Problem Solving.
b. Paradigms
i. Historic paradigms;
ii. Systems Paradigm;
iii. Cybernetic Principles.
c. Thinking Tools
i. Causal Modelling;
ii. System Dynamics;
iii. Learning organisation.

8. Aims of Course

This course is centred on new ways of thinking and paradigm shifts. It seeks to encourage police officers to take a more holistic view of the current problems facing Qatar and to be able to see the links that connect many situations together. They will be encouraged to evaluate, model and think creatively about their problems. It aims to inculcate a more rigorous, planned approach to problem solving that nevertheless incorporates the current systems paradigm.

9. Learning outcomes

Participants will be able to:

a) Understand that there are different ways of thinking, each with positive and negative aspects and each appropriate to time and place;
b) Be aware of the limitations of data input from the senses;
c) Recognise thinking traps;
d) Be aware of their own thinking processes;
e) Understand the problem solving process;

f) Be familiar with theories of learning;
g) Understand the major paradigms that have occurred in World History;
h) Understand what Systems Thinking entails;
i) Understand that each of us use different mental models;
j) Appreciate that mental models depend on perspective, culture and our senses;
k) Be able to represent a situation with a mental model;
l) Form a long term holistic view of a problem from the causal diagram;
m) Be able to run a System Dynamic model of a situation and analyse it
n) Appreciate the values of a Learning Organisation.

10. Learning and Teaching Strategy

This module will be delivered using a combination of lectures and practical seminars and discussions using modern technology such as Powerpoint slides and videos. Case studies will be used when appropriate to provide students with the opportunity of applying theory to practice, and guest lecturers will be brought in where possible. Students will be expected to work in a group and apply the material to solving a current policing problem in Qatar.

11. Assessment and feedback strategy

a. Summative assessment and rationale for tasks

The final assessment which will be a case study performed by groups of five students.

b. Additional formative assessment – detail of process and rationale

Specific feedback on progress will be given throughout the course.

12. Notional Student Workload

Activity type	Hours
Lecture	27
Practical classes and workshops	18
Total workload	45

13. Rationale

A police force needs to run on discipline. For every situation that can occur, a set of procedures must exist. Then, when police officers are asked to perform to handle a certain situation, they must follow these procedures. Currently, many of the courses at the Police Training Institute deal with such procedures and the discipline required to follow them. When creating a new course with modern content, it was decided to concentrate on the higher level of the force where the procedures and the strategy were already decided. At this level, people who follow orders without question are not needed. What is needed are people who can think creatively, make decisions, form strategies and integrate into the modern world.

This is why the first part of the course concerns how people think. The thoughts that one produces are strongly influenced by the mental models that exist in the mind of the thinker. Thus the second part of the course, investigated the major paradigms that affected the history

of the world. One technique that is easy to learn, but difficult to master, is the art of drawing Causal Models and running System Dynamic Models. These give a holistic view of the problem and enables one to spot many unintended consequences. This is the third part of the course.

For each area of the syllabus, the main ideas that were taught are summarised with comments on why they are applicable.

5.2.3 Part One: How People Think

This part examines how people think, as that is a key to different cultures.

The reading list used to develop this section was:

1. Second Nature, Gerald Edelman 2005;
2. The Universal Traveller, D Koberg 1981;
3. What we Believe but cannot prove, J Brockman 2005;
4. What is your dangerous Idea, J Brckman 2005;
5. Seven Theories of Human Nature, L Stevenson 1975;
6. Curious Emotions, R Ellis 2005;
7. Eureka, A Berry 1993;
8. The Five day course in Thinking, Edward de Bono 1957;
9. Lateral Thinking: An Introduction, Edward de Bono 2014;
10. Teach yourself to Think, Edward De Bone 2009
11. The Human Mind, R Winstone 2003
12. Use both sides of your brain, T Buzan 1989
13. How to Solve problems, W Wickelgren 1974

This part was divided into three sessions:

1. Perception;
2. Different ways of thinking;
3. Problem solving.

5.2.3.1 Session One – Perception

5.2.3.1.1 Objective

The objective of this lecture was the following: - information comes to the brain via our senses (sensations); the brain then interprets this information to produce what is termed perceptions; this interpretation process is not precise, can often be faulty and thus is the cause of many misinterpretations and misunderstandings.

5.2.3.1.2 Content

The lecture is to show that the human brain is often an unreliable machine and it is important to realise this. There are many recorded cases where:

i) people genuinely believe things that later can be proved never happened and
ii) things happen but are not perceived by observers.

Kant introduces two terms – the phenomenal world (which is the world as is observed) and the noumenal world (which is the world as it is). He posited that it was impossible to know the noumenal world. Our perceptions also are the basis of our culture so it is important to examine them. This session was focussed around several observations.

1. People perceive things differently.

This is illustrated by showing ambiguous pictures and observing a short video

2. It's easy to see something that isn't there.

This deals with false perceptions. Some problems are impossible to solve if one assumes a restriction that isn't stated (called an artificial boundary). If the artificial boundary is relaxed then the solution is easy. People are often prevented to solve problems because they assume things that are not actually there!

3. It is sometimes hard to see what IS there.

There are two very interesting examples – one is the sayings of a major Islamic Scholar of the 11th Century and the other is a strange case of a mirage. The course then examined what is termed "Inattention Blindness" A fifteen second video of young people passing a basketball was shown. In the middle of the clip, a man dressed as a gorilla walks on to the centre beats his chest and walks off. Because the group has been asked to concentrate hard on counting the number of passes, they do not notice the gorilla! This is an amazing occurrence, which has been verified by many tests. Most people accuse one of substituting a different video. It is a feature of human observation which is hard to believe but at the same time it is easy to understand. There are too many inputs into the brain so without this feature, it would be permanently overloaded.

4. How one approach a situation alters the perception of it.

This introduces the idea of analysis. The way something is analysed can give skewed results. The example given is that of cutting an orange where depending which way it is cut gives different views of its inside. This is followed with topical examples and followed up in the next session concerning different ways of thinking.

5. The Mind is very easily deceived.

This is covered by showing visual illusions. It also covers how the brain "fills the gaps" i.e. if information seems to fit a pattern, then the brain completes the pattern even though the pattern may not be there.

The session then finishes with a debate on the perils of perception. It can be summarised as:

- What you "see" depends on what you already know;
- What you "see" depends on how it is presented;
- What you "see" is what you want to "see";
- The Brain can identify what it "knows" but otherwise " guesses";
- How can you "see" what you don't know?

The conclusion is that the way one perceives is EXTREMELY important and the question then arises “How does one know what is correct” Several observations on perception are then discussed with the class.

5.2.3.2 Session Two - Ways of Thinking

5.2.3.2.1 Objective

There are many different ways of thinking and each can be used for a different type of problem. This area required extensive reading (shown in 5.2.1).

5.2.3.2.2 Content

Types of thinking.
The lecture begins with examining the thinking that was needed to administer countries up until the middle of the 20th century. Such a system of governance required a few strategic thinkers but a vast number of people did not think but just followed orders. This situation has changed in the last 40 years (greatly influenced by the discovery of computing power and the internet) and many more people are required to think and make strategic decisions.

Major classical ways of thinking are now examined:

A. <u>Logical Thinking</u> - this is usually expressed as

- Premise 1;
- Premise 2;
- Conclusion.

This is obviously a very useful way of thinking especially when one is solving a crime (e.g. Sherlock Holmes). However, it has its weaknesses when developing strategy because of what has been discussed previously. The premises may not be correct and the conclusion could therefore ne in error. Also, the premises might not be independent of each other which also affects the conclusion. This session on logical thinking provided an opportunity to discuss the limitations of logic and the role (and usefulness?) of experts.

By definition, an expert is expert in a very restricted area and his knowledge outside that area is not reliable. Obtaining knowledge can be compared to digging a hole. Logic is the tool used to dig the hole but if the hole is in the wrong place then no amount of improvement will make it in the right place. It is easier to keep on digging than starting again. An expert is an expert because he understands the present hole more than anyone else so he is found at the bottom of the deepest hole. There is no reason for him to jump out of the hole and start again as he would then not be an expert. Underlying these concepts of expert thinking are two fallacies:

1. The established way of looking at a situation is the only possible way because it is RIGHT (culture, background, education);
2. If you work logically on a situation you will eventually arrive at the right answer (persistence).

There are many circumstances (provided) where these two statements do not occur.

B. <u>Systematic Thinking</u>

This can be described as thinking in a logical order:

- First do this;
- Then this;
- Then this.

Examples would include the “Toyota Way” – which is used in car manufacturing and most production lines. However, humans cannot be treated as units in a production line and therefor excessive reliance on Systematic thinking is dangerous.

C. Reductionist Thinking.

Reductionalist Thinking is often known as “analysis.” In this type of thinking one breaks a problem down into small parts and solves each part. Then one puts put the solutions together to get a complete solution. This is a useful diagnostic tool i.e. if one’s car breaks down an engineer will use reductionist thinking to isolate or find the problem. But this type of thinking is not applicable when the parts are not independent. If the parts are all interconnected then it is impossible to use this type of thinking. One needs another type of thinking which is can be called Holistic Thinking.

D. Holistic Thinking

The important element of this type of thinking is that the sum is greater than its parts. This is especially true when one is forming a team. A good team is more than assembling the best players, this is often seen in football but equally applies to building a good police team. The example of slicing an orange has already been discussed. The example of six blind men describing an elephant is also instructive. Each gave a different description depending on which part they were feeling (see figure 5.1).

Figure 5.1 Multiple Viewpoints Source: circumsolatious.blogspot.com

E. Creative Thinking

Often to solve problems a third type of thinking (creative thinking) is needed. Examples are given on a particular type of creative thinking called "thinking outside the box" or Lateral Thinking. Lateral Thinking recognises dominant polarising ideas and then looks for alternatives. It does not always use logic and it recognises the role of chance in any discovery. Extensive use is made here of the books by Edward de Bono who first coined the name "Lateral Thinking" Many interesting examples are given both of lateral thinkers and lateral thinking. It provokes great discussion.

"Thinking Traps" were then introduced. This was first mentioned by a British Statistician called Geoffrey Vickers in 1972. It means that the way you think is influenced by what has gone before i.e. you are stuck in a mental trap. Maybe you are faced with a problem that is similar to one you have previous encountered and all that you can think of is trying the same thing again *even if it didn't work the last time*. It means that you are trapped in the past and are not adaptable or flexible to try new methods and new solutions. It is true that one cannot evaluate a tool unless one has tried it in different circumstances but what Vickers was saying is that you must ne aware of the situation i.e. the possibility of a thinking trap. Which tools work for you will also depend on the sorts of problem you encounter.

Vickers (1972) states

- *A trap is a trap only for the creatures which cannot solve the problems it sets;*
- *We the trapped, tend to take our own state of mind for granted - which is partly why we are trapped.*

Something that seems normal or inevitable today began with a choice that made sense at a particular time in the past but has survived despite the eclipse of the justification for that choice. A good example is QWERTY which was planned because it was the arrangement of keys that minimised the possibility of jamming on a mechanical typewrite. It has no relevance at all nowadays but it still retained.

5.2.3.3 Session Three – Problem Solving

5.2.3.3.1 Objective

This lecture shows that all problems are not of the same level of difficulty and classifies problems under several headings. The problems that the Police Training Institute will have to deal with can be called "complex". The session then presents a general methodology for problem solving which can accommodate any of the different types of thinking that were discussed in session two. This methodology was created by me in close collaboration with Professor Moscardini.

5.2.3.3.2 Content

This deals with different types of problems which can be labelled as

a) Hard and Soft problems;
b) Open Problems and Closed problems;
c) Complex Problems.

Types of problems

- Hard Problems:
  - Maybe difficult to solve but objectives are clear;
  - Example**:** A company may have data stored in an information system that they want to make available over the Internet through a web browser.
- Soft Problems:
  - No clearly defined objective, large social and political components;
  - Example: a company wants to determine why it is losing market share to the competition.
- Open Problems
  - Not well defined – SOFT;
  - Messy;
  - Many Interacting Features;
  - Not known if there is an answer at all;
  - No definite methodology.
- Closed problems
  - Well defined – HARD;
  - Normally one definite answer;
  - Normally, well defined method.
- Complex Problems
  - Not well defined – SOFT;
  - Messy;
  - Many Interacting Features;
  - Not known if there is an answer at all;
  - No definite methodology.

In these situations, the problem requires not one decision, but a long series, in which early decisions condition later ones. For a task that is changing continuously, the same action can be definitive at one moment and useless at another.

General Methodology for Solving Problems

Most times, problems are extremely complicated and complex as seen in session two. In such cases, one does not solve the REAL problem but a representation of the problem called a MODEL of the problem (this reflects Kant's phenomenal and noumenal divide). Obviously, the nearer the model is to reality then the nearer the solution is to a real solution. The logic is shown in Figure 5.2 below.

The upper horizontal level shows that the modeller must fit a model to the problem. The right-hand side shows that the solution obtained is then a solution to the model not necessarily to the problem. The lower horizontal level shows that the model solution must then be interpreted in the context of the original problem. Too many times, the model solution is taken as the problem solution. The arrows indicate this this is a repeatable process – i.e. the modeller goes round the loop several times each time getting a better fit between the problem and its solution.

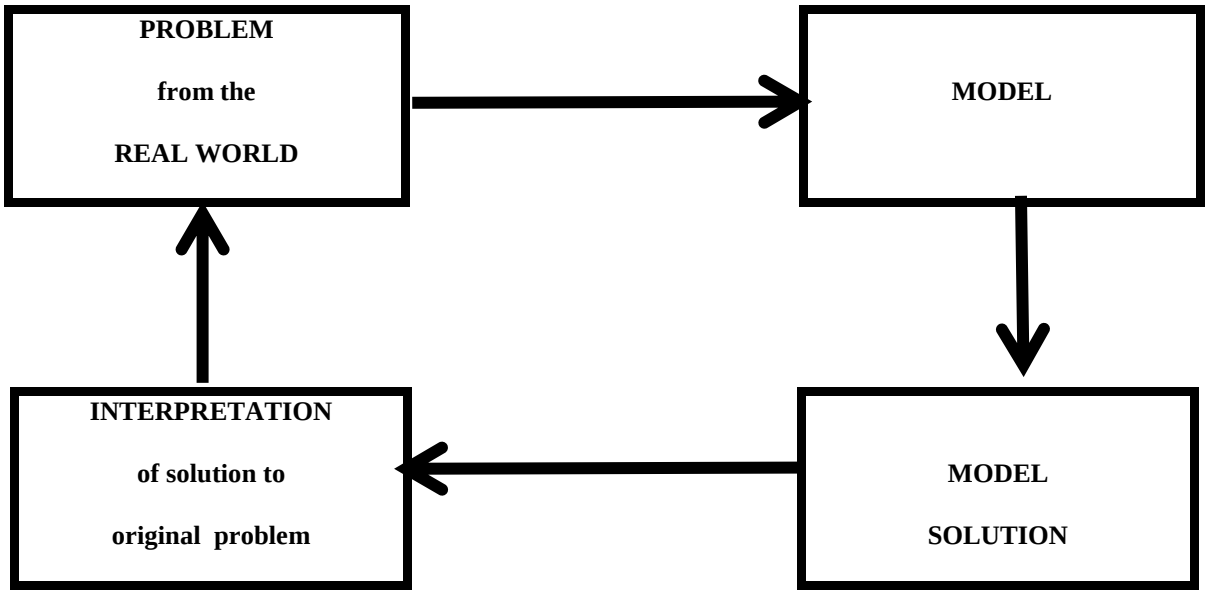


Figure 5.2 General Methodology for Solving Problems

Source: Created by the Researcher

This diagram sets out a general plan but it doesn't explain what the arrows represent e.g. how does one get from the problem to the model and how does one do the interpretation. To answer these questions, a nine-point plan was devised by the researcher which forms the basis for the teaching in this section. (figure 5.3)

PROBLEM ANALYSIS	**MODEL IDENTIFICATION**	**IMPLEMENTATION**
PERCEPTION	MODELLING	SOLUTON
STRATEGY	REPRESENTATION	INTERPRETATION
CONCEPTION	ANALYSIS	VALIDATION

Figure 5.3 Nine Point Plan
Source: Created by the Researcher

An important point is that a model is a simplified version of reality built for a particular purpose. Within a problem area, various models might be applicable. First, the problem solver must define in his own mind what the purpose of the model will be. How will it be used and who is it intended for. The plan is reinforced by first applying it with the participants to a problem and then as an exercise dividing the participants into small groups and having them apply the plan to a relevant problem for the Qatari police. The nine-stage plan is shown in Figure 5.3. There are three major stages – analysis, identification and implementation. Each stage can be subdivided into three sub-stages. The first stage is called problem analysis (Figure 5.4).

PROBLEM ANALYSIS

Perception Stage	**Strategic Stage**	**Conceptual Stage**
What is the background to the problem	What are the objectives?	Name the factors or attributes that could affect the model (feature list)
What exactly is being asked?	What criteria are being used?	
What information is available?	Have you a strategy?	
What information can be found?		
What form of solution is required?		
How will the results be used?		

Figure 5.4 Problem Analysis

Source: Created by the Researcher

The important thing to notice is the arrows which indicate that this is an iterative process. One thing that should be looked at the beginning is what information is available. Far too many times, a solution is suggested then it is found that the information available does not fit the solution. It is much better to sort this out at the beginning. There are two outputs from this stage.

1. Clear objectives;
2. A list of all the factors or attributes that could affect the solution (An Attribute List).

This is the end of the problem analysis stage.

The second stage, called *Model Identification*, begins with the Attribute list from stage one (see Figure 5.5). This is the most creative and difficult stage. First, every factor on the attribute list produced previously must be carefully examined and two decisions made.

a) Should one include this factor in the model or not?
b) If one does then are there any further assumptions to be made about this factor?

MODEL IDENTIFICATION

Modelling Stage	**Representation Stage**	**Analysis Stage**
What attributes are you concentrating on?	Identify the links between the attributes	Are the relationships consistent?
Make an assumption for each attribute	Construct a causal diagram	Can you estimate all the relationships
	Keep it simple	Test with Long term behaviour

Figure 5.5 Model Identification

Source: Created by the Researcher

The obvious problem is how does one know, at this initial stage, which factors to include or which to exclude? The answer lies in the fact that it is an iterative process. It is best to start with only a few factors and then, as the process is repeated, some of them, that were initially considered important, may lose their importance and other factors may be added or deleted. Thus, one is gradually constructing a more accurate model of the situation. (As explained in the next section, what will be recommended is a causal model but this process will apply to any model). But the process does not stop here. The first model will never be the best one. What is recommended in the third sub-stage is that the model is analysed and some general tests carried out. These are of a broad nature such as what would happen if this variable was zero or increased or decreased. This will invariably result is an iterative process between sub-stage two and sub-stage three.

The third stage is the implementation stage (Figure 5.6). If needed, a system dynamics model can be constructed from the causal model but sometimes that may not be needed. Once the model is considered adequate, then sensitivity tests must be carried out. This means that the solution is examined to see how sensitive it is to various scenarios. A solution that is very sensitive to conditions is not preferable as data is not always reliable. Once one is satisfied with the solution then before it is implemented it must be validated. This could either be using statistical methods or other standard validation tests. It can be seen that this is an extremely iterative process.

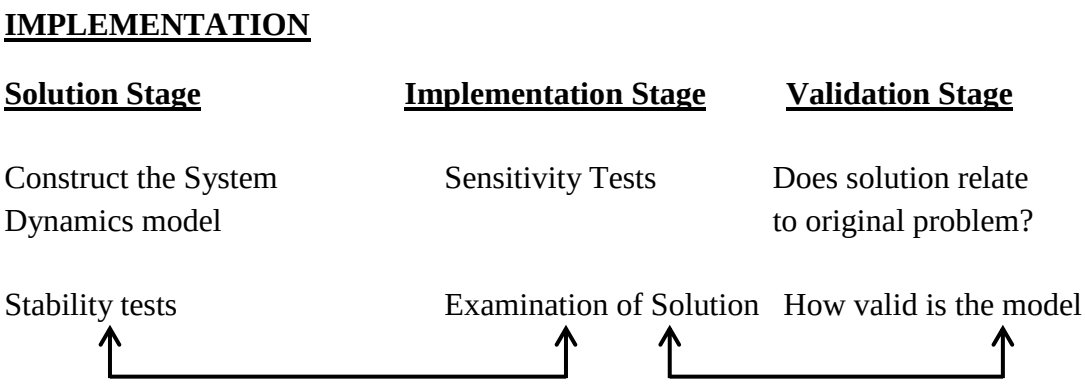


Figure 5.6 Implementation Stage

Source: Created by the Researcher

This session concludes the first part of the course. Feedback was collected and a summary is shown below. The general impression is that this is a new type of course in Qatar that challenges ingrained assumptions. It was recognised that new ways of thinking are important to the aim of Qatar to be a business hub of a modern connected global world.

All this is a preliminary to the need for a new way of thinking. This leads to a future session Systems Thinking is introduced. Systems thinking is a specialised branch of holistic thinking. It shouldn't be confused with Systematic thinking (described previously). **Systematic** means 'having a plan or a method' while **Systemic** means 'affecting entire body or organism'. So systematic thinking deals with orderly, methodical thinking and systemic thinking with the behaviour of wholes.

5.2.4 Paradigms

This part examines the major world paradigms that have existed and concentrate finally on the most modern paradigm (the Systems Paradigm).

The reading list used to develop this section was:

1. The Web of Life, Fritjof Capra 1997;
2. The Hidden Connections, Fritjof Capra 2003;
3. Systems Thinking and learning, S Haines 1988;
4. Systems Thinking and Modelling, R Cavana 2000;
5. Natures Mind, M Gazzaniga 1992;
6. Descartes Dream, R Hersh 1985;
7. What is this thing called Science, A Chalmers 1999.
8. Emergence, S Johson 2001;
9. The Tree of Knowledge, Maturana and Varela 1987;
10. Seeing the Forest for the Trees, D Sherwood 2002;
11. Ackoffs Best, R Ackoff 1999.

5.2.4.1 Session Four – Different Paradigms

The early Greek paradigm, the Arabic paradigm, the Scientific paradigm and the Systems paradigm are discussed.

5.2.4.1.1 The Early Greek Paradigm

This began around Athens around 500 BC. It has many great thinkers who did not always come up with solutions but who posed very important questions which are still being debated today. This is why it is relevant to discuss this paradigm in relation to Qatar today. It was dominated by three towering figures – Socrates, Plato and Aristotle each of them very different. Socrates never recorded anything. He spent his life debating issues with the people of Athens and eventually was forced to commit suicide for "corrupting the youth of Athens" In fact he was doing the same as this course - asking them to think and to question assumptions. This was politically dangerous in Athens at the time. All that is known about Socrates is what has been written by Plato.

Plato began as the disciple of Socrates but became a great thinker in his own right contributing to mathematics, philosophy, governance and Ethics. He foreshowed Kant in his parable of the caves where it posited that all that is known of the world is a model and reality can never be really known. Aristotle continued from Plato but also concentrated on Logic. His theory of logic lasted almost two thousand years and is the basis for logical thinking as discussed in session two. Although many of the thoughts expressed by these three giants are now redundant, the questions that they posed on how to think, how to behave and how to govern are still relevant to the 21st century and Qatar. It is important that strategic thinkers today are aware of their work.

5.2.4.1.2 The Arabic Paradigm

The Greek civilisation was conquered by the Romans who were not a philosophical nation. They were an example of systematic thinkers. They were excellent engineers and had a system of governance which was governed by an Emperor. Within this system they established a stability in the known world. Most of the Greek knowledge would have been lost

but it was saved by the Arabic traders and continued in places such as modern Istanbul (Byzantium). There was a flourishing of knowledge, science and leaning in the Arabic world from around 900 AD to 1500 AD which was greatly helped by the stability of the Ottoman empire. This included great thinkers such as Muhammad ibn Musa abu Addellah al-Khorezmi (born about 810 AD) of which ten books still exist today. The word "algorithm" came from the phrase "thus spake al-Khorezmi" and his third book gave us the word "algrebra". The western world is in great debt to the Ottomans for this continuation of the Greek tradition.

5.2.4.1.3 The Scientific Paradigm

This can be attributed to three great thinkers, Descartes in France, Liebnitz in Germany and Newton in England in the 17th century. It paved the way for the industrial revolution which ushered in the modern world. Descartes made three major three contributions.

a. He questioned what was real and arrived at the distinction between mind and matter. i.e. duality;
b. He invented coordinate geometry which transformed geometry into algebra;
c. He originated Analytical Thought which was discussed in session two.

Liebnitz had a famous fall-out with Newton as to who discovered the theory of the Calculus first. The Calculus is the mathematical method that deals with change and had been pursued for two thousand years. It is an unbelievable fact that it was discovered almost simultaneously by two geniuses in the 17th century (this fits with the role of chance which is a part of Lateral thinking).

But the main focus of this session is the work of Isaac Newton. Newton is perhaps the greatest Scientist that the world has seen. He had many successes but the greatest was that he invented the concept of Gravity. This explained almost every natural phenomenon such as why things fell to earth, why the moon went round the earth. Why the tides came in and out, the motion of the stars in the sky…. These were great scientific discoveries but the relevance to our session is that around the work of Newton came established the Scientific paradigm which exists to this day. This paradigm has several features: - Determinism, Equilibrium, Linearity, harmony, analytic thinking and logic

i) Determinism

This means that if one has a proven theory and one knows a precise starting point then all future motion can be determined. For example, if the position and velocity of a pencil are known, by applying the theory of gravity, exactly how and where it will fall can be determined the role of an observer is negligible. This idea was originally applicable in Quamtum Theory, but its applicability spread to everything. For example

"Everything is determined, the beginning as well as the end, by forces over which we have no control. It is determined for the insect as well as the star. Human beings, vegetables, or cosmic dust, we all dance to a mysterious tune, intoned in the distance by an invisible piper." - Albert Einstein

ii) Equilibrium

The Scientific paradigm believes that the world (Nature) is naturally in harmony or in balance. Sometimes shocks occur than put it out of balance but its fundamental stability and its laws will eventually restore the equilibrium.

iii) Linearity

Linearity can be regarded as the norm. Non-linear occurrences are abnormal and should be regarded as special cases.

iv) Harmony

The universe behaves as a clockwork machine, which was created by God in an equilibrium state and worked in *perfect harmony.*

v) Analytic Thinking and Logic

These topics have been discussed in session two. Thus the Scientific paradigm is a deterministic, linear, logical model of the world in perfect harmony observed by an observer.

This is an important session as most of these ideas still underpin current thinking by the majority of people. This paradigm has been indirectly responsible for all the technological advances of the last two hundred years including air travel, communications, modern living conditions, and improved productivity in all areas of consumption. The session is full of examples taken wherever possible from the Arab world but some examples, related to Newton, are from the Western world.

5.2.4.2 Session Five - The Systems Paradigm

The Scientific paradigm is a deterministic, linear, logical model of the world in perfect harmony observed by an observer. **The Systems paradigm refutes every claim.**

i) Determinism

Systems thinking is not deterministic. The example is given of Edward Lorentz who was the first to discover "Chaos" This is when it is impossible to predict. Small changes can have very large effects. There is an envelope of possibilities but that is all. This goes against the Newtonian paradigm and is a major change in today's thinking. Examples are given from weather prediction, politics and economics.

ii) Non- Linearity

Chaos theory results from non-linear behaviour. Another example is shown called Fractals. These are natural phenomenon that exhibits a repeating pattern that displays at every scale. If the replication is exactly the same at every scale, it is called a self-similar pattern. Fractals can also be nearly the same at different levels. This latter pattern is illustrated in the magnifications of the Mandelbrot set. Fractals also includes the idea of a detailed pattern that repeats itself. Most of Nature is Fractal not linear. The scientific view has now completely changed and it is recognised that nature is predominantly non-linear and that linearity is the exceptional case. This area is a fruitful field for examples that are relevant and interesting.

iii) Equilibrium

Newton's equilibrium only works for closed systems Open Systems exist in far from equilibrium conditions and need energy to survive Although there is no perfect harmony or equilibrium state, open systems can temporarily exist in equilibrium. This is known as DYNAMIC EQUILIBRIUM or HOMEOSTASIS.

As everything is interconnected, it is very difficult to predict behaviour This conclusion is the major insight of the whole course. The previous sessions have led up to this point and time was spent reinforcing it. It was not possible to involve some general scientific terms in this build up but the results have tremendous influence on solving non-scientific problems and is therefore of extreme importance to strategic thinkers and to Qatar.

iv) Analytic Thinking

This sees the parts as paramount, seeks to identify the parts, understand the parts and from this understanding build up a picture of the whole. Unfortunately, the whole often emerges with extra properties not contained in the parts Holistic Thinking recognises the patterns that exist throughout the whole system.

v) Role of an Observer

The observer has an influence on the results. He is not independent of the events. These ideas are revolutionary in Europe and America and are totally new to Qatar. They challenge many cultural preconceptions and it is accepted that it will be a long time before such ideas are accepted. Nevertheless, it is important that these ideas are introduced. One reason is that the Qataris will understand how other people's perceptions and another is that it is good for one's own perceptions to be challenged.

5.2.4.3 Session Six – Cybernetic Principles

Cybernetics can be loosely described as the study of control – how things are organised. It is a new area of knowledge, originating in the 1950's and has much in common with Systems Thinking. The session starts with a brief history of cybernetics, then deals with the following aspects – purpose, variety, feedback, self-organisation and Emergence

i) Purpose

The idea of purpose is a difficult one. Is there a purpose in Nature? Dawkins argues that is simply the "selfish gene". Believers will say it is the desire of God. Environmentalists will say that it is simply the eternal laws of nature. Cybernetics recognises the idea of purpose. Living organisms are notable for their ability to maintain their identity; in spite of perturbations in their environment, Human organizations also have this characteristic. These systems are **purposive.** The actual forms that the purposes of companies, institutions, and organizations and their planning, organization, implementation, and control take are many and varied. Yet the nature of their functioning is always the same. It is important to accurately determine the purpose of the organisation in order to establish the system ones of the organisation. This is succinctly captured in Stafford Beers quotes: "A system is what a system does".

ii) Variety

Cybernetics uses the word Variety instead of Chaos. Variety is the measure of the number of different states in a system

Examples:

A light switch has a variety of 2 (States On & Off);

A single-digit display has a variety of 10 (States 0,1,2,3,4,5,5,7,8,9) i.e 2^{10} (2048).

Variety grows rapidly with the complexity of systems. The human brain has staggeringly huge variety! Real-world systems have variety, which is effectively mathematically infinite. So how does one cope with "reality"? Control can be obtained only if the variety of the controller is at least as great as the variety of the situation to be controlled. This is called Ashby's law. The concept of RECURSION can also be used. Many problems in management are caused by confusing the levels of recursion

iii) Feedback

Feedback is a very important concept and the whole of session seven is devoted to it.

iv) Self-Organisation

Self-organisation is the spontaneous emergence of new structures and new forms of behaviour in open systems far from equilibrium, characterised by internal feedback loops and described by non-linear relationships. Several examples are given of this e.g. flocking birds. It is instructive to realise that a lot of Nature operates outside of a central control.

v) Emergence

It is tempting to try to understand problems by taking them apart and studying their constituent parts. Emergent problems can't be understood this way. Emergent systems are ones in which many different elements interact. The pattern of interaction then produces a new element that is greater than the sum of the parts and which then exercises a top down influence on the constituent systems.

5.2.5 Part Three: Thinking Tools

Having looked at the major world paradigms that have existed and concentrated finally on the most modern paradigm (the Systems Paradigm) which is to be introduced into the Police Training Institute, some practical tools to implement the ideas were needed. The tool or methodology chosen centres around System Dynamics. The reading list for this part is not as extensive as the other two as in this part, the concepts are easy to understand, the difficulty comes in the doing which takes a lot of practice, experience and time.

The reading list used to develop this section was:

1. Strategic Modelling and Business Dynamics, J Morecroft 2007;
2. Business Dynamics, J Sterman 2000;
3. The Fifth Discipline, P Senge 2005;
4. Feedback Thought in Social Science and Systems Theory, G Richardson 1991;

5. Causal and Simulation Modelling Using System Dynamics, I Moffat 1991.

The objectives, the content, cultural perceptions is now summarised for each session.

5.2.5.1 Session Seven – Causal Modelling

5.2.5.1.1 Objective

Causal Modelling is an excellent way of pictorially setting down ones thoughts which can easily be understood by others. It is commonly used for consensus building. It also allows for long term trends to be spotted whilst also revealing possible counter-intuitive behaviour. It depends heavily on the concept of feedback, which is also covered in this session.

5.2.5.1.2 Content

First, the concept of feedback and how causal arrows can represent it is discussed. This is followed by a general problem-solving methodology. The assembly of a causal model will be described in various stages using a model suggested by Rushing (2010) in his paper "Causal Loop Diagrams: Little Known Analytical Tool." This describes the problems concerning employment – hiring and firing. The process follows several stages. First, some of the main variables their consequences are listed (Figure 5.7). This is an example of a laundry list i.e. at this stage all the variables are independent.

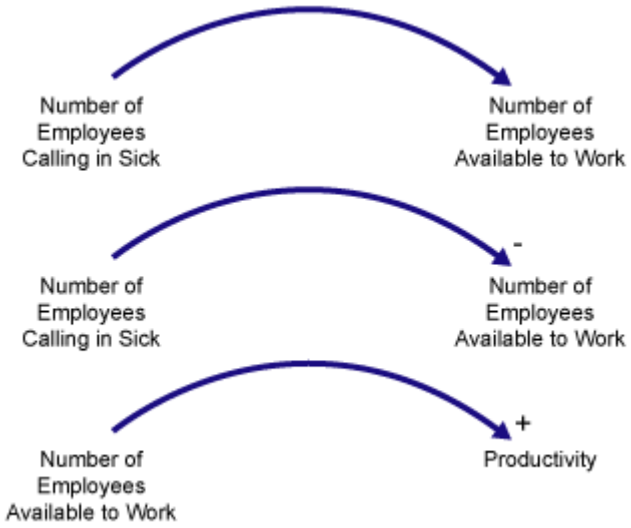


Figure 5.7 Laundry List
Source: Created by the Researcher

A second stage is now added i.e. what is the effect of the number of employers available for work. Also positive and negative signs are added. (Figure 5.8). A positive sign means that any change in a variable induces a positive change in the consequence. i.e. an increase in the case causes an increase in the consequence or alternatively a decrease induces a decrease. A negative sign means that any change is in the opposite direction i.e. an increase in the cause causes a decrease in the consequence and vice-versa.

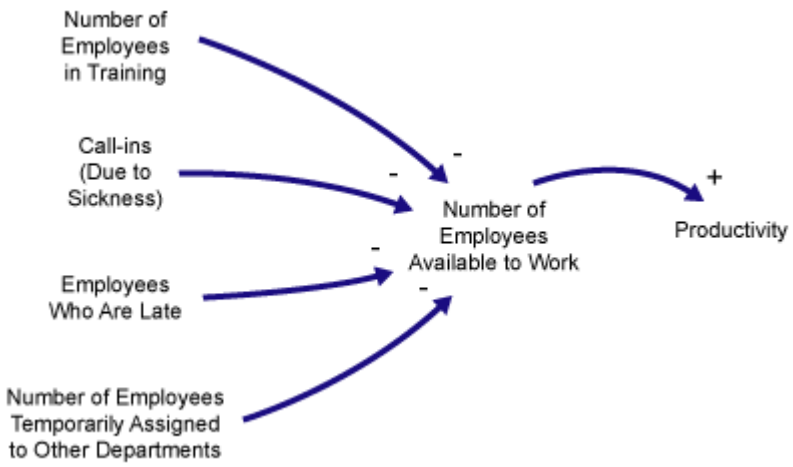


Figure 5.8 Signed Diagram

Source: Created by the Researcher

The process is then continued with the possible effects of productivity (Figure 5.9).

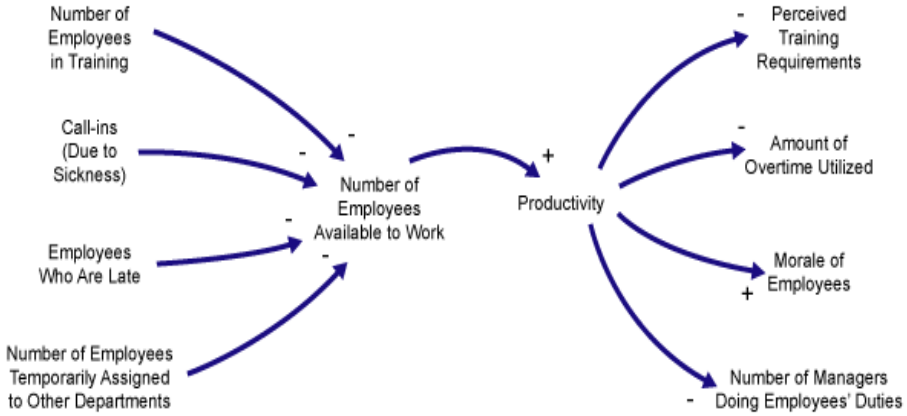


Figure 5.9 Enlarged Diagram

Source: Created by the Researcher

This is now the interesting stage as for the first time some loops are created. (Figure 5.10) This is when the arrows return to where variable where they started. The two parallel lines at the base of the bottom loop means there is a delay.

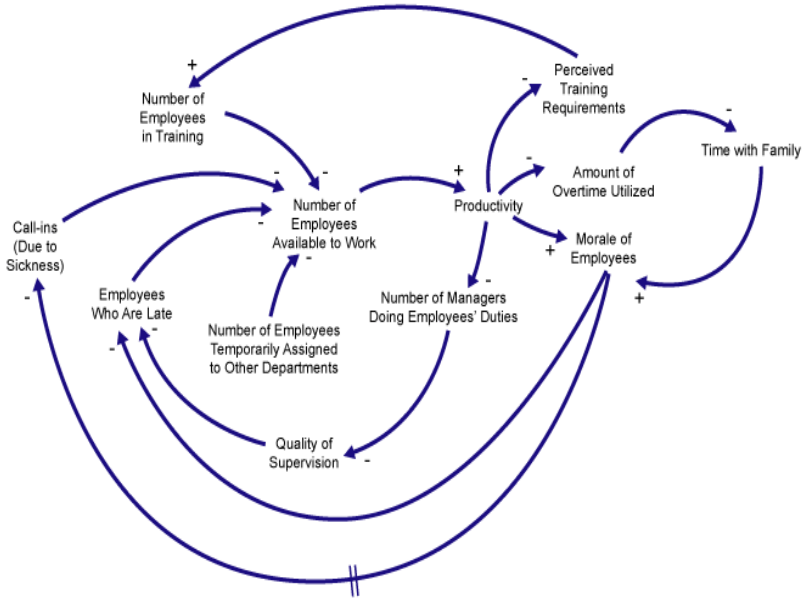


Figure 5.10 Diagram with Loops

Source: Created by the Researcher

Several loops can be identified and each loop can be assigned a sign. The sign of the loop is obtained by multiplying the individual signs at the end of the arrows. A positive loop means that there is amplification in the system whereas a loop with a negative sign means balancing behaviour. For example, in Figure 5.11, loop R1 is a positive loop as there are four negative signs and a positive sign. The product is a plus. This means that the number of employers available for work will increase productivity which decreases the number of managers needed which decreases the quality of supervision which increases the number of employees that are late which would then mean hire more employees. Notice that the sign assigned to a cause and effect assumes that no other factors are taken into consideration – it is assumed that all other things are equal.

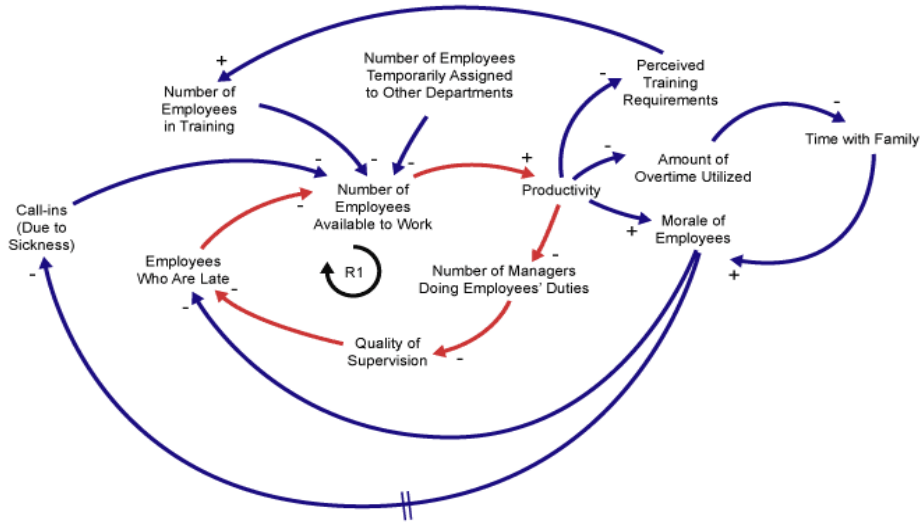


Figure 5.11 A Positive Loop

Source: Created by the Researcher

A balancing loop is shown in Figure 5.12:

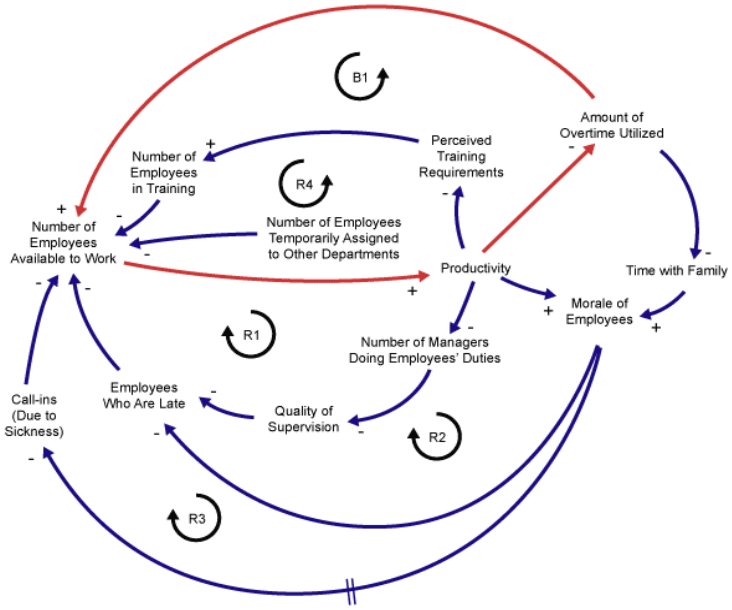


Figure 5.12 A Balancing Loop

Source: Created by the Researcher

Here the signs are positive – negative-positive whose product is negative. This shows that if overtime is increased there is no need to employ extra people. Also another three positive loops are shown. This example was used as a teaching tool. Two examples of counter-intuitive behaviour are presented: one to do with a car manufacturer and the other to do with a police force. The second is presented here. This simplest diagram is shown below which shows the intuitive perception that more police officers reduce the crime rate, but the next three diagrams, the situation is more complex. If there are queues building in the courts, then plea-bargaining may take place which results in shorter sentences and more ex-prisoners in the community. This is shown in the expanded diagram below (see Figure 5.13).

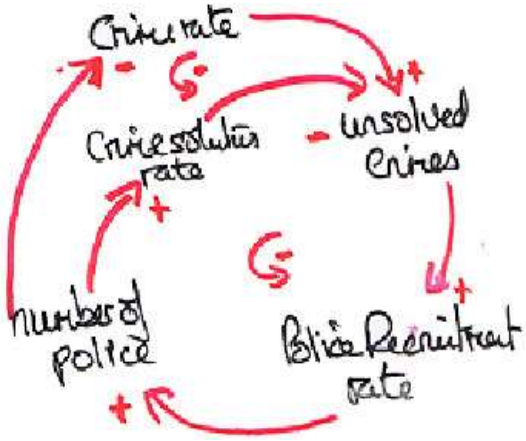


Figure 5.13 Expanded Feedback Loop

Source: Created by the Researcher

If one now adds in the pressure on the jails that is caused by increases in convictions. More prisoners may be released. See in the diagram below (Figure 5.14).

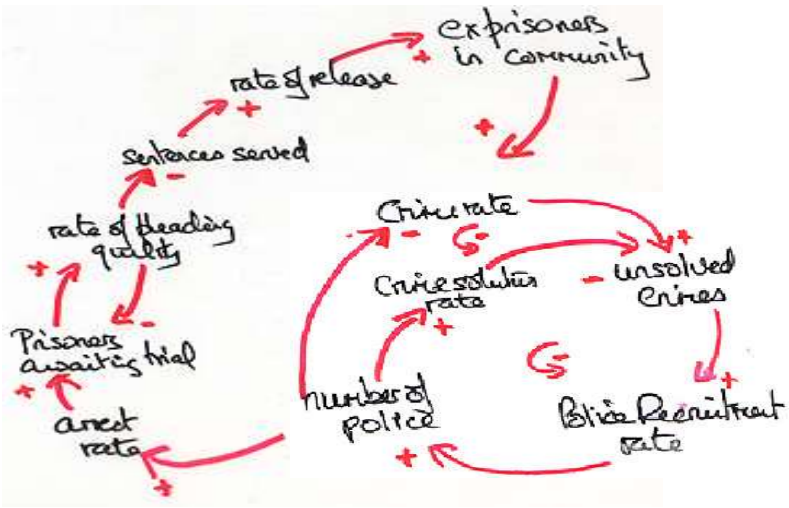


Figure 5.14 Feedback Loop of Pressure on the Jails

Source: Created by the Researcher

The final diagram (see Figure 5.15) shows that there are four areas to be addressed – the police, the community, the courts and the jails. If one just takes a reductionist view of the problem and solves the problem in one of these areas then pressure will build on the other three. The only way to find a lasting solution is to tackle all the four problem areas at the same time. This is an example of holistic thinking and of counter intuitional effect. The session finished by showing several important archetypes and discussing where they could be relevant to the Police in Qatar.

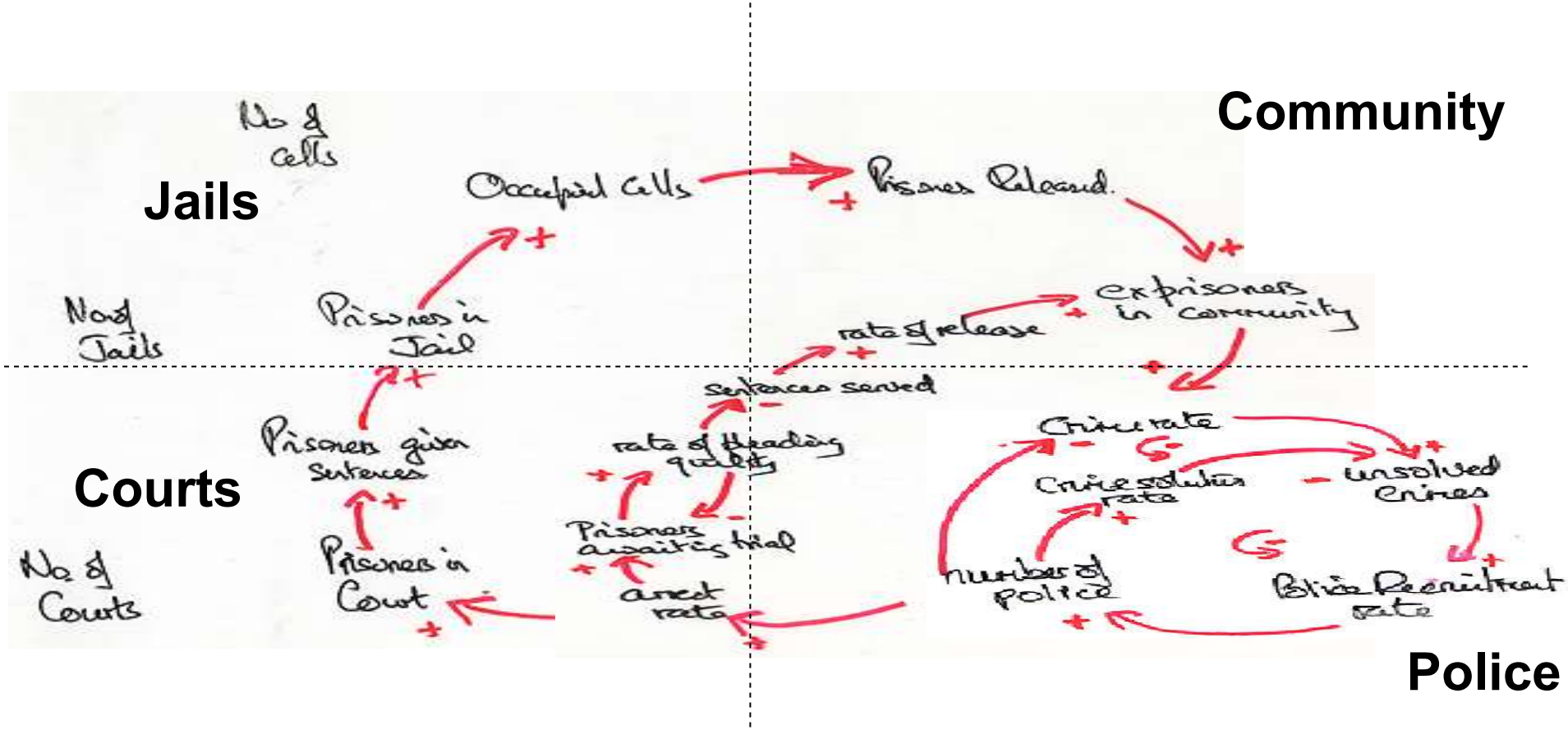
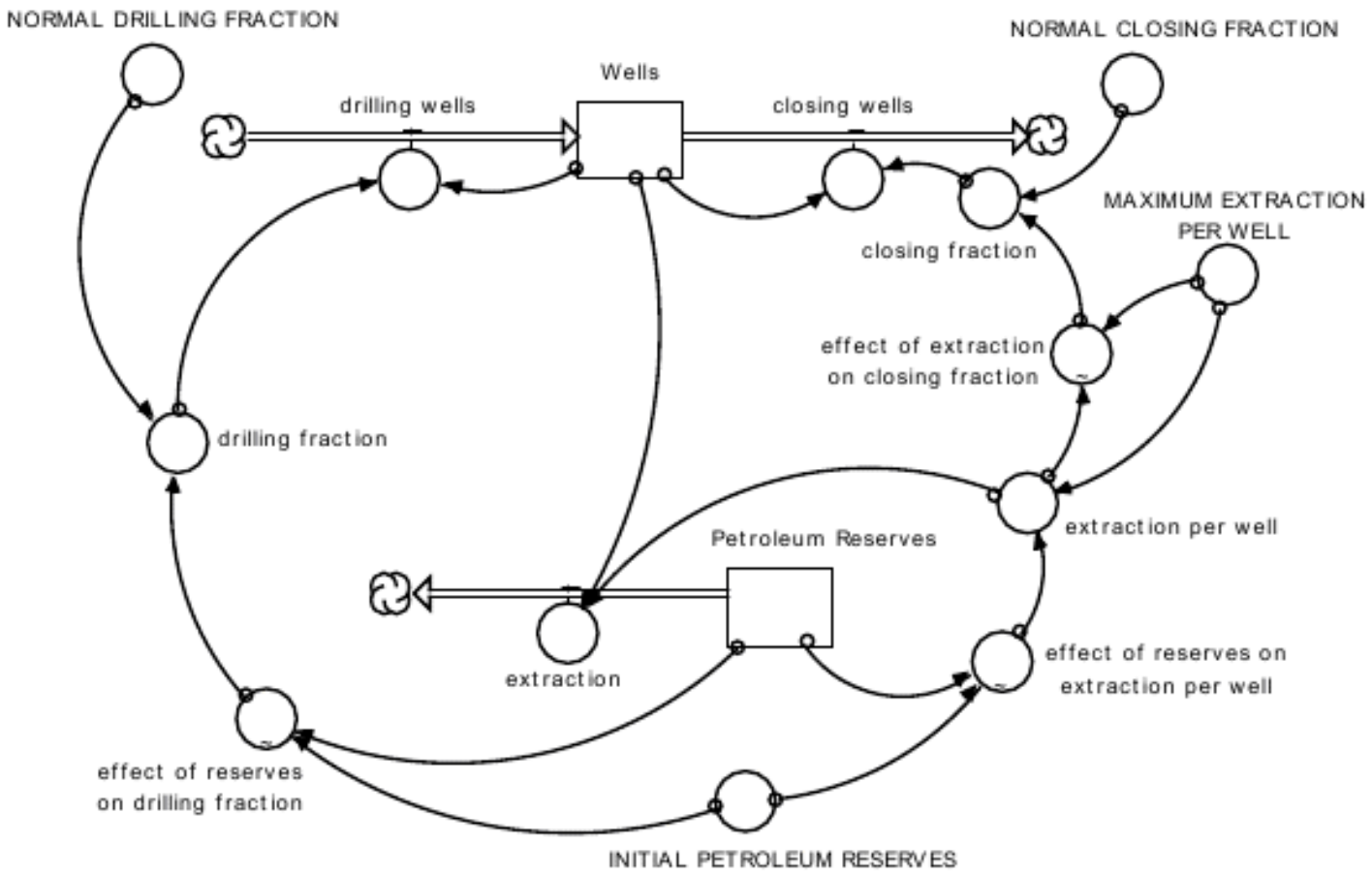


Figure 5.15 Final Diagram

Source: Created by the Researcher

5.2.5.2 Session Eight – Systems Dynamic Modelling

In a short course like this, it is only possible to introduce the ideas of System Dynamics. This is new to the Police Training Institute and the reaction of the trainees to this modelling tool was important. An example from the K-12 program initiated by MIT called "Overshoot and Collapse" was chosen. This is a generic model and can be adapted to relevant circumstances in Qatar. The case study was adapted to reflect the Arabic Culture and asked them to use their causal modelling skills developed in session 7 to draw a causal model of the situation. This was then compared with the K-12 causal model and a fruitful discussion enfolded. To run this course, the Police Academy purchased Powersim Studio 10 as the System Dynamics software and this was used to develop a very simple population model consisting of population, births and deaths. Using this software, a System Dynamics model was built by the researcher (Figure 5.16). The students could then experiment with this model. The data for the model was entered by the group and the graphical output was discussed in detail. After playing with this model, the generic model (Figure 5.17) was given to the group who had to apply it to a situation that occurred in their work. The feedback from this small experiment was very positive. So much so that negotiations for a full ten-week course in System Dynamics were initiated.



Model of Petroleum Extraction

Figure 5.16 Feedback Loops of Petroleum Drilling

Source: Created by the Researcher

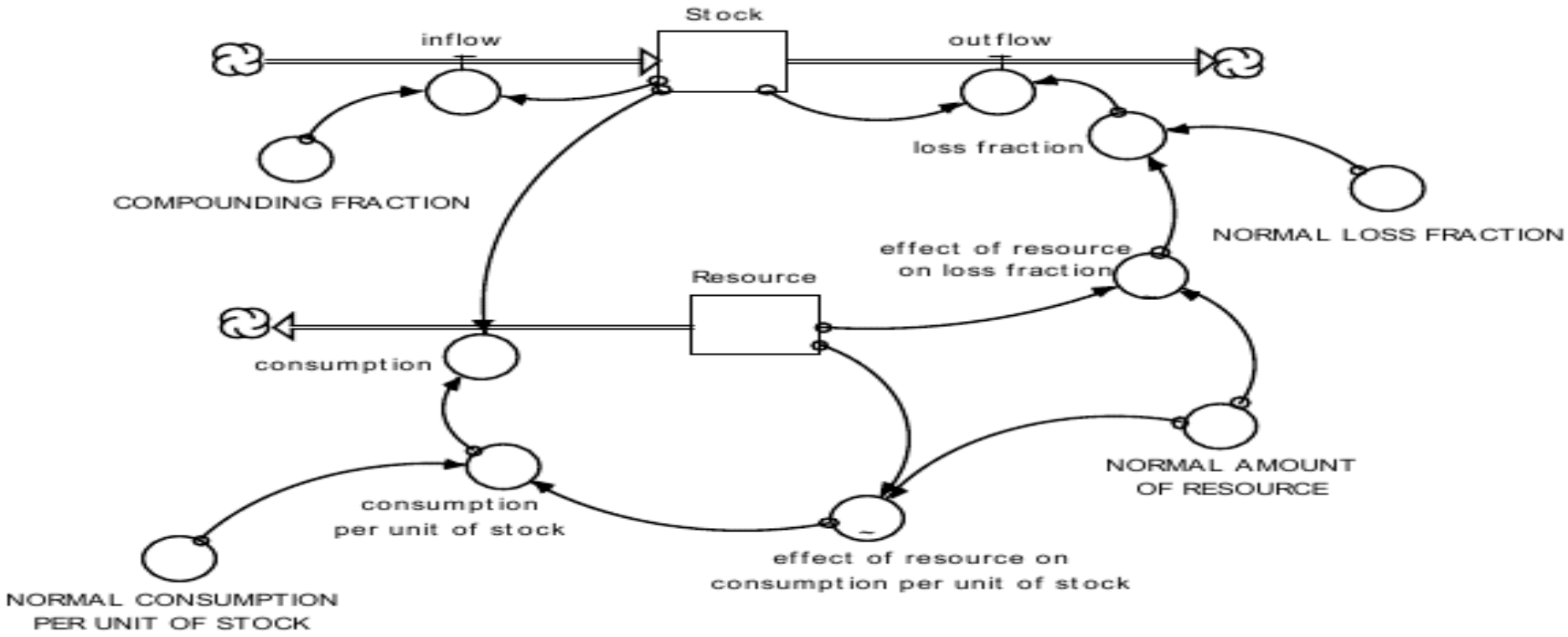


Figure 5.17 Generic Structure Producing Overshoot And Collapse (With A Non-Renewable Resource)

Source: Created by the Researcher

5.2.5.3 Session Nine - The Learning Organisation

A learning organization is the term created by Peter Senge. It describes a company that actively promotes learning for its members and is flexible enough to respond quickly to change. The current competitive global environment exerts great pressure on companies to be operationally excellent. Senge proposes four main features are necessary for a company to call itself a Learning Organisation

- personal mastery;
- mental models;
- shared vision and;
- team learning

which are all underpinned by Systems Thinking

Systems thinking has been covered extensively in the first part of this course. It is the oil that makes the learning organisation work. Each feature is considered in turn but it must be remembered that the four features are interdependent and contained in a holistic view of the organisation which is the fundamental premise of System Thinking.

i. Personal Mastery

Some of the main points taught under this heading are

- Personal mastery is when the worker has the skills and expertise to do the work to a high standard. The workers will have pride in their work and the term "master" is used in the sense of "master craftsman"
- This learning can be acquired in many ways – "kaisen" or training or apprenticeship to an expert. The onus for learning should come from the worker – so a culture where learning is encouraged should be developed;
- An organisation whose workforce can learn more quickly than the workforce of other organizations will obviously have a competitive advantage over others.

ii. Mental Models

Mental models describe how people think – either collectively or individually. Companies that have been in existence for many years develop a way of doing things, a preferred process and a distinct way of thinking. This must always be challenged as tomes and markets change and so should the mental models.

Research has shown that there is often a difference between what workers think thay do and what they actually do. Similarly, organizations tend to have 'memories' which preserve certain behaviours, norms and values In creating a learning environment it is important to promote an "open culture" where attitudes and processes can be challenged without confrontation. For this to be done, the underlying mental models must first be identified and then there should be procedures for introducing change.

iii. Shared Vison

What makes a company what it is? Why are universities (which have similar structures and staff) different? It is because of the culture of the organisation and the culture is developed

by the creation of a shared vision. By "shared" it is mean the vision involves everyone – from top management to the lowest worker. All must be working towards a common aim. This is sometimes called the unique selling point.

iv. Team Learning

Most top companies encourage the formation of small teams. These can react more quickly to problems and the sharing of ideas and skills of a team can outweigh the output of individuals. But to work in a team requires certain social skills for the individual and also necessitates certain structures in the organisation. This is what is covered in this session on Team Learning

A Learning organization will tend not to operate with a "silo mentality" but will encourage openness, communication, sharing of ideas and common understanding. A Learning organization will also have good knowledge management systems.

Benefits of the Learning Organisation

- Maintaining levels of innovation and remaining competitive;
- Being better placed to respond to external pressures;
- Having the knowledge to better link resources to customer needs;
- Improving quality of outputs at all levels;
- Improving Corporate image by becoming more people oriented;
- Increasing the pace of change within the organization. (Senge 1990)

5.3 Using more technologically advanced instruction tools

This section builds on the discussions in the literature review (section 2.5.1) especially the work of Podhradsky et al (2010) and summarised in table 2.11. This secondary data was reinforced by primary data taken from the brainstorming sessions, the SWOT matrix and the questionnaire discussed in chapter four.

5.3.1. Need for new Tools

Organisations have to realise that their workforce has become more technically sophisticated in their everyday lives. What worked well in the past isn't necessarily the best approach for the present and the future. There are now many more informal ways that people learn particularly through various digital news and social sharing forums and feeds.

All types of organisations need to embrace a more self-paced model of training and personal development that combines both the formal methods with unstructured and ad hoc learning. On-line storage, flexibility of access and the ability to connect through mobile devices at any time in any location moves training and development to a more efficient on-demand model. This increases the potential audiences that can consume training and reduces the unit cost of training materials.

The goal must be to build an environment that encourages and supports learning and delivers the necessary incentives for acquiring skills and knowledge. Research shows that about 10% of employees post and share with others simply because they feel it's worthwhile and important. Rewards can push the number up to 80% or higher.

Learning is always evolving with a trend to a more tailored individualised learning experience to the individual where the learner shares and consumes when and where they feel

comfortable. Trainers should put more emphasis on helping individuals create their own personal learning portfolios and develop learning habits that fit in with their all-round interaction with technology and social and news media. Learning will increasingly become part an important and often informal part of the everyday digital interaction of employees inside and outside of the work environment.

This research clearly shows that technological advances and the changing online habits of a younger workforce are a driver to move from conventional structured, timetabled classroom training to a more on-demand shared learning experience. This motivated the production of a mobile application that was flexible in terms of content and training consumption but personalised to the needs of the device owner.

5.3.2 Choice of delivery method

The researcher chose to experiment with a specially designed mobile App. This was because no such App had ever been used in vocational training in Qatar and by using an App the researcher could incorporate the benefits obtained from the secondary and primary research already described. The applicability of Apps in MENA countries is extensively discussed in section 2.5.2 Modern teaching methods stress the importance of the student taking care of their own learning and also providing the opportunity for creative work (Khaddage & Knezek 2011, Cheong et al 2012).

Further reading on the topic (discussed in section 2.5) convinced the researcher that the following five areas should be addressed by the App.

5.3.2.1 Ease of Communication

There is strong evidence that students learn better which collaborating rather than individualistically. Normally this would involve teamwork and verbal communication but using modern technology enables with them to connect with peers in other cities or even countries. This is termed M-learning which can be asynchronous or synchronous. Asynchronous M-learning is when texts, videos or audios are available for use. For example, participants can learn by watching a video that the teacher has put online. This way of mobile learning is relatively less interactive. It's more about individual consuming. There is no interaction with teachers or other students. Synchronous M-learning is when there is immediate feedback and access to many participants not separated by space or time (Pedro at al 2018).

5.3.2.2 Cooperation

In the authors views, the ability to work alone is not a bad thing but it is more important to learn to work cooperatively. Margulis (1970) in her work on biological symbiosis and Lyn Ostrom who received the Nobel prise for her work on cooperatives (Ostrom 1998), both advocate the evolutionary and social need for cooperation. The Netherlands is currently trying to change its university funding system to reduce competition between academics for research grants, cutting the time spent on largely unsuccessful funding applications Changes proposed in a major review of the sector mark a turn away from a competitive philosophy, reflecting growing Dutch concerns that the costs of pitting academics against each other in pursuit of funding have begun to outweigh the benefits

This fits with the concept of open source learning. Learners teach each other and in doing so, they uncover the ideas and concepts behind their own beliefs thus utilising, albeit unconsciously,

Argyris's double loop learning cycle (Argyris 1991). It has strong links to the "Gestalt" theories in psychology (Hilgard et al 1966).

5.3.2.3 Curiosity

The learning process that the researcher is encouraging is related to a Montessorian or Piagetian manner where the group has freedom to experiment and pursue new ideas within the boundaries of the study. It will also involve interdisciplinarity and creativity. Using modern technology such as the mobile App allows the learner to take charge and have responsibility for their learning (Zane 2013).

5.3.2.4 Control

New pedagogies encourage learners to learn from each other. The lecturer must cease presenting himself as a professor, an expert but more as a guide for people who wish to discover new knowledge that will help them in their career. This is very suited to the design of a mobile App (Kukulska-Hume 2008).

Assessment procedures often dictate the teaching. It could be possible that after an allotted time, the learners have not reached a solution or even arrived at a conclusion. This need not necessarily mean a poor grade. The assessment should be of the journey – not the destination. This can be monitored by a Mobile App (Traxler 2011).

5.3.3 Desired outcomes from the App

Although the immediate focus of the application was in the context of the training services, innovations and user community targeted in this thesis, the App was designed and developed with a consideration for more training content and wider use across the MENA region. Following from section 5.3.2, the literature discussed in chapter two and the SSM analysis in chapter four, the following features of the proposed App were identified as being worthy of testing:

- On-demand availability: It must be possible to access and interact with training anytime at the demand of the consumer, when they need it most - anytime, anywhere any device, convenience;
- Sympathetic to the cultural difference requirements as identified in the research and questionnaire results;
- Rich media experience using everyday user mobile devices (Phone & Tablet);
- Personal learning experience;
- Learning in Small bites;
- Sharing learning experiences with others;
- Flexibility to deliver different training content type in a modular way;
- Ability for management to track usage and feedback;
- Timely – aimed at a problem, or situation;
- Learning management;
- Monitoring and assessment (behaviours);
- Incentives – the reluctant trainee;
- Learning agility – nimble.
- Reduction in costs of training delivery;
- More employee information sharing;
- More interaction between experienced and 'novice' employees (mentoring);
- More feedback into the 'learning' ecosystem to enable continuous improvement of learning material and strategies;

- Easier access to knowledge.

Potential benefits for the employee:

- Easier access to more knowledge and information;
- Ability to use 'dead time' such as travelling to / from work to train;
- Get assistance when and where it is need most;
- Share experiences, questions with peers and mentors;
- Feeling part of the team, not under pressure;
- Instant rewards for hard work;

These were the outcomes that were provided to the developer by the researcher. The ability to achieve these benefits will be analysed using a questionnaire with the targeted application trial group.

5.3.4 Design of the App

As the researcher is not an IT specialist but has strong ideas of how to improve course delivery, the researcher produced a design and ideas, which were then sourced to an experienced mobile app development company in order to assemble a prototype of the required App. This was tested by the researcher in the public **public training sector** in Qatar and is analysed in chapter Six.

Given the timeframe available for development and financial constraints it was agreed with the developer to provide an early prototype app using RAD techniques (explained later), that would be able to deliver 'hard coded' training content to test the user experience. It was understood that a more 'integrated' approach would ideally be deployed once the initial prototype was reviewed, specifically taking into account the likelihood of existing training management systems at a corporate level.

The design for the App reflects the work of (Kearney et al 2012, Cheong et al 2012, Ranires-Donoso 2017) and incorporates:

- training services are available whenever and wherever they may be needed;
- training material consists of small bytes that are simple to access and consume;

The new training delivery strategy and methods that form the basis of the mobile app concept were formulated in the context of the findings from my analysis into Arabic cultural preferences using the seven dimensions of cultural differences identified and studied in detail in Chapter 2.

The App concept and design thus focused on providing a feeling of personal relationship between the trainee, trainer, mentor and colleagues, whilst encouraging group learning through sharing experiences.

The developer needed certain decisions to be made by the researcher. The decisions were informed by the analysis of technology penetration and trends conducted earlier in this report, as well as the dominating market players that to some extent limit choice due to the level of support they provide in technology forums and supporting development environments.

A major choice was whether to create a web app (this needs a network connection to function) or to build a mobile app that can operate on a mobile device without a network connection. There are several benefits that each option brings:

- Web app
    - Normally cheaper to develop and update;
    - Easier to update and distribute (no device deployment);
    - Instantly available;
    - Cross device compatibility;
    - Easier to find via standard search tools;
    - Lifecycle (will last longer – not deleted from device);
    - Easier to support and sustain;
- Mobile App
    - Interactivity and quality of user experience;
    - Personalisation / everyday use;
    - Native (phone / tablet) integration for example phone, text etc.
    - No network connection (available off-line);
    - Consumption of high quality graphics/video.

(Kearney et al 2012, Cheong et al 2012, Ranires-Donoso 2017)

The researcher decided that the need for a very high quality user experience and the personal sharing requirements dictated that a mobile app was the best solution.

In addition, the researcher was consulted for his preferences and rational for the options technology choices. After discussion with the developer (taking into account development time and costs), the researcher decided:

- Development Environment: In discussion with the developer, it was decided to use the adobe flash platform. This was due to the experience of the developers in this platform and the ability to compile for iOS and Android platforms as well as a potential desktop deployment, from a single code build.

- Target Device: The App should be architected for both phone and tablet usage. This would mostly impact on the use of text and screen formatting within designs.

- As a central database was not available to collect usage data and enable flexibility in content. it was decided that a local (on-board device) database would store the different content, usage statistics, contact information and progress information.

The development details of the App are shown in Appendices M, N and O.

5.3.5 Reflections on the new delivery method

The new training delivery strategy and methods that form the basis of the mobile app concept strongly relate to the findings from the researchers' analysis into Arabic cultural preferences using the seven dimensions of cultural differences identified and studied in detail in Chapter 2.

Of specific interest is the bias in Qatar towards 'particularist' end of the 'Universalist-Particularist' axis, defining attitude towards rules and relationships, where the Arabic cultural preference is towards a less formal, relationship approach. A study of the Individualism – Communitarianism axis that looks at the relationship between the group and the individual indicated that there is a

preference towards the group (tribe) in Arabic culture. A personalised training approach that incorporates sharing of experiences with colleagues is aligned with the 'relationship' over 'rules' and group aspect of Arabic culture preferences.

The App concept and design thus focused on providing a feeling of personal relationship between the trainee, trainer, mentor and colleagues, whilst encouraging group learning through sharing experiences. Additionally, the graphical design of the app may need to be sympathetic to Arabic cultural preferences, although many western-based apps are current in use throughout the Middle East and North Africa.

Table 5.1 provides a full mapping between the findings in this study of the preferences of Arabic Culture within the seven blocks to the design features, functionality and resulting new training delivery methods made possible by the Mobile application.

Table 5.1 Full Mapping

Cultural difference	Arabic Cultural Tendency	Design	Assessment
Particularist - Universalist	Rules are less important than process	The App permits the user to form his own rules for learning	Very suitable for target audience
	Process is more important	The emphasis is on the learning process	Very suitable for target audience
Individualistic-Communitarianistic	Tendency to associate with a group	App allows shared learning or group learning	Very suitable for target audience
Specific - Diffuse	Specific cultures separate and divide into parts. Diffuse reflects a more holistic approach	The App is structured so that the knowledge is provided in small chunks	This is disadvantage of the design as it is difficult to inculcate a holistic view
Achievement - Ascription	Achievement which reflects a more hierarchical structured society	The App is more equalitarian which does not reflect the Qatar culture	This does not conform with the Qatar culture but is directed to a more flexible organisational structure

Reflecting on the comments raised in section 2.6 regarding new teaching approaches, the mobile App pedagogy certainly is designed to promote cooperation and allows the freedom to discover. It also satisfies some critical criteria resulting from the SSM analysis i.e. it provides:

- training services that are available whenever and wherever they may be needed;
- training services designed as small bytes that are simple to access and consume.

5.3.6 Training Content

The 'Personal Development' training for women police officers as detailed in 5.1 was chosen for the trials of a new teaching App. "The module is centred on learning and development. It aims to help women police officers become effective, independent and confident self-directed life-long learners. Theory will be presented in lectures, and discussed in seminars. Participants will produce a portfolio of their best work showcasing their skills and abilities, which can be stored on their personal records. This will also enable them to record their personal objectives and evaluate their progress towards the achievement of these objectives, thus continuously developing their career plans. This portfolio will be summatively assessed, as well as being used to give formative feedback. By using reflective practice to understand how they are learning and how to prove what they have learned, and recording this in the portfolio, they will be able to relate their skills and capabilities to their employment."

Twenty female police officers were chosen to do this course and divided into two groups – one of which would use the App for some exercises.

CHAPTER SIX. ANALYSIS

The three suggested improvements to vocational training in Qatar: the change in teaching style to reflect cultural differences, the delivery of new material and an experiment with mobile Apps are now analysed.

6.1 Reflecting Cultural Differences in Teaching Style

As revealed in the SSM, there is no universally agreed definition of culture among social scientists. Various leading researchers have defined culture in different ways. In the GLOBE Project (Chhokar, *et al.* 2007), researchers from 38 countries came together to develop a collective understanding. They defined it as:

> *Shared motives, values, beliefs, identities, and interpretations or meanings of significant events that result from common experience of members of collectives and are transmitted across age generations (Chhokar, et al. 2007).*

Well -established cultural theory shows each group or category of people carries with it a set of common mental programs that create its national culture. Each of the major studies and many minor studies confirm this and are closely correlated (Hofstede and Hofstede 2005: 81). Culturally, the Western world, represented by mainly Americans, British and Northern Europeans, and the Arab world are widely separated. This significantly complicates the interchange of ideas (Lewis 2006: 402). Importing essentially alien methods of management, education and training go a long way to institutionalising the effects of any westernisation of public services. The result is that pressures to conform to an alternative culture are creating strong resistance and an even stronger trend towards national cultural identity.

The region consisting of Qatar, Kuwait, Saudi Arabia and UAE has long been regarded as displaying a strong common culture (Lewis 2006: 405). This can be explained by a common history and the overwhelming influence of Islam in every facet of personal and organisational life in the region (Adler 2002). This Arab identity is helped by institutions such as the influential Qatar based Al-Jazeera broadcaster. As a result, most significant cultural commentators such as Lewis (2005), Trompenaars and Hampden Turner (1997), and Hofstede (Hofstede 1980, 1991) and many other authors refer to "the Arab World", rather than individual states. This allows the conclusions from other research in the region to be used to draw inferences.

Welsh and Raven (2006) note that in the Gulf region, family and religious values probably have a major influence on the way organisations are managed. There is a strong authoritarian hierarchy and network which makes their public services different to those in the West. As they all have strong family connections, there is a lack of anonymity which inculcates a fear of losing face by making mistakes. The trend towards overseas education and training potentially widens this cultural gap between Qatari civil servants and the people they serve. This has become a matter of serious concern to people in Qatar and elsewhere in the Gulf (Al Kaabi, 2007). Indeed, the Qatar National Vision 2030 (GSDP 2008: 4) is clear, stating:

> *"Preservation of cultural traditions is a major challenge that confronts many societies in a rapidly globalizing and increasingly interconnected world. .....*

Qatar's rapid economic and population growth have created intense strains between the old and new in almost every aspect of life."

The analysis detailed in Chapter 3 has identified that training in Qatar could benefit from the incorporation of the incorporating cultural differences into the training.

6.1.1 First Experimentation

The short course called Personal Development, which was described in section 5.1, was designed to test out various teaching styles. The course was given to a group of 20 Qatar police personnel who were predominately female with an average age below thirty. A pre-course questionnaire was designed to elicit expectations for the course which was based on Trompenaars seven cultural dimensions. A summary of the responses of the group is shown below.
Scale: (1) Very Unimportant; (2) Unimportant; (3) Neutral; (4) Important; (5) Very Important.

Table 6.1 Pre questionnaire for cultural differences

1 The tutor will give me the rules for developing personal skills.	4
2 The tutor will develop trust and rapport with the group	3
3. The tutor will accommodate the questions of all participants.	4
4 The tutor will respect the opinions of all participants.	5
5 The training materials used can be used to share knowledge to colleagues	2
6 The training environment is open to sharing of experiences of participants	4
7. To be able to apply the skills in my work.	3
8. To be able to teach my colleagues the skills.	2
9. To use these skills to help Qatar adapt to the modern world.	5
10. The tutor will hold a positive attitude towards the problems in the Qatari Police Force.	4
11. The tutor will control any possible conflict amongst participants.	3
12. The tutor is knowledgeable in the topic.	5
13 The attitude towards time	4
14. There is sufficient equipment to encourage sharing among participants.	4
15. The training environment is comfortable for participants.	4
16. The training environment is conducive to learning.	4

Source: Created by the Researcher

It was therefore decided in the new course to avoid:

a) Isolating people – making them state opinions in front of the group
b) Conflict within the group
c) Praising individuals
d) Favouritism

e) Restraining social interactions

The course was to actively promote

i) Group decision making
ii) Building relationships in the group
iii) Praising group work
iv) Boosting confidence
v) The importance of planning and punctuality

The tutor was not be afraid of

1. displaying emotions
2. Showing positive body language

The tutor was to:

I. Be flexible with tasks and assignments
II. Relate the course to work
III. Take responsibility of the course

After the course, a post questionnaire was issued and the average responses are shown below. The response shows that on first appearance, the attempts to incorporate cultural differences was successful.

Scale: (1) Strongly Disagree; (2) Disagree; (3) Neutral; (4) Agree; (5) Strongly Agree.

Table 6.2 Post questionnaire for cultural differences

1 The tutor encouraged me to develop my own personal skills.	5
2 The tutor developed trust and rapport with the group	5
3. The tutor accommodated the questions of all participants.	4
4 The tutor respected the opinions of all participants.	4
5 The training materials used can be used to share knowledge to colleagues	3
6 The training environment was open to sharing of experiences of participants	4
7. To be able to apply the skills developed in my work.	3
8. To be able to teach my colleagues the skills developed.	2
9. To use the skills developed to help Qatar adapt to the modern world.	5
10. The tutor held a positive attitude towards the problems in the Qatari Police Force.	4
11. The tutor controlled potential conflict amongst participants.	3
12. The tutor was knowledgeable in the topic.	5
13 There was a good attitude towards time	4
14. There was sufficient equipment to encourage sharing among participants.	4
15. The training environment was comfortable for participants.	4

16. The training environment was conducive to learning.	4

Source: Created by the Researcher

The response shows that three categories showed improvement, one did not and twelve stayed the same. The comparison between the pre and post questionnaires showed that:

- By encouraging them to develop their personal skills instead of giving them rules to do it, the score increased from 4 to 5. This is significant in the light of the bureaucratic system described earlier.
- Trust and rapport increased from 3 to 5. This is also very encouraging result as trust outside the family is not common. There is a lot of "upmanship" between tribes.
- The materials can be used to share knowledge. This relates to the previous point
- The expectation "the group expected the tutor to respect the opinions of all participants" fell from 5 to 4. This was disappointing as the tutor had tried to minimise the particularist and emphasise the universal dimension by steps a) to e) above. This feedback was discussed with the group. One possible reason was that some participants members took lack of praise (see point c) above) for absence of respect. This illustrates the delicate nature of these cultural differences where good intentions can be misconstrued.

This was an initial experiment designed to test various approaches and the improvement in expectation, even though it is small, was encouraging. The experience gained then applied to the major course that was developed on Systems Thinking

6.1.2 Analysis of Cultural differences for the Systems Course

At this stage, the researcher had extensive knowledge of cultural differences as shown in table 2.1- 2.3. This secondary date was enhanced by the primary date discussed in 4.2 and the results of the experiment described in 6.1. The seven cultural dimensions are grouped into four cultural factors are now discussed in detail.

6.1.2.1 Cultural Factor One – the physical environment

Research was conducted on how physical environmental factors impact on learning (Blackmore et al 2011, Martin 2002, Moos 1979, Steele 1973, Woolner 2010, Woolner et al 2011). This secondary data indicated that a high-quality learning environment has the potential to shift possibilities, raise aspiration and demands deep commitment to learning. The spaces in which we spend most of our time give important messages about what we value most. It is hard to separate the environment from teaching or planning - it communicates more than just the learning content. It represents the blending of content and pedagogy so that an understanding of how learning is organised, represented and adapted is made visible. There is also a link between mastery learning and how the environment is used as a resource for challenging pupils to gain deeper levels of understanding. When connected to a learning philosophy, the environment can:

- Provide a framework to help pupils organise sequences of learning
- Build conceptual understanding so that the 'why' of learning is better understood
- Encourage deeper levels of reflection
- Help learners make sense of the world around them

(http://www.robcarpenter.org.uk/44/climbing-the-hill/post/95/is-it-time-the-learning-environment-was-given-higher-status-as-a-learning-multiplier)

The researcher convinced the PTI of the appropriateness of the following quotation which summarises this analysis.

> *"The beauty we've designed into our centre isn't window dressing; it's an essential part of our success. It nourishes the spirit, and until you reach that part of the spirit that isn't touched by cynicism or despair, no change can begin."* (Strickland 2007).

As a result, the PTI identified the environment as playing an important role in the training process. It was chosen to be conducive to learning, comfortable, open to sharing and provide up to date equipment. The participants had comfortable seats with up to date equipment, internet and software. The seats were arranged so that the participants could easily communicate and work with each other. This was successful but it could be a problem to reproduce these ideal conditions when the classes are larger – 20/30 people.

6.1.2.2 Cultural Factor Two – learner's expectations

Learners can have very different expectations of the same course. Two leaners can be in the same group, have the same trainer and even get the same assessment mark, yet still one could be satisfied and the other not. This is a complex problem with many interconnected reasons, but one explanation could be due to their different expectations prior to the course. Learners in Qatar will come to a training session with different perceptions – the difficulty level, the purpose or usefulness of the training or even the appearance of the trainer. These perceptions have a cultural base and part of the trainer's job is to manage these expectations (Dudley & Marlow, 2005).

Expectations can and do affect achievement. High expectations are a critical component of effective learning. Teachers who form expectations based on inappropriate data, are rigid and unchanging in their expectations. Training can enable tutors to become aware of their unconscious biases and differential treatment of students, and help them to make positive changes in their thinking and behaviour (Cotton 1989).

Tables 6.1 and 6.2 showed that students had high expectations that were not all met by the training. For the Systems Course, the response to this was to manage these expectations and ensure that they are realistic before the course commences. Thus, it was made clear to the participants that the material was not only useful and relevant for them individually but also was important for Qatar – i.e. satisfying the collective instinct. They were reassured that they could (with hard work) complete the course and would subsequently acquire and be able to pass on skills learned in the course. Thus, much thought was given to the publicity governing each session. To ensure that the right expectations existed and that the class knew the relevance and usefulness of the course to them and the nation of Qatar, the following introductory material was prepared and given out before the sessions.

Session One

This session deals with Perception which is how we interpret "reality" and thus is the basis for our culture. Our brain interprets data and forms opinions and beliefs. This data comes from our five senses. The aim of this session is to show that the interpretation of data by our brains is often

misleading. We should therefore always think about what we think and listen to the thoughts of others.

Session Two

There are different classes of problems going from logical to complex and messy. Mathematical and scientific problems can be hard, but their solution follows a logical sequence. Problems involving people are not like that. They are often messy in the sense that there are many causes, and behaviours. People often do not behave in a logical manner (but according to their perceptions) Because of this, new types of thinking are needed. In this session we examine classical ways of thinking and analyse their applicability to Qatar.

Session Three

This session deals with a general methodology for solving problems using modelling. Nine stages are discussed in detail and examples will be provided. This is a preparation for the later sessions on Causal Thinking and Systems Dynamics.

Session Four

A paradigm is a world view. It is a way of thinking that is accepted as true by all. There have only been a few world paradigms in the history of mankind. This session examines these paradigms and discusses their successes and deficiencies. It then looks at a new paradigm that is coming into existence called the systems paradigm and its related thinking called Cybernetics. It is stressed that if Qatar is to succeed in its aims, then it must understand and possible adopt this way of thinking.

Session Five

This session discusses a new type of thinking, called Systems Thinking, which is very useful when dealing with complex problems where everything is interconnected. It is especially important for strategic thinkers.

Session Six

This session discusses Cybernetics which is closely connected with Systems Thinking. It looks at the best way to organise entities from schools, academies to governments and nations. Many of the principles could be usefully employed in the Qatar Police Training Institute.

Session Seven

This session identifies a useful thinking tool for the Qatari police which is that of causal modelling. This allows for a holistic view of the situation to be assembled and also allows the user to insert all the various interconnections between variables. One the model is produced, often unintended connections can be identified.

Session Eight

A natural consequence of Causal Modelling is System Dynamic Modelling. This is where one can take the causal model and transform it onto a dynamic model, which accepts data and also process graphs. This session shows how these models work and if there is interest we will make a course on this for a future date.

Session Nine

This session presents the concept of the Learning organisation is a new one, which has developed from the ideas of Systems Thinking. It is hoped that the Qatar Police Training Institute could aspire to this type of organisation.

6.1.2.3 Cultural Factor Three – role of the tutor

This concerns the Tutor or teacher of the course. Previous discussions in chapter is an important factor in the process. It is expected that he is knowledgeable and has experience in what the course is about. He must respect the culture of the group and engage with them emotionally. The teaching style should be appropriate to the culture. The following recommendations were drawn from the work of Brophy (1983), Cooper and Tom (1984), Cotton (1989), Marshall and Weinstein (1985), Patriarca et al (1986), and Woolfolk et al (1985).

- Avoid unreliable sources of information about students' learning potential, e.g., social stereotypes, the biases of other teachers, etc.
- Communicate to students that they have the ability to meet the standards.
- Use heterogeneous grouping and cooperative learning activities whenever possible;
- Develop task structures in which students work on different tasks, on tasks that can be pursued in different ways, and on tasks that have no particular right answer.
- Emphasize that different learners are good at different things and let the learners see that this is true by having them observe one another;
- Concentrate on extending warmth, friendliness, and encouragement to all students.,
- Monitor student progress closely so as to keep expectations of individuals current,
- When students do not understand an explanation or demonstration, diagnose the learning difficulty and follow through by breaking down the task or reteach it in a different way, rather than merely repeating the same instruction or giving up.

Tutors on the new course were specially selected and provided with these recommendations. There were frequent meetings between the tutors and the researcher during the duration of the course.

6.1.2.4 Cultural Factor Four – the content

The final factor is the material. This has been discussed in chapter 5. Great care was taken to choose examples that were relevant to the problems experienced in either the Arab World, the United Emirates or Qatar. This could not be the case for every example, but the majority should be this way. Effort was made to choose content that would develop new ideas that can be shared.

As far as possible examples were taken that are not specifically “western” and can be understood in Qatar. Examples include:

- Throwing shoes;
- Women in Burkas;
- Abu Hamid Muhammad al-Ghazali.

In all discussions, great care was taken not to embarrass or isolate individuals and to generate a collective view.

An example is the question chosen for session 2 “Different ways of Thinking” . This is taken from the Open University module “Systems Thinking and Practice” and is available on the web..

“Illegal drug use and the associated criminality is a vexing problem for European governments). Plant-derived drugs, grown by peasant farmers in less-developed countries and processed,

shipped and distributed by organised crime syndicates, are a major part of the problem. Chemically derived drugs, produced in illegal laboratories all over Europe have lately been gaining ground. Some drugs are addictive or dangerous or both. Most are expensive, tempting users into petty crimes. What is the solution for Qatar?"

Some possible solutions that were discussed are:

1. Logical Thinking – new means to detect drug uses involving maybe "stop and search"
2. Systematic Thinking – remove source of drugs
3. Lateral Thinking – pay the drug growers money if they DO NOT produce drugs.
4. Holistic Thinking – legalise drugs
5. Systems Thinking - Provide free, confidential help to anyone using illegal drugs (Systems Thinking

The classification of the different types of thinking was subjective. Other views were sought, and it stimulated a lively debate. It was stressed that none of these ways of thinking is incorrect. They all have their use and can all be used effectively. The purpose was to demonstrate that different ways of thinking exist and that one should consider the situation before deciding on which to use.

6.2 Evaluation of the new content on systems course

This course was attended by eight high ranking officers in the Qatar Police Training Institute. Because of this smaller group, it was possible to get much more detailed feedback. Semi-structure interviews were conducted by this researcher to further expound on the feedback of the training participants. The interview questions included the following: (1) Did the course challenge you? Please state how; (2) Has the course changed the way that you think? If so state how you thought before and how you think afterwards; (3) Did the course relate to Qatar and its Culture? (4) What did you learn from the course? and (5) Are such courses useful? Please state why; and (5) Did the course meet your expectations? The close-ended questions were treated statistically using SPSS version 21.

Every effort was used to avoid bias a detailed in section 4.3. The questions are shown in Appendix J and the transcripts of the interviews are shown in Appendix K and are analysed below.

Table 6.3 summarizes the statistics of responses for the close-ended questions of the semi-structured interviews for new courses. As shown in the table, All eight respondents (n=8, 100%) believed that the new courses: (1) challenged them; (2) changed the way they think; (3) relate to Qatar and its culture; (4) are useful; and (5) met their training expectations.

The table below summarizes the result of the content analysis of the open-ended questions of the semi-structured interviews. As shown in the table, the new course offering – systems thinking- were perceived by the respondents to be: (1) very challenging; (2) relevant to Qatar and its culture; and (3) very useful and practical. Moreover, the respondents believed that the new course met their expectation and they learned many things from it.

Table 6.3 Results of the Content Analysis of Interview Transcripts for the New Courses Showing the Codes Made and the Corresponding Quotations

1 Codes	2 Quotations

3	**The new course was very challenging**	1) The course challenged me to think more analytically and to consider the problem from all aspects, as there is always more than just one way of looking at the problem (Interviewee 1). 2) Systems thinking and systems dynamics are new courses and they presented new or novel concepts that made it challenging to me. (Interviewee 1). 3) Systems thinking and systems dynamic modelling are new concepts to me. Understanding loops and models are a challenge to me (Interviewee 2). 4) The courses challenged me because of their novelty. They have new concepts, which were unheard of by me before (Interviewee 3). 5) The course challenged me because this is the first time I learned about systems thinking Interviewee 4). 6) The course offered many new discoveries for me. It challenged my old ways of thinking. (Interviewee 5). 7) It challenged my pre-formed thoughts, my old mental structures and constructs. It challenged my long-held beliefs at seeing things and considering only one perspective. The course challenged me because it presented many fresh ideas that are opposed to routine courses offered in vocational training for police officers (Interviewee 7). 8) The course challenged me because it is something new and I do not have any ideas about it (Interviewee 8). 4
5	**The course changed the way that participants think**	1) Now, I think differently as I am now able to analyze the problems using the stages of problem solving I learned from systems thinking. I also think that modelling the problem can help address the problems more effectively (Interviewee 1). 2) The courses changed the way I think. Before I took the courses, I consider problems under just my own way of thinking and feeling or perception. After I participated in the training, I learned that there are many ways of thinking about the causes and solutions to the problem (Interviewee 2). 3) Before, my way of thinking is that there is only one way of looking of or considering a problem. After the courses, I now look at things from many angles. I now think holistically and logically (Interviewee 3) 4) It has changed the way I think. Now, I learnt that there are many ways of solving a problem and it pays to follow the systems thinking methodology because it is logical and can help solve the problems more effectively (Interviewee 4). 5) The course has changed the way I think. Prior to the training, I thought in such a way that is very conventional. After the training, I see things differently as I am able to make a paradigm shift from conventional

		ways of thinking to systems thinking, which is more logical and more critical (Interviewee 5). 6) Before the course, I think in the routine, ordinary kind of way. After the course, I am now a lateral thinker – looking at many ideas and alternative solutions before resolving the problems (Interviewee 5). 7) Like I said before, the course changed my pre-formed thoughts, my old mental structures and constructs (Interviewee 7). 8) After the course, I think in many different ways- that is called lateral thinking (Interviewee 8).
6	**The course was related to Qatar and its culture**	1) The trainer used examples that are based in the Arabic culture (Interviewee 1). 2) The teacher made reference to the women of Burkas to illustrate an example of a concept (Interviewee 2). 3) The teacher used the example of throwing shoes which is a part of our own culture (Interviewee 3). 4) The course was related to Qatar and its culture because the trainer made mention of several examples based on our culture. The trainer for instance, used the example of Abu Hamid Muhammad al-Ghazali and the throwing of shoes which we, the participants are all familiar of (Interviewee 4). 5) The course was related to Qatar and its culture because the examples were about the Arab culture such as the women in Burkas and the throwing of shoes, which are very Arab in nature (Interviewee 5). 6) There were some Western examples but they fewer compared to Arab examples. In addition, the Arab culture was highlighted in the examples (Interviewee 5). 7) The teacher gave examples that are very Arab- culturally. Examples mentioned during the training were the Burkas women and Abu Hamid Muhammad al-Ghazali (Interviewee 7).
7	**Participants learned many things from the course**	1) I learned many new concepts from the courses. For example, I learned about the methodology that is based on causal modelling. I also learned to illustrate and understand the problem with the use of feedback loops (Interviewee 1). 2) I learned many things from the courses such as changing our ways of looking at a problem. I leaned about the methodology of problem solving which is called the nine-stage plan of solving a problem. I also learned a lot about holistic way of thinking and about logical thinking (Interviewee2). 3) I learned about the techniques of problem solving which is called the nine-stage plan of solving a problem. I also learned a lot about paradigms and how they can be changed (Interviewee 3). 4) I learned many things from the courses such as changing our paradigms from scientific and traditional to systems thinking

		paradigm. I learned about causal modelling and the problem-solving methodology (Interviewee 4). 5) I learned many things from the course. For instance, I learned about system dynamics model, which can be constructed from the causal model. I also learned about the Nine Point Plan of problem solving (Interviewee 5). 6) I learned so many things from the course. These new learnings include lateral thinking, paradigms, and the 9-point plan of solving problems. I also learned about causal modelling (Interviewee 5). 7) I learned about paradigms, lateral thinking, causal loops, modelling, and the methodology for problem-solving (Interviewee 7) 8) I learned that systems thinking are more effective than scientific thinking. I learned about the problem –solving methodology and that there are numerous perspectives to consider when solving a problem. I learned about cybernetic principles, modeling and feedback (Interviewee 8).
8	**The new course is useful**	1) Work problems can be solved more logically with the use of systems thinking and model the causes of the problems, so that they can solved more effectively (Interviewee 1). 2) The courses are very useful especially that policing requires an ability to solve problems related to crime, which can be very life threatening. In order to protect the civilian population as well as their property and those of the government of Qatar, in order to maintain law and order effectively, we should be able to solve crime-related problems effectively by using the methodology involving the 9 stages of systems thinking (Interviewee 2). 3) The courses are very useful to my profession and to my every day way of life also. I can think logically and solve problems more successfully (Interviewee 3). 4) The courses are very useful and valuable to my profession. I can use causal modelling and the problem-solving methodology in addressing and resolving problems at the MOI. The courses are very applicable to my work. Very practical and useful (Interviewee 4). 5) The courses are very useful because in terms of problem solving. Model construction can made to address or resolve problems at work. We can apply the concepts of systems thinking and systems dynamics in solving issues at the MOI (Interviewee 5). 6) The courses are very useful in problem solving. It can be applied at work – solving problems at the MOI or at home. This is because the methodology that was taught during the training for solving problems is applicable to many situations. Very practical and applicable (Interviewee 5). 7) The courses are very useful in problem solving particularly at the MOI. They are very practicable (Interviewee 7)

		8) The courses are useful in work-related problems – they are very applicable in problem solving Interviewee 8).
9	**The course successfully met participant expectations**	1) The new courses not only met my expectation, but they exceeded them (Interviewee 1). 2) The new courses were able to meet my course expectations (Interviewee 2). 3) The new courses were able to meet my expectations. I learned a lot from them and everything I learned from the courses are very applicable in my profession and in my private life. I expected that the courses would be interesting and useful and they met my expectations (Interviewee 3). 4) The new course was able to meet my expectations. I learned a lot. The Arab culture was used in examples. The course was interesting and engaging. It is very practical and useful both in everyday life and at the MOI (Interviewee 4). 5) The new course was able to meet my expectations. The course was interesting; it was something new and very practical. It can be applied at work and in any situation. I learned a lot (Interviewee 5). 6) The new course met my expectations (Interviewee 5). 7) The new course met my expectations. It met my expectations for an interesting m new and practical course (interviewee7). 8) New course met my expectations of what a vocational training course should be –challenging, interesting, practical and reflects our own Arab culture (Interviewee 8)

Source: Created by the Researcher

Sessions seven and eight were different to the others in so far as they were largely practical. There was not enough time in the present course for the participants to thoroughly master all these skills, but the purpose of the sessions was to introduce these methods to the students so that their power would be revealed. Because of the interest shown, it is intended to give further courses in Causal and System Dynamics modelling.

6.3 Analysis of the use of the new delivery method

Chapter five describes and gives reasons for the choice of the technology, the design of the App, cultural differences, the choice of course to test the pedagogy and the expected outcomes. This section now analyses these expectations.

This was obtained by using the questionnaire described in Appendix L. The responses are given in Table 6.5. All the respondents were female, 12 between 21 and 29 and 8 between 31 and 39 so it was not a representative sample. They all had mobile phones and the App was installed. Eight had Apples, the rest had android phones but this did not cause any problems.

6.3.1 Analysis of the choice of delivery method

6.3.1.1 Ease of communication

The response here was very positive which is encouraging for the researcher as this is seen as the major advantage of using a mobile in training. All the officers were pleasantly surprised as to how they could easily communicate to each other and how this encourage group work. They saw possibilities of using this facility in all kinds of police work not just training.

6.3.1.2 Cooperation

Questionnaire 13 and 18 scored a 4 and typical comments were "very easy to share my thoughts with a colleague" and "easy to communicate with the tutor"

This was seen as a very useful and easy to operate facility. During the work, the tutor could give extra encouragement to the slower ones and after each note, the tutor could communicate with the group as a whole.

6.3.1.3 Curiosity

Comments from the questionnaire (Appendix L) were favourable. The reply to questions 5, 12 and 14 scored a 4 and typical comments were "its access to the internet means that it is very easy to obtain more knowledge" and "the App allowed time for reflection"

6.3.1.4 Control

Before the course, all students said that they preferred to read the notes on paper. This probably reflects their age and their culture which is not computer oriented. It was suggested that there should be a print function (wireless operated) to allow printed version to be obtained but the problems of finding a printer and having the correct drivers etc. were acknowledged. When faced with question – "*OK we understand that you prefer a printed copy but could you physically read the notes easily*? the response was that the notes were readable but the facility to increase or decrease font size would be useful

6.3.1.5 Assessment

At first, they did not like the restriction that they could not progress till everyone had communicated as some officers were much quicker than others but they realised the reason for the restriction and by the time they arrived at "notes4" this objection had disappeared

The trainer was enthusiastic about this as they appreciated that every response from every student could be accessed thus making assessment of a difficult subject easier.

This facility enabled the trainer to spot the slower students and thus give the opportunity for motivation and encouragement.

It was decided to test the App in two ways:

1. To test its facility to share experiences;
2. To test its usefulness in providing knowledge anytime, anywhere.

This test used an exercise taken from the Personal Development Course taken from the internet and shown in Appendix P. In this exercise, an incident happened in a park and four accounts are given by the same woman. The object of the exercise is to develop a shift in thinking along the following lines:

- from description to reflective account;
- from no questions to questions to responding to questions;

- emotional influence is recognised, and then handled increasingly effectively;
- there is a 'standing back from the event';
- self-questioning, challenge to own ideas;
- recognition of relevance of prior experience;
- the taking into account of others' views;
- metacognition - review of own reflective processes.

This exercise was part of the course that was given in a standard classroom/lecturer environment. The course was repeated with another group of students who were exposed to the App.

The students organized themselves into groups of five. The App was then set up so that people in these groups were in contact with each other; The four accounts were available on the App but could only be accessed in the prescribed order and a subsequent one only followed after group discussion on the previous one had taken place; The tutor can see what interaction is taking place within the group; The results of the group discussions are stored on file rather than on a flip chart.

This was chosen as a test for the App because

- there were some manageable chunks of text that could be downloaded;
- the student could reflect personally on them;
- the student could share his thoughts with others in the group using the App.

6.3.2 Did the design incorporate the desired outcomes?

The following table shows how the outcomes desired by the researcher (which are detailed in section 5.3.3) matched the design.

Table 6.4 Desired outcomes against the Design

Outcomes desired by the researcher	Match with design
On-demand availability	The app was designed to run on standard phone or tablet devices, and provides 24*7 flexibility to access the system and training resources.
Sympathetic to the cultural differences	The design encourages peer engagement, discussion, relationships and informal learning with no pressure, all identified preferences for the Qatari users.
Rich media experience	The app design enables multi-media such as video, sound and animation to be used in training delivery. Also video and audio input is available to the user to comment and share experiences.
Personal learning experience	The design is specifically based on the role the user is currently employed to perform and links heavily with real work events. User set up their own specific learning environment by inviting friends, feeding back into the process, and recording personal experience. All data and events are tagged to a specific person.
Learning in Small bites	This will be mostly driven by the design of training resources, but the design specifically breaks down learning to specific real events within roles

	(or job types). By using an anytime-anywhere approach the design encourages smaller less formal learning episodes.
Sharing learning experiences	The design encourages the user to build peer networks and share experience through messaging and video and voice recordings.
Flexibility to deliver different training	The design is specifically domain independent and will be configured depending on the users role and the work events associated with that role. The user has the ability to add personal training experiences and packages to this model. Many different training approaches can be delivered digitally from multi-choice questionnaires to instructional videos or audio packages.
Ability to track usage and feedback	The design has specific modules for users to record and share experiences. The extended design (a second phase of development) links the app with a cloud based management system. This could either be a SaaS (software as a service) commercial service of integration with existing enterprise training management environments.
Timely	Access through mobile devices enables 24*7 access to the user isn't restricted to when they can access training. Additionally the design links training to work events, so training can be accessed close to the user understanding of when these events will happen.
Monitoring	App usage and frequency of usage of specific training resources is recorded locally on the app. This can be synchronised to a central system and access for management information.
Learning Agility	The design provides agility through the mobility, user based configuration and availability aspects of the design. At any time new modules can be added and linked to the role – work event model which is core to the design.
Reduction in Costs	The design delivers efficiency through reduction of travel, accommodation, room hire, equipment, trainer costs incurred for more formal classroom based training. There are potentially additional cost benefits in terms of the effectiveness of the training and the increased motivation of the workforce.
Interaction between students and staff	The design enables students and staff to share experiences through the 'friends' network and by enabling comments and experiences to be recorded and shared.
Interaction between staff	This is less implicit in the design, but would be a product of the phase 2 development where the tools are firmly integrated into an enterprise training and development system.
More feedback on the learning	Recording text, voice and video and encouraging sharing and community based training implicitly creates a feedback loop that encourages development of the training environment based on experience.
Easier access to knowledge	The design provides not only easy access to training resources but also the knowledge embedded in experience. This bank of knowledge based on real events will develop and grow with system usage both in quantity and quality.

Source: Created by the Researcher

6.3.3 Matching usage to Cultural Dimensions

Table 6.5 provides a mapping between the seven dimensions of Trompenaars with the design features of the App. This relates to the secondary research and observational data detailed in chapters 2,4 and 5.

Table 6.5 Mapping Cultural Dimensions against the Design

Cultural Dimension	Arabic Cultural Tendency	Design	Supporting References
Particularist - Universalist	Rules are less important than process Process is more important	The App permits the user to form his own rules for learning The emphasis is on the learning process	Zane L. B, Lin Muilenburg, L., (2013). Handbook of Mobile learning
Individualistic-Collectivism	Tendency to associate with a group	App allows shared learning or group learning	Khaddage, F. & Knezek, G. (2011). Device Independent Mobile Applications for Teaching and Learning: Challenges, Barriers and Limitations
Neutral - emotional	To express an emotional response	App allows all types of responses	Kukulska-Hulme A. & Shield, L. (2008). An overview of mobile assisted language learning
Specific – Diffuse	Specific cultures separate and divide into parts. Diffuse reflects a more holistic approach	The App is structured so that the knowledge is provided in small chunks	Khaddage, F. & Knezek, G. (2011). Device Independent Mobile Applications for Teaching and Learning: Challenges, Barriers and Limitations
Achievement - Ascription	Achievement which reflects a more hierarchical structured society	The App is more equalitarian which does not reflect the Qatar culture	Zane L. B, Lin Muilenburg, L., (2013). Handbook of Mobile learning
Orientation in time	Tendency to downgrade the western concept of keeping time	The App can set to prescribed time limits and block out responses that go over the allotted time	Traxler, J. (2011). Education and the Impact of Mobiles and Mobility
Attitudes towards physical environment	Equate physical environment with expectation of course	The App can be used anywhere	Traxler, J. (2011). Education and the Impact of Mobiles and Mobility

6.3.4 Was the chosen course suitable to test the App.

The course selected was the short course on personal development which has been discussed previously. This course consisted of the following sections which were conducive to using a mobile application.

- Critical thinking development: effective report writing; evaluating information resources; critical reading; presentation preparation (10%)
- Reflective thinking. (10%)
- Self-management: time management; task setting / prioritising; taking responsibility; self-motivation (20%)
- Self-presentation (10%)
- Listening skills; giving and receiving feedback; reacting to grounded criticism (15%)
- Peer-to-peer Interaction (10%)
- Group work to produce a joint project (15%)

The cohort of twenty was divided into two groups a of ten – one which used the App and one which used a traditional pedagogy. The response of the students was mixed and on such a small sample no firm predictions can be made. Four officers were well used to using Apps and they thought that it was a good idea and should be integrated into all learning. Two officers were mobile – averse and thus did not see any advantages for this (in their eyes) extra layer of complexity. The other two officers were indifferent but did not raise strong objections to its use.

6.3.5 Were the desired outcomes achieved

A final questionnaire was composed to obtain feedback on the desired outcomes. It was completed by the 20 participants of the mobile App course. The average scores on a Likert scale are shown below. The researcher followed up with personal discussions and the general feedback is recorded in the final column.

Outcomes desired by the researcher	Score	Feedback
On-demand availability	5	This was universally agreed
Sympathetic to the cultural differences	3	There was some confusion over the seven dimensions. %0% were encouraged to express their own d feelings.
Rich media experience	3	This score is equivalent to a no comment as in this experiment, there was little multimedia exposure
Personal learning experience	4	Rated highly
Learning in Small bites	4	This was appreciated and it was encouraging to see how the exercise was completed
Sharing learning experiences	5	The App encouraged them to do this
Flexibility to deliver different training	3	Again this score is equivalent to a no comment as the question was not relevant to the experiment
Ability to track usage and feedback	5	This was a particularly strong element
Timely	3	This was not received well by the students but the tutor was very satisfied with it

Monitoring	5	The tutor was very satisfied with this and it linked well with the timely question
Learning Agility	4	The question was not really understood
Reduction in Costs	3	Again this score is equivalent to a no comment as the question was not relevant to the experiment
Interaction between students and staff	5	Excellent
Interaction between staff	3	Again this score is equivalent to a no comment as the question was not relevant to the experiment
More feedback on the learning	4	Staff were pleased with the performance

6.3.6 Summary for New Delivery Methods

The current high population of young students and young adults of working age puts pressure on the already struggling educational and training resources of the different Middle Easter nations as they move through a period of rapid modernisation and general infrastructure construction. Viewed alongside the rapid growth in mobile and Internet technologies penetration, these challenges provide an opportunity to deliver a new training service to a receptive and highly used sophisticated young audience, when and where they need it.

New technology and online interaction can enable a more agile and flexible framework for skill building and knowledge sharing throughout an employee's day. Smartphones and tablets, equipped with headphones and microphones are already everyday personal equipment carried at all times by a young workforce in all major cities around the world. We can be sure that in the future Mobile networks will become faster, wireless networks will have more coverage, and equipment will become lighter.

All of the above will become cheaper, while people, transport and accommodation costs will become more expensive. This will drive training services away from a formal classroom environment and create more personalised and digitally connected informal learner's scenarios.

The growth of digital interaction brings a new challenge relating to the amount of data that is produced and stored. This demands that the app design considers how to ensure the data produced can be stored intelligently to enable filtering and retrieval in future (and potentially unknown) learning scenarios. If the data is to be shared effectively it must have context and an identifiable value, otherwise it just adds to the problem.

6.4 Conclusion to Chapter

This chapter analysed the new course on Systems Thinking and The Learning Organisation as to how it addressed cultural differences and whether the choice of topic was appropriate. The cultural differences that were inserted into the content and the teaching style resulted in a better appreciation of this course than for previous ones. The concept of a Learning Organisation aroused a lot of interest and it is being currently investigated by the PTI.

CHAPTER SEVEN. SUMMARY, RECOMMENDATIONS, FURTHER ACTIONS AND CONCLUSION

The research set out to investigate and evaluate the quality of training in Qatar especially at the Police Training Institute. The anecdotal evidence was that training was outdated and also reflected a cultural bias towards the West.

The aim of this chapter is to bring together the different threads of the research, present a summary of what has been done and to consider to what extent the purpose of the study has been met.

The chapter also discusses the lessons learned during the course of this research and recommends possible further actions in the future.

7.1 Flow chart of Research

Figure 7.1 shows a Process Flow Chart of the Research.

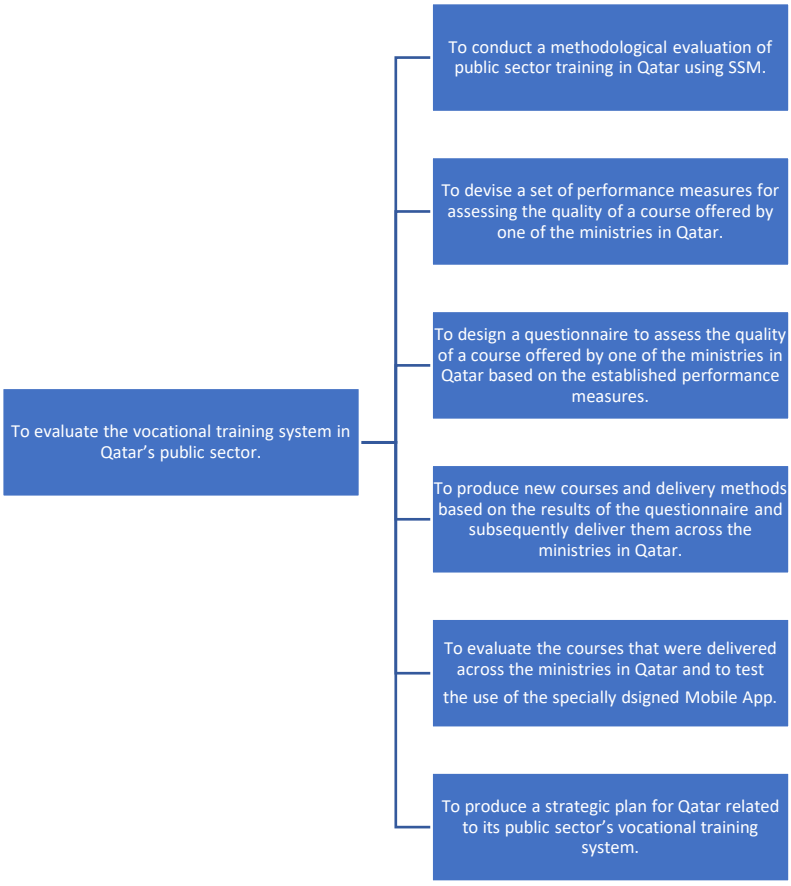


Figure 7.1 Process Flow Chart of the Research Aims and Objectives of the Present Study

7.2 Achievement of Aim and Objectives

As set out in Section 3.5, the aim of this study was "to complete a thorough analysis of the present training in Qatar and produce verifiable recommendations for the Ministry of the Interior." This was to be achieved by satisfying the following five objectives:

7.2.1 to conduct a relevant literature review.

The literature review involved a detailed study of several major issues connected with training. The first issue covered training in general and specifically vocational training. This involved analyzing the principles behind major education theories, such as Bloom's Taxonomy and other cognitive theories. An important study was of training evaluation, particularly the pragmatic system developed by Donald Kirkpatrick.

An important issue in the context of Qatar is that of culture and how cultural differences can affect learning. The starting point for this was the ground-breaking work of Hofstede and hi Cross-Cultural Dimension Framework. Other theories which stemmed from Hofstede and the one chosen was that of Trompenaars and his seven cultural dimensions. This had a major influence on the research.

It was important to select a methodology and after extensive reading the tool chosen was the Soft Systems Methodology (SSM) developed by Peter Checkland in the 1970's. This is discussed under objective two

The significance of course content in knowledge acquisition was acknowledged. Because of the problems outlined in 7.1, it was thought that, perhaps, the Qatari police force could benefit from Systemic Thinking. Thus, much time was spent researching the ideas behind Systems Thinking. During these readings, Peter Senge's Learning Organisation appeared to be an ideal objective for the Police Academy. Another bi-product of the research into Systems thinking was the concept and paradigm of System Dynamics developed by Jay Forrester in MIT in the late 60's.

The final part of the literature review was the role of ICT in Learning and Vocational Training. This is a current area of research and development and needed to be investigated for the Qatar context.

7.2.2 to conduct a methodological evaluation of public sector training in Qatar using Soft Systems Methodology (SSM);

After considering the content of the literature review, The SSM concept and paradigm was adopted as the methodology to be used in the research. This consisted of seven stages which were rigorously followed. The first three stages involved personal experience, staff meetings, questionnaires and interviews out of which came a Rich Picture and a Root Definition of the problem. The results of the SSM confirmed that there was indeed a cultural bias in the training courses and that the courses were considered to be out of date and not too relevant to the participants. The ideas of the SSM are of course not original but the survey carried out in Qatar was the first of its kind. The key findings to come out of these stages were that the police training in Qatar did not meet the participants' expectations. The analysis suggested that the training could benefit by:

modifying the teaching method to account for cultural differences
offering new courses with more modern content
using more technologically- advanced instruction tools.

7.2.3 to implement the recommendations arsing for the Soft Systems Analysis.

A specially designed short course was created to test the effects of cultural differences in the Qatar training. This is described in Chapter Five and analysed in Chapter Six. The results of this initial experiment conformed that cultural differences were indeed an important of the training process and that they needed attention in the Qatar vocational training programmes.

Building on this result, a new course was constructed on Systems Thinking and the Learning organisation. This required considerable personal research on totally new concepts and a different way of thinking. The course was given and certainly can be claimed as original.

The use of different delivery methods was also investigated. The author has noted the rapid rise of mobile phone applications and decided to investigate the usefulness of this in delivering courses to the Police Institute. Accordingly, the author designed a set of actions and commissioned a software developer to provide the specific IT requirements. At the moment a prototype has been developed that will handle the basic functions. This is certainly an original piece of work.

7.2.4 to evaluate results

This covered stages 5-7 of the SSM and is discussed in Chapter Six. Three key issues to be evaluated are:

a) Did cultural differences have an effect on the Qatar vocational training?
   This was first tested with a short course on personal development to a small number of participants. Questionnaires were distributed and the results seemed to indicate that cultural issues did indeed have an effect. That knowledge led to a different teaching style in the Systems Thinking course that was subsequently developed. Detailed study of questionnaires and semi-structured interviews confirmed this hypothesis.
b) Was the choice of a course on Systems Thinking beneficial to the Qatar police force?
   The feedback obtained was positive and more such courses seem to be required.
c) Could the power of new technologies be harnessed to improve course delivery?
   The Mobile App was not as successful in so far as the concept is not fully accepted yet in Qatar. More work needs to be done in this area.

7.2.5 to produce recommendations for Qatar related to its public sector's vocational training system

The Soft Systems Analysis proved difficult to carry out, but it achieved its objectives. At the conclusion, there were three clear recommendations:

1. All future teaching should recognize the importance of cultural differences and should be modified to include the specific culture of Qatar,
2. There is a need for the Qatar police force to think systemically especially as the number of foreign visitors increase. Such thinking will enable them to confront new situations and "think on their feet" rather than applying rules and regulations that do not fit the circumstance.
3. More effort should be expended in developing new technological tools into the training.

These recommendations were evaluated by the IAD. The evaluation was positive and it is shown in figure 7.2

7.3 Contribution to Knowledge

The contributions outlined in section 3.5.4 are now critically evaluated.

1. Demonstrating the use of SSM in a new area of study;

SSM is an established methodology which has been used extensively in many areas including teaching and learning. To the researcher's knowledge, this is the first such use of the methodology being used in a MENA country. The problem was dissatisfaction in the Qatar Police Academy regarding the quality of the training. The researcher created a Rich Picture (from extensive interviews and questionnaires) which identified three possible solutions - new content, cultural differences and new technologies.

The research journey, especially chapters four, five and six, has shown that the Soft Systems Methodology is a suitable methodology for such investigations. This is a significant contribution to knowledge for all MENA countries.

2. Applying received theory in cultural differences in a new context;

The issues of new content, cultural differences and new technologies were thoroughly researched, and a synthesis of current theories was used to suggest solutions to the problem. The feedback gathered demonstrated that this new amalgamation of previous theories pointed towards a positive way forward and the recommendations from the research have been accepted by the Qatar Ministry. In this sense, previously available knowledge has been applied in a new context. and is a contribution to knowledge.

3. Publishing new Data derived from interviews and evaluations

The primary data which has been assembled was not easy to obtain due to restrictions in Qatar and the Ethics committee in Cardiff. This is therefore a valuable contribution and can be a fertile source of knowledge for other MENA countries. This is covered in Chapter Four and the transcriptions in the appendices.

4. Introducing Systems Thinking to Qatar

During the period of research, the researcher became a passionate advocate of System Thinking especially for a police force operating in a global environment. The spread of this thinking in Qatar is a major contribution to both knowledge and practice.

5. Reporting on an experiment using a social media delivery method;

The experiment was to discover and to learn how best to employ social media techniques in vocational training. The tool chosen was a specially designed mobile App. The experiment revealed some plusses and minuses which are documented in Chapter six. This is the first such experiment in the vocational sector of Qatar and was viewed with great interest by the Ministry. The results of this experiment are a valuable guide for trainers wishing to introduce learning by mobile apps in vocational courses.

6. Redefining Western debate in an area of research.

The issues covered in this thesis are not confined to Qatar but are part of the general debate on the future of teaching and learning in the twenty-first century. As such this thesis is a contribution to knowledge.

7.3.1 Contribution to Practice

Three courses were conducted in the period of this research and detailed monitoring was undertaken. This was on how the courses were taught and the way they were received by the PTI. This documentation is a contribution to practice in the area of vocational training

بسم الله الرحمن الرحيم

Ministry of Interior
Human Resources Department

وزارة الداخلية
إدارة الموارد البشرية

التاريخ: 20/10/1436 هـ
الموافق: 04/10/2015 م

الرقم: إ م ب/ق.ب/د-١/18573

To Whom it me Concern

We hereby inform you that after a careful analysis of the Strategic Plan, which is an integral part of the thesis prepared by **Mr. Hamad Mubarak al-Kaabi**, Employment No. (1286) for his PHD degree, We decided to accept it as a model for the training procedures in Police Training Institute (PTI). Inter alia, the plan clearly defines strengths, weaknesses, opportunities, and sets goals, which will lead to further improvement of PTI training efficiency.

We also believe that this good practice will be disseminated through Qatar as a whole, since one of the important aspects of the plan is creating more relevant content to the local environment matching with the global changes.

This certificate has been issued upon his request without any responsibilities for the Ministry of Interior.

Brigadier:
Hussain Hassan AlJaber
Director of the Human Resources Dept.

Figure 7.1 Letter from the Ministry of Interior

7.4 Future Work

The response to the recommendations is positive which indicates that the general direction of the research was needed and successful**.** The Systems Thinking ideas were well received and more courses need to be design in this area at different levels.

It is felt that the communication techniques using mobile technology is the future of training. The attempt in this thesis was a first step in the process and needs to be extended. This has a knock-on effect to the content in the sense that the content must be broken down into smaller "chunks" that can be successfully accommodated on a mobile phone. This impacts on the holistic approach of Systems Thinking. Once this paradox is resolved, this new delivery method will develop exponentially.

The third avenue for future research focusses on the learning organisation. This repeatedly appeared in the Literature review and seems a logical step forward. The PTI is an ideal candidate for a Learning Organisation, It needs to maintain knowledge about new courses and delivery methods, understand what is happening in the outside environment and produce creative solutions using the knowledge and skills of all within the organization. This requires co-operation between individuals and groups, free and reliable communication, and a culture of trust.

There would be many benefits:

- The learners would appreciate that the courses were modern and relevant
- It would be much more flexible and able to respond in this modern world
- The improved communication would mean that it was "in touch" with its users
- All round quality would improve which would increase its corporate image
- It would be more "people oriented".

7.5 Conclusion

The research achieved its objectives by identifying that cultural differences were a factor in the effectiveness of the vocational training courses in Qatar. It then created and delivered two original courses to demonstrate how a new pedagogy could incorporate ways to assimilate these differences. Finally, it experimented with the use of a mobile App specially prepared for the Qatar police Academy. This was not fully accepted but the ground was prepared for an improved version of the App.

It was shown that the Soft System Methodology is effective in the Qatari context although gathering the primary data is itself a task in the face of Arab reticence and bureaucratic barriers.

APPENDICES

A. Consent Form for questionnaire

Dear _____,

I am_____, a student of _____, who is currently working on a research paper focusing on the investigation of vocational training at the ministries in Qatar in order to devise a strategic plan for its improvement. In line with this, I would like to ask for your participation as a respondent in this research study. Your role as a respondent is to answer a self-developed questionnaire prior to engaging and after the completion of the vocational training at the ministries in Qatar. The items in the questionnaire seek to assess whether your needs and expectations were met after the completion of the vocational training.

The records of this study will be kept private. No identifiable information will be included in any of the reports that will be made in line with this study. Research records will be kept in a locked file; only the researcher will have access to the records. All data collected will be destroyed three years after the completion of this study.

Taking part in this study is completely voluntary. You may skip any questions that you do not want to answer. If you decide not to take part or to skip some of the questions, it will not affect your participation in the vocational training. If you decide to take part, you are free to withdraw at any time.

If you have questions, you may contact _____ at _____. You will be given a copy of this consent form for your records.

Please sign according to your willingness to participate in the study.

□ I have read the above information, and have received answers to any questions I asked. I consent to take part in the study.

□ I have read the above information but I do not want to take part in the study.

Sincerely yours,

_____

B. Questionnaire on Cultural differences

1 – absolutely not true, 2 not true, 3 – no view 4 true, 5- absolutely true

Attribute	Ranking				
Rules come before relationships				**4**	
Do circumstance and relationships form the rules that you live by				**4**	
Your response to a particular situation changes, based on who's involved					**5**
You make your own decisions regardless of others				**4**	
You are the only one responsible for yourself				**4**	
Your group is more important than the individual				**4**	
Your group provides help and safety in exchange for loyalty and obedience					**5**
You always follow your group leader				**4**	
It is OK to speak against the group opinion				**4**	
Personal and work life should be kept separate				**4**	
There is an overlap between your work and personal life.					**5**
Relationships do not have an impact on your work objectives				**4**	
People can work together without having a good personal relationship				**4**	
Good relationships are **essential** to working together			**3**		
You like to spend time outside work hours with colleagues and/or clients.					
You should make a great effort to control your emotions at work				**4**	
You look for ways to express your emotions, even spontaneously, at work.				**4**	
Reason influences your actions far more than your feelings.				**4**	
You believe that it's welcome and accepted to show emotion at work				**4**	
You don't reveal what you are thinking or how you are feeling.		**2**			
					5

You are what you **do**, and your worth judged simply by what you do					**5**
You should be valued for who you **are – your status**		**2**			
Power, title, and position matter and these roles define behaviour of others		**2**			
If you don't do a good job you should be sacked regardless of who you are		**2**			
You like events to happen in order			**3**		
You place a high value on punctuality, planning (and sticking to your plans), and staying on schedule			**3**		
"Time is money," and you don't appreciate it when schedules are not kept.		**2**			
You see the past, present, and future as interwoven periods.					
Plans and commitments as flexible			**3**		
You believe that you can control nature or your environment to achieve goals. (This includes working with teams and within organizations.)				**4**	
You believe that nature, or your environment, controls you				**4**	
You must work **with** your environment to achieve goals					**5**
At work or in relationships, you focus your actions on others needs					**5**
You avoid conflict where possible					**5**
It is permissible to publicly criticise others				**4**	
You appreciate reassurance that you are doing a good job.				**4**	

C. Survey Questionnaire 1 (Pre-Test)

The purpose of this survey questionnaire is to gather data on your expectations on aspects of vocational training in Qatari ministries. Please choose the option which best represents your perception and expectations. Thank you.

I. Demographic Information

1. Gender
    a. Male
    b. Female
2. Age
    a. Below 18 years old
    b. 19-30 years old
    c. 31-40 years old
    d. 41-50 years old
    e. 51-60 years old
    f. Above 60 years old
3. Highest educational attainment
    a. High School
    b. Bachelor's Degree
    c. Master's Degree
    d. Doctorate Degree
    e. Associate Degree
    f. Other: _____

II. Pre-Test: Answer the following based on your expectations on the Vocational Training.

Importance and Expectations on the Vocational Training in Ministries

Scale: (1) Very Unimportant; (2) Unimportant; (3) Neutral; (4) Important; (5) Very Important

Item	(1)	(2)	(3)	(4)	(5)
1. To learn the basics on the topic.					
2. To learn advanced concepts on the topic.					
3. To be able to complete the course.					
4. To be able to apply the skills I've learned in training.					
5. To develop the skills in using the topics learned in everyday activities.					
6. To be able to teach my colleagues the skills I've learned from the training.					
7. The speaker is able to share his/her knowledge well.					
8. The speaker is able to prepare his/her materials to make it easier to understand the concepts.					
9. The speaker accommodates the questions of participants.					

10. The speaker is knowledgeable in the topic.					
11. The speaker provides sufficient examples to help participants understand the concept.					
12. The training is developed appropriately to match the needs of the participants.					
13. The training materials provided are interesting.					
14. The training materials provided can be used independently.					
15. The training materials used can be used to share knowledge to colleagues.					
16. The training environment is conducive to learning.					
17. The training environment is open to sharing of experiences of participants.					
18. There is sufficient equipment to encourage sharing among participants.					
19. The training environment is comfortable for participants.					
20. The training environment is helpful in encouraging participants to take notes, etc.					

D. Survey Results for pre-test methodological

Table D.1 Statistics of the Demographic Profile of Participants

		Gender	Age	Educational Attainment
N	Valid	142	142	142
	Missing	0	0	0
Mean		1.23	2.81	2.11
Std. Deviation		.419	.694	.317

Table D.2 Frequencies of the Educational Attainment of Participants

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Bachelor's Degree	126	88.7	88.7	88.7
	Master's Degree	16	11.3	11.3	100.0
	Total	142	100.0	100.0	

Table D.3 Statistics of the Pre-Test Likert- Scale Questions

	N			
	Valid	Missing	Median	Std. Deviation
To learn the basics on the topic	142	0	5.0	.000
To learn advanced concepts on the topic	142	0	4,7	.440
To be able to complete the course.	142	0	5.00	.000
To be able to apply the skills I've learned in training.	142	0	5.00	.000
To develop the skills in using the topics learned in everyday activities.	142	0	4.9	.217
To be able to teach my colleagues the skills I've learned from the training.	142	0	3.5	1.050
The speaker is able to share his/her knowledge well.	142	0	4.9	.326
The speaker is able to prepare his/her materials to make it easier to understand the concepts.	142	0	4.9	.245
The speaker accommodates the questions of participants.	142	0	4.5	.501
The speaker is knowledgeable in the topic.	142	0	5.00	.000
The speaker provides sufficient examples to help participants understand the concept.	142	0	4.9	.000
The training is developed appropriately to match the needs of the participants.	142	0	4.9	.166
The training materials provided are interesting.	142	0	4.6	.185
The training materials provided can be used independently.	142	0	4.9	.826
The training materials used can be used to share knowledge to colleagues.	142	0	5.00	.826
The training environment is conducive to learning.	142	0	4.9	.000
The training environment is open to sharing of experiences of participants.	142	0	4.9	.185
There is sufficient equipment to encourage sharing among participants.	142	0	4.9	.245
The training environment is comfortable for participants.	142	0	4.7	.437
The training environment is helpful in encouraging participants to take notes, etc.	142	0	4.9	.245

Table D.4 Frequencies of the Pre-test Item:

"To learn the basics on the topic."

	Frequency	Percent	Total	Average

Valid	Very Important	142	100.0	710	5.00

Table D.5 Frequencies of the Pre-test Item:

"To learn advanced concepts on the topic."

		Frequency	Percent	Total	Average
Valid	Important	37	26.1	136	
	Very Important	105	73.9	525	4.7
	Total	142	100.0	661	

Table D.6 Frequencies of the Pre-test Item:

"To be able to complete the course."

		Frequency	Percent	Total	Average
Valid	Very Important	142	100.0	710	5.00

Table D.7 Frequencies of the Pre-test Item:

"To be able to apply the skills I've learned in training."

		Frequency	Percent	Total	Average
Valid	Very Important	142	100.0	710	5.00

Table D.8 Frequencies of the Pre-test Item:

"*To develop the skills in using the topics learned in everyday activities."*

		Frequency	Percent	Total	Average
Valid	Important	7	4.9	28	
	Very Important	135	95.1	675	4.9
	Total	142	100.0	703	

Table D.9 Frequencies of the Pre-test Item:

"To be able to teach my colleagues the skills I've learned from the training."

		Frequency	Percent	Total	Average
	Unimportant	34	23.9	68	
	Neutral	13	9.2	39	3.5
	Important	83	58.5	332	
	Very Important	12	8.5	60	
	Total	142	100.0	499	

Table D.10 Frequencies of the Pre-test Item:

"The speaker is able to share his/her knowledge well.

		Frequency	Percent	Total	Average
Valid	Important	17	12.0	68	
	Very Important	125	88.0	625	4.9
	Total	142	100.0	693	

Table D.11 Frequencies of the Pre-test Item:

"The speaker is able to prepare his/her materials to make it easier to understand the concepts."

		Frequency	Percent	Total	Average
Valid	Important	9	6.3	36	
	Very Important	133	93.7	665	4.9
	Total	142	100.0		

Table D.12 Frequencies of the Pre-test Item:

"The speaker accommodates the questions of participants."

		Frequency	Percent	Total	Average
Valid	Important	76	53.5	304	
	Very Important	66	46.5	330	4.5
	Total	142	100.0	634	

Table D.13 Frequencies of the Pre-test Item:

"The speaker provides sufficient examples to help participants understand the concept."

		Frequency	Percent	Total	Average
Valid	Very Important	142	100.0	710	5

Table D.14 Frequencies of the Pre-test Item:

"The training is developed appropriately to match the needs of the participants."

		Frequency	Percent	Total	Average
Valid	Important	4	2.8	16	
	Very Important	138	97.2	690	4.9
	Total	142	100.0	706	

Table D.15 Frequencies of the Pre-test Item:

"The training materials provided are interesting."

		Frequency	Percent	Total	Average
Valid	Important	5	3.5	20	
	Very Important	137	96.5	685	4.9
	Total	142	100.0	705	

Table D.16 Frequencies of the Pre-test Item:

"The training materials provided can be used independently."

		Frequency	Percent	Total	Average
Valid	Unimportant	9	6.3	18	
	Neutral	4	2.8	12	
	Important	23	16.2	92	4.6
	Very Important	106	74.6	530	

	Total	142	100.0	652	

Table D.17 Frequencies of the Pre-test Item:

"The training materials used can be used to share knowledge to colleagues."

		Frequency	Percent	Total	Average
Valid	Unimportant	9	6.3	18	
	Neutral	4	2.8	12	
	Important	23	16.2	92	4.9
	Very Important	106	74.6	530	
	Total	142	100.0	652	

Table D.18 Frequencies of the Pre-test Item:

The training environment is conducive to learning.

		Frequency	Percent	Total	Average
Valid	Very Important	142	100.0	710	5

Table D.19 Frequencies of the Pre-test Item:

"The training environment is open to sharing of experiences of participants."

		Frequency	Percent	Total	Average
Valid	Important	5	3.5	20	
	Very Important	137	96.5	685	4.9
	Total	142	100.0	705	

Table D.20 Frequencies of the Pre-test Item:

There is sufficient equipment to encourage sharing among participants.

		Frequency	Percent	Total	Average
Valid	Important	9	6.3	36	
	Very Important	133	93.7	665	4.9
	Total	142	100.0	701	

Table D.21 Frequencies of the Pre-test Item:

"The training environment is comfortable for participants."

		Frequency	Percent	Total	Average
Valid	Important	36	25.4	144	
	Very Important	106	74.6	530	4.7
	Total	142	100.0	674	

Table D.22. Frequencies of the Pre-test Item:

"The training environment is helpful in encouraging participants to take notes, etc."

		Frequency	Percent	Total	Average

Valid	Important	9	6.3	36	
	Very Important	133	93.7	665	4.9
	Total	142	100.0	701	

E. Survey Questionnaire (Post-Test)

Post-Test: Answer the following based on your experience in the vocational training completed using the following rating scales (1) Strongly Disagree; (2) Disagree; (3) Neutral; (4) Agree; (5) Strongly Agree

Post-Test Items	Median
a) I was able to learn the basics on the topic.	3.5
b) I was able to learn advanced concepts on the topic.	1.5
c) I was able to complete the course.	5.0
d) I will be able to apply the skills I've learned in training.	2.4
e) I developed the skills in using the topics learned in everyday activities.	2.1
f) I will be able to teach my colleagues the skills I've learned from the training.	1.9
g) The speaker was able to share his/her knowledge well.	2.3
h) The speaker was able to prepare his/her materials to make it easier to understand the concepts.	1.5
i) The speaker accommodated the questions of participants.	2.4
j) The speaker was knowledgeable in the topic.	4.8
k) The speaker provided sufficient examples to help participants understand the concept.	1.0
l) The training was developed appropriately to match the needs of the participants.	1.3
m) The training materials provided were interesting.	1.3
n) The training materials provided can be used independently.	1.4
o) The training materials used can be used to share knowledge to colleagues.	1.5
p) The training environment was conducive to learning.	1.0
q) The training environment was open to sharing of experiences of participants.	1.2
r) There was sufficient equipment to encourage sharing among participants.	1.3
s) The training environment was comfortable for participants.	5.0
t) The training environment was helpful in encouraging participants to take notes, etc.	1.8

F. Results of the Statistical Analysis of the Post-Test methodological

Table F.1 Frequencies of the Post-test Item:

"I was able to learn the basics on the topic."

		Frequency	Percent	Total	Average
Valid	Strongly Disagree	7	4.9	7	
	Disagree	71	50.0	284	
	Neutral	24	16.9	42	3.5
	Agree	33	23.2	132	
	Strongly Agree	7	4.9	28	
	Total	142	100.0	493	

Table F.2 Frequencies of the Post-test Item:

"I was le to learn advanced concepts on the topic."

		Frequency	Percent	Total	Average
Valid	Strongly Disagree	45	31.7	45	
	Disagree	64	45.1	68	
	Neutral	26	18.3	78	1.5
	Agree	7	4.9	28	
	Total	142	100.0	100.0	

Table F.3 Frequencies of the Post-test Item:

"I was able to complete the course."

		Frequency	Percent	Total	Average
Valid	Strongly Agree	142	100.0	710	5.0

Table F.4 Frequencies of the Post-test Item:

"I will be able to apply the skills I've learned in training

		Frequency	Percent	Total	Average
Valid	Strongly Disagree	13	9.2	13	
	Disagree	92	64.8	184	
	Neutral	17	12.0	51	2.4
	Agree	7	4.9	28	
	Strongly Agree	13	9.2	65	
	Total	142	100.0	341	

Table F.5 Frequencies of the Post-test Item:

"I developed the skills in using the topics learned in everyday activities."

		Frequency	Percent	Total	Average
Valid	Strongly Disagree	40	28.2	40	
	Disagree	65	45.8	130	

	Neutral	**17**	**12.0**	**51**	**2.1**
	Strongly Agree	**20**	**14.1**	**80**	
	Total	**142**	**100.0**	**301**	

Table F.6 Frequencies of the Post-test Item:

"I will be able to teach my colleagues the skills I've learned from the training."

		Frequency	**Percent**	**Total**	**Average**
Valid	**Strongly Disagree**	**22**	**15.4**	**22**	
	Disagree	**113**	**79.6**	**226**	
	Neutral	**4**	**2.8**	**12**	**1.9**
	Agree	**3**	**2.1**	**12**	
	Total	**142**	**100.0**	**272**	

Table F.7 Frequencies of the Post-test Item:

"The speaker was able to share his/her knowledge well."

		Frequency	**Percent**	**Total**	**Average**
Valid	**Strongly Disagree**	**61**	**42.9**	**61**	
	Disagree	**26**	**18.3**	**52**	
	Neutral	**9**	**6.3**	**27**	**2.3**
	Agree	**46**	**32.4**	**184**	
	Total	**142**	**100.0**	**324**	

Table F.8 Frequencies of the Post-test Item:

"The speaker was able to prepare his/her materials to make it easier to understand the concepts."

		Frequency	**Percent**	**Total**	**Average**
Valid	**Strongly Disagree**	**79**	**55.6**	**79**	
	Disagree	**49**	**34.5**	**94**	
	Neutral	**12**	**8.5**	**36**	**1.5**
	Agree	**2**	**1.4**	**8**	
	Total	**142**	**100.0**	**217**	

Table F.9 Frequencies of the Post-test Item:

"The speaker accommodated the questions of participants."

		Frequency	**Percent**	**Total**	**Average**
Valid	**Strongly Disagree**	**4**	**2.8**	**4**	
	Disagree	**108**	**2.1**	**216**	
	Neutral	**5**	**3.5**	**15**	**2.42**
	Agree	**25**	**19.0**	**100**	
	Total	**142**	**100.0**	**345**	

Table F.10 Frequencies of the Post-test Item:

"The speaker was knowledgeable in the topic."

	Frequency	**Percent**	**Total**	**Average**

Valid	**Strongly Disagree**	**1**	**.7**	**1**	
	Disagree	**3**	**2.1**	**6**	
	Neutral	**4**	**2.8**	**12**	**4.8**
	Agree	**9**	**6.3**	**36**	
	Strongly Agree	**125**	**88.0**	**625**	
	Total	**142**	**100.0**	**680**	

Table F.11 Frequencies of the Post-test Item:

"The speaker provided sufficient examples to help participants understand the concept."

		Frequency	**Percent**	**Total**	**Average**
Valid	**Strongly Disagree**	**47**	**33.1**	**47**	
	Disagree	**88**	**62.0**	**78**	
	Neutral	**4**	**2.8**	**12**	**1**
	Agree	**3**	**2.1**	**12**	
	Total	**142**	**100.0**	**149**	

Table F.12 Frequencies of the Post-test Item:

"The training was developed appropriately to match the needs of the participants."

		Frequency	**Percent**	**Total**	**Average**
Valid	**Strongly Disagree**	**106**	**74.6**	**106**	
	Disagree	**32**	**22.5**	**64**	**1.3**
	Neutral	**4**	**2.8**	**12**	
	Total	**142**	**100.0**	**182**	

Table F.13 Frequencies of the Post-test Item:

The training materials provided were interesting.

		Frequency	**Percent**	**Total**	**Average**
Valid	**Strongly Disagree**	**104**	**73.2**	**104**	
	Disagree	**34**	**23.9**	**68**	**1.3**
	Neutral	**4**	**2.8**	**12**	
	Total	**142**	**100.0**	**182**	

Table F.14 Frequencies of the Post-test Item:

"The training materials provided can be used independently."

		Frequency	**Percent**	**Total**	**Average**
Valid	**Strongly Disagree**	**100**	**70.4**	**100**	
	Disagree	**34**	**23.9**	**68**	
	Neutral	**5**	**3.5**	**20**	**1.4**
	Agree	**3**	**2.1**	**12**	
	Total	**142**	**100.0**	**200**	

Table F.15 Frequencies of the Post-test Item:

"The training materials used can be used to share knowledge to colleagues."

		Frequency	**Percent**	**Total**	**Average**

Valid	Strongly Disagree	100	70.4	100	
	Disagree	35	24.6	70	
	Neutral	6	4.2	18	1.5
	Agree	1	.7	28	
	Total	142	100.0	216	

Table F.16 Frequencies of the Post-test Item:

"The training environment was conducive to learning."

		Frequency	Percent	Total	Average
Valid	Neutral	142		142	1.0

Table F.17 Frequencies of the Post-test Item:

"The training environment was open to sharing of experiences of participants."

		Frequency	Percent	Total	Average
Valid	Neutral	136	95.7	136	
	Agree	6	4.2	24	1.2
	Total	142	100.0	160	

Table F.18 Frequencies of the Post-test Item:

"There was sufficient equipment to encourage sharing among participants."

		Frequency	Percent	Total	Average
Valid	Strongly Disagree	103	72.5	103	
	Disagree	34	23.9	68	
	Neutral	5	3.5	20	1.3
	Total	142	100.0	191	

Table F.19 Frequencies of the Post-test Item:

"The training environment was comfortable for participants."

		Frequency	Percent	Total	Average
Valid	Strongly Agree	142	100.0	710	5.0

Table F.20 Frequencies of the Post-test Item:

"The training environment was helpful in encouraging participants to take notes, etc."

		Frequency	Percent	Total	Average
Valid	Disagree	124	87.3	228	
	Neutral	13	9.2	13	1.8
	Agree	5	3.5	20	
	Total	142	100.0	261	

G. Consent Form for the Semi-Structured Interview methodological

Dear _____,

This is _____, a student of _____, who is currently working on a research paper focusing on the investigation of vocational training at the ministries in Qatar in order to devise a strategic plan for its improvement. In line with this, I would like to ask for your participation as an interviewee in this research study. Your role is to respond to the questions that will be asked by me (as the interviewer).

The records of this study will be kept private. No identifiable information will be included in any of the reports that will be made in line with this study. Research records will be kept in a locked file; only the researcher will have access to the records. All data collected will be destroyed three years after the completion of this study.

Taking part in this study is completely voluntary. You have the option not to respond to questions that you do not want to answer. If you decide not to take part or to skip some of the questions, it will not affect your participation in the vocational training. If you decide to take part, you are free to withdraw at any time.

If you have questions, you may contact _____ at _____. You will be given a copy of this consent form for your records.

Please sign according to your willingness to participate in the study.

□ I have read the above information, and have received answers to any questions I asked. I consent to take part in the study.

□ I have read the above information but I do not want to take part in the study.

Sincerely yours,

H. Interview Schedule for the Methodological Evaluation of Vocational Training in Qatar.

Opening

My name is Hamad Al-Kaabi. As a requirement for my PhD thesis, your participation is being requested for a study that aims to investigate vocational training at the ministries in Qatar and to devise a strategic plan for its improvement. The interview should take about 20 minutes. Are you available to respond to the questions at this time?

Body

1. Was the training course developed appropriately to match the needs of the participants? If 'yes', in what ways do you think the training course matches the needs of the trainees? If 'no', what do think is the reason why the training course failed to match the needs of the trainees.
2. Why did you think the training equipment was not sufficient to encourage sharing of knowledge amongst other trainees? Kindly explain.
3. Why did you think the speaker failed to provide sufficient examples to help participants understand the concepts? Kindly explain.
4. What do you think are the effects of this/these problem/s on the learning of new skills or skills development?
5. What do you think is needed to address these problems effectively?
6. What do you think are the goals of public sector training in Qatar?
7. Do you think that the vocational training system is able to accomplish these goals? Why or why not?
8. Who do you think are the customers of public sector training in Qatar?
9. Who do you think carryout the activities of public sector training in Qatar?
10. What do you think does the vocational training system do to achieve its public sector training goals?
11. Who do you think are the person(s) who has commissioned the agency responsible for vocational training and who has sufficient formal power over it to stop it from existing if they so wished?
12. What do you think are the environmental constraints placed on public sector training in Qatar? These may include ethical restrictions, regulations, financial constraints, resource limitations, limits set by terms of reference, and so on.

Closing

Thank you for taking the time to participate in this interview. Is there anything else that you think would be helpful for me?

I. Interview Transcripts for the Methodological Evaluation of Vocational Training in Qatar

Interviewee 1

1. *Was the training course developed appropriately to match the needs of the participants? If 'yes', in what ways do you think the training course matches the needs of the trainees? If 'no', what do think is the reason why the training course failed to match the needs of the trainees.*

No. It did not match our needs. The course was based on examples from the US. I can hardly understand the concepts.

2. *Why did you think the training equipment was not sufficient to encourage sharing of knowledge amongst other trainees? Kindly explain.*

Training equipment is only blackboard and modules. No other hi-tech gadgets were used, such as computers etc.

3. *Why did you think the speaker failed to provide sufficient examples to help participants understand the concepts? Kindly explain.*

Maybe because the speaker cannot apply the examples in our country. Examples were about Western countries only.

4. *What do you think are the effects of this/these problem/s on the learning of new skills or skills development?*

It is difficult to acquire new skills from the training.

5. *What do you think is needed to address these problems effectively?*

Courses should be adapted to the Middle Eastern context, not Western. There should be new content of the course. The training equipment must be upgraded and be technologically advanced.

6. *What do you think are the goals of public sector training in Qatar?*

To increase productivity in the workplace.

7. *Do you think that the vocational training system is able to accomplish these goals? Why or why not?*

Maybe. But they need to have reforms in the content and delivery of the courses.

8. *Who do you think are the customers of public sector training in Qatar?*

Public sector organisations and its employees.

9. *Who do you think carryout the activities of public sector training in Qatar?*

The Institute of Training and Development.

10. *What do you think does the vocational training system do to achieve its public sector training goals?*

It conducts training courses for employees of the public sector.

11. Who do you think are the person(s) who has commissioned the agency responsible for vocational training and who has sufficient formal power over it to stop it from existing if they so wished?

The IAD administrators. Emir H.H. Sheikh Tamim Bin Hamad Al Thani .

12. *What do you think are the environmental constraints placed on public sector training in Qatar? These may include ethical restrictions, regulations, financial constraints, resource limitations, limits set by terms of reference, and so on.*

I think it is limited by the use of courses that are not applicable to the needs of trainees.

Interviewee 2

1. *Was the training course developed appropriately to match the needs of the participants? If 'yes', in what ways do you think the training course matches the needs of the trainees? If 'no', what do think is the reason why the training course failed to match the needs of the trainees.*

No. They are Western-based. It was difficult to understand.

2. *Why did you think the training equipment was not sufficient to encourage sharing of knowledge amongst other trainees? Kindly explain.*

Training equipment is very traditional. No new technologies on training were provided.

3. *Why did you think the speaker failed to provide sufficient examples to help participants understand the concepts? Kindly explain.*

It is because the concepts are very Western and not applicable to Qatar.

4. *What do you think are the effects of this/these problem/s on the learning of new skills or skills development?*

Trainees do not learn effectively.

5. *What do you think is needed to address these problems effectively?*

New courses must be introduced that are applicable to Qatar.

6. *What do you think are the goals of public sector training in Qatar?*

To equip employees with the needed skills for their jobs.

7. Do you think that the vocational training system is able to accomplish these goals? Why or why not?

Yes, but not 100%. There's a room for improvement.

8. *Who do you think are the customers of public sector training in Qatar?*

Public sector employees.

9. *Who do you think carryout the activities of public sector training in Qatar?*

The IAD.

10. *What do you think does the vocational training system do to achieve its public sector training goals?*

Help train public sector employees.

11. *Who do you think are the person(s) who has commissioned the agency responsible for vocational training and who has sufficient formal power over it to stop it from existing if they so wished?*

The heads of IAD. Emir H.H. Sheikh Tamim Bin Hamad Al Thani.

12. *What do you think are the environmental constraints placed on public sector training in Qatar? These may include ethical restrictions, regulations, financial constraints, resource limitations, limits set by terms of reference, and so on.*

It is restricted by resource limitations that it placed on itself such as training courses that are based on Western settings and the use of old training equipment.

Interviewee 3

1. *Was the training course developed appropriately to match the needs of the participants? If 'yes', in what ways do you think the training course matches the needs of the trainees? If 'no', what do think is the reason why the training course failed to match the needs of the trainees.*

The training courses are not culturally responsive to the needs of the trainees. They are more applicable in Western countries and not on Qatar. Western countries have more informal workplace traditions while Qatar has more traditional settings.

2. *Why did you think the training equipment was not sufficient to encourage sharing of knowledge amongst other trainees? Kindly explain.*

They consist of blackboard and modules. They failed to make training appealing and interesting to trainees.

3. *Why did you think the speaker failed to provide sufficient examples to help participants understand the concepts? Kindly explain.*

The speaker perhaps cannot apply examples that are relevant to Qatar because the course is focused on Western culture.

4. *What do you think are the effects of this/these problem/s on the learning of new skills or skills development?*

It is difficult for trainees like me to understand the course.

5. *What do you think is needed to address these problems effectively?*

Offer new training courses that are applicable in Qatar. Upgrade training equipment.

6. *What do you think are the goals of public sector training in Qatar?*

To increase organisational productivity and performance.

7. *Do you think that the vocational training system is able to accomplish these goals? Why or why not?*

Partly…but not fully. This is because it needs to improve its courses and the delivery of the courses.

8. *Who do you think are the customers of public sector training in Qatar?*

Public sector employees and their organisations.

9. *Who do you think carryout the activities of public sector training in Qatar?*

The training arm of the The Institue of Administrative Development.

10. *What do you think does the vocational training system do to achieve its public sector training goals?*

They assess training needs and buy training modules to be offered to public sector employees. They provide the training equipment.

11. *Who do you think are the person(s) who has commissioned the agency responsible for vocational training and who has sufficient formal power over it to stop it from existing if they so wished?*

The Institute of Administrative Development of Qatar.

12. *What do you think are the environmental constraints placed on public sector training in Qatar? These may include ethical restrictions, regulations, financial constraints, resource limitations, limits set by terms of reference, and so on.*

It is limited by the choice of course offerings and training equipment.

Interviewee 4

1. *Was the training course developed appropriately to match the needs of the participants? If 'yes', in what ways do you think the training course matches the needs of the trainees? If 'no', what do think is the reason why the training course failed to match the needs of the trainees.*

No. It failed to match the needs of the trainees because the training course is not practical and not applicable to the Qatari workplace. There are many cultural differences between the examples and concepts of the course and the Qatari workplace.

2. *Why did you think the training equipment was not sufficient to encourage sharing of knowledge amongst other trainees? Kindly explain.*

Teaching was done through blackboard. The equipment needs to be updated to include those related to the use of technology such as computers and other gadgets.

3. *Why did you think the speaker failed to provide sufficient examples to help participants understand the concepts? Kindly explain.*

Because the speaker cannot relate the concepts to the Qatari experience. There's a cultural disconnect between the concepts tackled in the course and the Qatari setting.

4. *What do you think are the effects of this/these problem/s on the learning of new skills or skills development?*

Trainees find it difficult to understand and learn the course. No skills are learned.

5. *What do you think is needed to address these problems effectively?*

Offer more courses that are applicable to Qatar. Buy technologically-advanced training materials and equipment.

6. *What do you think are the goals of public sector training in Qatar?*

To help employees in their professional development and in their career by equipping them with the needed skills to become more efficient workers.

7. *Do you think that the vocational training system is able to accomplish these goals? Why or why not?*

Yes. But it needs to improve on the concepts of the course- make them applicable to Qatari employees.

8. *Who do you think are the customers of public sector training in Qatar?*

Public sector agencies.

9. *Who do you think carryout the activities of public sector training in Qatar?*

The Institute of Administrative Development of Qatar.

10. *What do you think does the vocational training system do to achieve its public sector training goals?*

Deliver training courses.

11. *Who do you think are the person(s) who has commissioned the agency responsible for vocational training and who has sufficient formal power over it to stop it from existing if they so wished?*

Administrators of the IAD

12. *What do you think are the environmental constraints placed on public sector training in Qatar? These may include ethical restrictions, regulations, financial constraints, resource limitations, limits set by terms of reference, and so on.*

Resource limitations. They have to provide more relevant training courses and use more technologically advanced training equipment.

Interviewee 5

1. *Was the training course developed appropriately to match the needs of the participants? If 'yes', in what ways do you think the training course matches the needs of the trainees?*

If 'no', what do think is the reason why the training course failed to match the needs of the trainees.

No. They are very westernized…does not apply to Qatar.

2. *Why did you think the training equipment was not sufficient to encourage sharing of knowledge amongst other trainees? Kindly explain.*

No. I find the equipment very traditional at does not keep pace with technological development.

3. *Why did you think the speaker failed to provide sufficient examples to help participants understand the concepts? Kindly explain.*

The speaker cannot apply examples to the employees' experiences in Qatari workplace.

4. *What do you think are the effects of this/these problem/s on the learning of new skills or skills development?*

Trainees or employees cannot learn the skills being taught in the training.

5. *What do you think is needed to address these problems effectively?*

Offer new training courses that trainees can relate to culturally. Buy new training equipment.

6. *What do you think are the goals of public sector training in Qatar?*

To help develop the skills of public sector employees to make them more productive at work. In turn public sector organisations are more efficient in doing what they are mandated to do – offer services to the public.

7. *Do you think that the vocational training system is able to accomplish these goals? Why or why not?*

Yes, because they are able to train many public sector employees.

8. *Who do you think are the customers of public sector training in Qatar?*

Agencies of the public sector.

9. *Who do you think carryout the activities of public sector training in Qatar?*

The IAD.

10. *What do you think does the vocational training system do to achieve its public sector training goals?*

They develop training courses and offer them to public sector employees.

11. *Who do you think are the person(s) who has commissioned the agency responsible for vocational training and who has sufficient formal power over it to stop it from existing if they so wished?*

Emir H.H. Sheikh Tamim Bin Hamad Al Thani.

12. *What do you think are the environmental constraints placed on public sector training in Qatar? These may include ethical restrictions, regulations, financial constraints, resource limitations, limits set by terms of reference, and so on.*

Resource limitations. They need to offer new courses and purchase more updated training equipment.

Interviewee 6

1. *Was the training course developed appropriately to match the needs of the participants? If 'yes', in what ways do you think the training course matches the needs of the trainees? If 'no', what do think is the reason why the training course failed to match the needs of the trainees.*

No, because I can't understand the course very well.

2. *Why did you think the training equipment was not sufficient to encourage sharing of knowledge amongst other trainees? Kindly explain.*

Because training equipment is old, just blackboard. They did not use new equipment.

3. *Why did you think the speaker failed to provide sufficient examples to help participants understand the concepts? Kindly explain.*

Maybe because the course is not applicable to our country's situation. So the speaker did not give sufficient examples.

4. *What do you think are the effects of this/these problem/s on the learning of new skills or skills development?*

We did not learn the skills we were supposed to be learning.

5. *What do you think is needed to address these problems effectively?*

Make reforms in the training system itself…like new courses that are relevant to workers in Qatar and buy new training equipment.

6. *What do you think are the goals of public sector training in Qatar?*

I think the goals of public sector training in Qatar are to equip public sector employees with the required skills to make them more efficient workers and to make the public sector agencies that employ these workers more effective and productive.

7. *Do you think that the vocational training system is able to accomplish these goals? Why or why not?*

Yes, they were able to train public sector employees. But reforms are also needed to come up with more relevant training courses and deliver them in a more interesting manner.

8. *Who do you think are the customers of public sector training in Qatar?*

The customers of public sector training are the public sector agencies and their employees.

9. *Who do you think carryout the activities of public sector training in Qatar?*

It is the The Institue of Administrative Development.

10. *What do you think does the vocational training system do to achieve its public sector training goals?*

They provide or offer training courses to public sector employees.

11. *Who do you think are the person(s) who has commissioned the agency responsible for vocational training and who has sufficient formal power over it to stop it from existing if they so wished?*

The head of the IAD and Emir H.H. Sheikh Tamim Bin Hamad Al Thani.

12. *What do you think are the environmental constraints placed on public sector training in Qatar? These may include ethical restrictions, regulations, financial constraints, resource limitations, limits set by terms of reference, and so on* Environmental constraints are those concerned with the training courses being offered and the training equipment.

Interviewee 7

1. *Was the training course developed appropriately to match the needs of the participants? If 'yes', in what ways do you think the training course matches the needs of the trainees? If 'no', what do think is the reason why the training course failed to match the needs of the trainees.*

No, the training course failed to match our needs because they are very Western. They are not relevant to our culture. They are very different from our culture. It is difficult to understand.

2. *Why did you think the training equipment was not sufficient to encourage sharing of knowledge amongst other trainees? Kindly explain.*

Because they are composed of blackboard only. There are no ICT equipment. We need computer-aided instruction, or other ICT materials and equipment.

3. *Why did you think the speaker failed to provide sufficient examples to help participants understand the concepts? Kindly explain.*

Because again, the course is very Western. The speaker could not think of examples that we can relate to.

4. *What do you think are the effects of this/these problem/s on the learning of new skills or skills development?*

We did not gain new skills, overall.

5. *What do you think is needed to address these problems effectively?*

Offer new courses that are relevant to Qatari workers or those employees working in Qatar. Also, buy new training equipment that will facilitate the learning of concepts and the sharing of knowledge and interaction amongst trainees.

6. *What do you think are the goals of public sector training in Qatar?*

I think the goals are to facilitate the professional development of public sector employees and make them productive at work

7. Do you think that the vocational training system is able to accomplish these goals? Why or why not?

Yes, they train employees to help them become more productive.

8. *Who do you think are the customers of public sector training in Qatar?*

The public sector organisations and their employees.

9. *Who do you think carryout the activities of public sector training in Qatar?*

The Institue of Administrative Development or IAD for short.

10. *What do you think does the vocational training system do to achieve its public sector training goals?*

They train public sector employees and develop skills that are required in their jobs.

11. *Who do you think are the person(s) who has commissioned the agency responsible for vocational training and who has sufficient formal power over it to stop it from existing if they so wished?*

Emir H.H. Sheikh Tamim Bin Hamad Al Thani.

12. *What do you think are the environmental constraints placed on public sector training in Qatar? These may include ethical restrictions, regulations, financial constraints, resource limitations, limits set by terms of reference, and so on.*

I think the environmental constraints are resource limitations. Public sector training in Qatar should have training modules that are relevant and practical to Qatari employees and should be delivered through more technologically-advanced learning /teaching equipment such as those involving ICT.

Interviewee 8

1. *Was the training course developed appropriately to match the needs of the participants? If 'yes', in what ways do you think the training course matches the needs of the trainees? If 'no', what do think is the reason why the training course failed to match the needs of the trainees.*

No, I don't think so. I did not learn new concepts at all. I think there should be new course offerings – courses that are new and practical to our work.

2. *Why did you think the training equipment was not sufficient to encourage sharing of knowledge amongst other trainees? Kindly explain.*

The training equipment was not sufficient to encourage sharing of knowledge amongst other trainees because the equipment consisted of the blackboard. Sometimes, there is an overhead projector. But they do not facilitate interaction amongst us.

3. *Why did you think the speaker failed to provide sufficient examples to help participants understand the concepts? Kindly explain.*

Perhaps the speaker do not know how to apply Western concepts to our country's experiences.

4. *What do you think are the effects of this/these problem/s on the learning of new skills or skills development?*

It was difficult to acquire and develop new skills from the training.

5. *What do you think is needed to address these problems effectively?*

New courses should be offered and new training equipment should be used.

6. *What do you think are the goals of public sector training in Qatar?*

To help public sector workers in Qatar develop and hone their professional skills.

7. *Do you think that the vocational training system is able to accomplish these goals? Why or why not?*

Yes, to some extent, because they continually offer training courses and produce many graduates from those courses.

8. *Who do you think are the customers of public sector training in Qatar?*

The customers of public sector training in Qatar are agencies belonging in the public sector and their workers or employees.

9. *Who do you think carryout the activities of public sector training in Qatar?*

The IAD.

10. *What do you think does the vocational training system do to achieve its public sector training goals?*

They offer vocational training courses to public sector employees.

11. *Who do you think are the person(s) who has commissioned the agency responsible for vocational training and who has sufficient formal power over it to stop it from existing if they so wished?*

Emir H.H. Sheikh Tamim Bin Hamad Al Thani.

12. *What do you think are the environmental constraints placed on public sector training in Qatar? These may include ethical restrictions, regulations, financial constraints, resource limitations, limits set by terms of reference, and so on.*

Maybe they have policies that limit the offering of training courses to those that are already well-established and not new or novel ones.

Interviewee 9

1. *Was the training course developed appropriately to match the needs of the participants? If 'yes', in what ways do you think the training course matches the needs of the trainees? If 'no', what do think is the reason why the training course failed to match the needs of the trainees.*

No, it did not match the needs of trainees. As for me, I don't think the training course itself is practical. I already know most of the concepts taught. I was expecting to learn something new and practical.

2. *Why did you think the training equipment was not sufficient to encourage sharing of knowledge amongst other trainees? Kindly explain.*

Training equipment consisted of the blackboard and training modules. Thus, sharing of knowledge amongst us trainees was not very encouraging. To encourage the sharing of knowledge, more advanced training equipment must be used to facilitate interaction amongst us.

3. *Why did you think the speaker failed to provide sufficient examples to help participants understand the concepts? Kindly explain.*

Well perhaps the speaker couldn't think of examples that are based on our culture. The course itself is based on Western thinking and ways of living.

4. *What do you think are the effects of this/these problem/s on the learning of new skills or skills development?*

It was difficult for me to learn or develop new skills from the training alone.

5. *What do you think is needed to address these problems effectively?*

The MOI should offer new training courses and use more technologically-advanced training equipment – use technology in training.

6. *What do you think are the goals of public sector training in Qatar?*

To help in the professional development of public sector employees or personnel.

7. *Do you think that the vocational training system is able to accomplish these goals? Why or why not?*

To some extent, yes. But the bigger issue is that the courses offered were not applicable to our workplaces as they are western-based.

8. *Who do you think are the customers of public sector training in Qatar?*

Public sector institutions or agencies and their personnel or employees.

9. *Who do you think carryout the activities of public sector training in Qatar?*

The Institute of Administrative Development.

10. *What do you think does the vocational training system do to achieve its public sector training goals?*

They offer training courses to public sector employees.

11. *Who do you think are the person(s) who has commissioned the agency responsible for vocational training and who has sufficient formal power over it to stop it from existing if they so wished?*

Emir H.H. Sheikh Tamim Bin Hamad Al Thani.

12. *What do you think are the environmental constraints placed on public sector training in Qatar? These may include ethical restrictions, regulations, financial constraints, resource limitations, limits set by terms of reference, and so on.*

I think the environmental constraints are resource limitations. They should offer new courses that are applicable to our workplaces' work culture and they should deliver these courses more effectively with the use of technology-aided instruction.

Interviewee 10

1. *Was the training course developed appropriately to match the needs of the participants? If 'yes', in what ways do you think the training course matches the needs of the trainees? If 'no', what do think is the reason why the training course failed to match the needs of the trainees.*

No, it was not developed appropriately to match the needs of the participants, because the course content was not very interesting and not practical. I mean the skills that we were supposed to acquire are not the ones needed for our jobs.

2. *Why did you think the training equipment was not sufficient to encourage sharing of knowledge amongst other trainees? Kindly explain.*

Training equipment was outdated.

3. *Why did you think the speaker failed to provide sufficient examples to help participants understand the concepts? Kindly explain.*

The speaker failed to provide sufficient examples to help participants understand the concepts because the concepts in the course were Western-based and so were the examples. The speaker maybe found it difficult to apply the concepts to our culture and use examples that are based on our own culture and way of life.

4. *What do you think are the effects of this/these problem/s on the learning of new skills or skills development?*

I had a difficult time understanding the course.

5. *What do you think is needed to address these problems effectively?*

New, practical courses should be offered, whose content are very applicable to the Qatari culture – not Western based. The new courses should be very interesting and have new concepts. These courses should be delivered through new technological platforms – such as those used in e-learning, where trainees can have access to the course anytime.

6. *What do you think are the goals of public sector training in Qatar?*

To train public sector employees so that the entire workforce of the Qatari public sector will become more productive and efficient in doing public service.

7. *Do you think that the vocational training system is able to accomplish these goals? Why or why not?*

Yes, they were able to train people or public sector employees.

8. *Who do you think are the customers of public sector training in Qatar?*

These would be the employees and public sector agencies.

9. *Who do you think carryout the activities of public sector training in Qatar?*

It is the Institute of Administrative Development.

10. *What do you think does the vocational training system do to achieve its public sector training goals?*

It conducts training and provides the training equipment and venue.

11. *Who do you think are the person(s) who has commissioned the agency responsible for vocational training and who has sufficient formal power over it to stop it from existing if they so wished?*

The IAD administrators.

12. *What do you think are the environmental constraints placed on public sector training in Qatar? These may include ethical restrictions, regulations, financial constraints, resource limitations, limits set by terms of reference, and so on.*

The environmental constraints placed on public sector training in Qatar are mainly resource limitations in the sense that the IAD has to focus on updating its training resources- both in terms of the training courses and of the manner by which they are delivered to trainees (training equipment has to be updated).

J. Interview Schedule for the New Vocational Training Course – Systems Thinking.

Opening

[Establish rapport]. My name is Hamad Al-Kaabi. As a requirement for my PhD thesis, your participation is being requested for a study that aims to investigate vocational training at the ministries in Qatar and to devise a strategic plan for its improvement. The interview is about your perceptions on the new courses - *Systems Thinking and Systems Dynamics* which were offered in the training that you participated in last March 2015. The interview should take about 20 minutes. Are you available to respond to the questions at this time?

Body

1. Did the course challenge you? Please state how.
2. Has the course changed the way that you think? If so state how you thought before and how you think afterwards.
3. Did the course relate to Qatar and its Culture?
4. What did you learn from the course?
5. Are such courses useful? Please state why.
6. Did the course meet your expectations?

Closing

Thank you for taking the time to participate in this interview. Is there anything else that you think would be helpful for me?

K. Transcripts of Semi-structured Interviews on the New Vocational Training Courses.

New Courses Interviewee 1

1 Did the course challenge you? Please state how.

Interviewee 1

Yes. The course challenged me to think more analytically and to consider the problem from all aspects, as there is always more than just one way of looking at the problem. Systems thinking and systems dynamics are new courses and they presented new or novel concepts that made it challenging to me.

Interviewee 2

Yes. The course challenged me. Systems thinking and systems dynamic modelling are new concepts to me. Understanding loops and models are a challenge to me. I have never encountered them before. These are very new to me. And these courses opened my eyes to new ways of thinking and problem-solving.

Interviewee 3

Yes. The courses challenged me because of their novelty. They have new concepts which were unheard of by me before. But they were also easy to digest and understand because of the help of illustrations and examples made by the teacher. The methodology of effectively solving problems is new to me. The courses are very challenging, yet interesting to me.

Interviewee 4

Yes. The course challenged me because this is the first time I learned about systems thinking. The lessons are new to me. I learned something new and challenging.

Interviewee 5

Yes, the course challenged me because it is new and I don't know much about it. The course offered many new discoveries for me. It challenged my old ways of thinking. The concepts in the course offer new ways of thinking and looking at things and situations.

Interviewee 6

Yes, the course challenged me. It was something new for me. The concepts are new. The new methodology of problem solving is novel to me. It was challenging and engaging. It was very interesting.

Interviewee 7

Yes. It challenged my pre-formed thoughts, my old mental structures and constructs. It challenged my long-held beliefs at seeing things and considering only one perspective. The course challenged me because it presented a lot of fresh ideas that are opposed to routine courses offered in vocational training for police officers

Interviewee 8

Yes, the course challenged me because it is something new and I don't have any ideas about it.

2 Has the course changed the way that you think? If so state how you thought before and how you think afterwards.

Interviewee 1

Yes it has changed the way I think. I now think differently. Before I took the courses, I often think subjectively. For solving problems related to my job at the MOI, I did not use any systemic methodology. Now, I think differently as I am now able to analyze the problems using the stages of problem solving I learned from systems thinking. I also think that modelling the problem can help address the problems more effectively.

Interviewee 2

I learned many things from the courses such as changing our ways of looking at a problem. I leaned about the methodology of problem solving which is called the nine-stage plan of solving a problem. I also learned a lot about holistic way of thinking and also about logical thinking.

Interviewee 3

Yes. It has changed the way I think. Before, my way of thinking is that there is only one way of looking of or considering a problem. After the courses, I now look at things from many angles. I now think holistically and logically

Interviewee 4

Yes. It has changed the way I think. Before attending the training, I think in ordinary ways like I follow what was taught in school that there are only few established ways of solving a problem- the traditional way of problem solving. Now, I learnt that there are many ways of solving a problem and it pays to follow the systems thinking methodology because it is logical and can help solve the problems more effectively

Interviewee 5

Yes. The course has changed the way I think. Prior to the training, I thought in such a way that is very conventional. After the training, I see things differently as I am able to make a paradigm shift from conventional ways of thinking to systems thinking, which is more logical and more critical

Interviewee 6

Yes, the course has definitely altered the way I think or my ways of thinking. Before the course, I think in the routine, ordinary kind of way. After the course, I am now a lateral thinking – looking at many ideas and alternative solutions before resolving the problems. I am now thinking more logically

Interviewee 7

Yes, the course changed the way I think. Like I said before, the course changed my pre-formed thoughts, my old mental structures and constructs. Before the training, I don't know anything about the lateral thinking concept or the problem-solving methodology or the modeling process. After the course, I now have an understanding of these new concepts of systems thinking.

Interviewee 8

Yes, the course changed the way I think. Before, I think in old ways. After the course, I think in many different ways- that is called lateral thinking.

Did the course relate to Qatar and its Culture?

Interviewee 1

Yes, it is related to Qatar and its culture. In fact, the concepts I learned from the courses – systems thinking and systems dynamics are relevant to any type of culture – Qatari or not. Systems thinking and systems dynamics are applicable to all cultures. The generic model of the MIT is also applicable to the Qatari culture as causal models are not culture-specific. Models are generic to all types of cultures worldwide. Also, the trainer used examples that are based in the Arabic culture.

Interviewee 2

Yes, the courses were related to Qatar and its culture because the examples are of our own Arab culture which made it easy for us to understand the concepts. The trainer or teacher of the courses know a lot about our own culture. For example, the teacher made reference to the women of Burkas to illustrate an example of a concept

Interviewee 3

Yes, the courses were related to Qatar and its culture because the examples given by the teacher were based on our own Arab culture. The teacher used the example of throwing shoes which is a part of our own culture

Interviewee 4

Yes, the course was related to Qatar and its culture because the trainer made mention of several examples based on our culture. The trainer for instance, used the example of Abu Hamid Muhammad Al-Ghazali and the throwing of shoes which we, the participants are all familiar of

Interviewee 5

Yes, the course was related to Qatar and its culture because the examples were about the Arab culture such as the women in Burkas and the throwing of shoes, which are very Arab in nature.

Interviewee 6

Yes, the course did relate to Qatar and its culture because the examples used were based on our very own Arab culture. There were some Western examples but they fewer compared to Arab examples. Also, the Arab culture was highlighted in the examples.

Interviewee 7

Yes, the course was related to Qatar and its culture.

Interviewee 8

Yes, the course was related to Qatar and its culture. The teacher gave examples that are very Arab-culturally. Examples mentioned during the training were the Burkas women and Abu Hamid Muhammad Al-Ghazali.

What did you learn from the course?

Interviewee 1

I learned a lot of new concepts from the courses. For example, I learned about the methodology that is based on causal modelling. I also learned to illustrate and understand the problem with the use of feedback loops.

Interviewee 2

Interviewee 3

I learned many things from the courses such as changing our ways problem solving. I leaned about the techniques of problem solving which is called the nine-stage plan of solving a problem. I also learned a lot about paradigms and how they can be changed. I learned that there is no one, single, correct way of thinking or looking at things- but there are many possibilities

Interviewee 4

I learned many things from the courses such as changing our paradigms from scientific and traditional to systems thinking paradigm. I learned about causal modelling and the problem-solving methodology

Interviewee 5

I learned many things from the course. For instance, I learned about system dynamics model which can be constructed from the causal model. I also learned about the Nine Point Plan of problem solving

Interviewee 6

I learned so many things from the course. These new learnings include lateral thinking, paradigms, and the 9 point plan of solving problems. I also learned about causal modelling.

Interviewee 7

I learned about paradigms, lateral thinking, causal loops, modelling, and the methodology for problem-solving. I learned that there are many ways of looking at problem situations and many ways of solving the problem. I learned that the solution to any given problem is not just comprised by one solution, but by many solutions. I learned that we should have a problem-solving plan in order to resolve messy problems, or any types of problems.

Interviewee 8

I learned that systems thinking are more effective than scientific thinking. I learned about the problem –solving methodology and that there are numerous perspectives to consider when solving a problem. I learned about cybernetic principles, modeling and feedback.

Are such courses useful? Please state why.

Interviewee 1

Yes, they are very useful and practical. Work problems can be solved more logically with the use of systems thinking and model the causes of the problems, so that they can solved more effectively.

Interviewee 2

Yes, the courses are very useful especially that policing requires an ability to solve problems related to crime which can be very life-threatening. In order to protect the civilian population as well as their property and those of the government of Qatar, in order to maintain law and order effectively, we should be able to solve crime-related problems effectively by using the methodology involving the 9 stages of systems thinking

Interviewee 3
Yes, the courses are very useful to my profession and to my every day way of life also. I can think logically and solve problems more successfully
Interviewee 4
Yes, the courses are very useful and valuable to my profession. I can use causal modelling and the problem-solving methodology in addressing and resolving problems at the MOI. The courses are very applicable to my work. Very practical and useful.
Interviewee 5
Yes, the courses are very useful because in terms of problem-solving for example, I now know that the solution to the problem can be made up of several decisions or actions – not just one intervention. Model construction can made to address or resolve problems at work. We can apply the concepts of systems thinking and systems dynamics in solving issues at the MOI.
Interviewee 6
Yes, the courses are very useful in problem solving. It can be applied at work – solving problems at the MOI or at home. This is because the methodology that was taught during the training for solving problems is applicable to many situations. Very practical and applicable.
Interviewee 7
Yes, the courses are very very useful in problem solving particularly at the MOI. They are very practicable.
Interviewee 8
Yes, the courses are useful in work-related problems – they are very applicable in problem solving.
Did the course meet your expectations?
Interviewee 1
Yes, the new courses not only met my expectation, but they exceeded them.
Interviewee 2
Yes, the new courses were able to meet my course expectations
Interviewee 3
Yes, the new courses were able to meet my expectations. I learned a lot from them and everything I learned from the courses are very applicable in my profession and in my private life. I expected that the courses would be interesting and useful and they met my expectations
Interviewee 4
Yes, the new course was able to meet my expectations. I learned a lot. The Arab culture was used in examples. The course was interesting and engaging. It is very practical and useful both in everyday life and at the MOI.
Interviewee 5
Yes, the new course was able to meet my expectations. The course was interesting; it was something new and very practical. It can be applied at work and in any situation. I learned a lot.
Interviewee 6
Yes, the new course met my expectations
Interviewee 7
Yes, the new course met my expectations. It met my expectations for an interesting m new and practical course
Interviewee 8
Yes, the new course met my expectations of what a vocational training course should be

L. Questionnaire for App Evaluation.

General Information

*** 1. Are you male or female?**

- Male
- Female

*** 2. What is your age group?**

- 18-20
- 21-29
- 30-39
- 40-49
- 50+

*** 3. Which of the following devices do you own?**

- Windows Phone
- Blackberry
- iPad
- Palm Phone
- Symbian Phone
- Android Phone
- iPhone

Other (please specify)

*** 4. Have you ever downloaded apps for your device?**

- Yes - Always Free
- Yes - Always Paid
- Yes - Free & Paid
- No

*** 5. How likely would you be to use our app if it was available on your device?**

- It already is available on my device
- Extremely likely
- Very likely
- Moderately likely
- Slightly likely

- Not at all likely

User Friendliness

*** 6. The App is user friendly and visually sympathetic**

- I don't have any of your apps
- Strongly agree
- Agree
- Neutral
- Disagree
- Strongly disagree

*** 7. What changes would make the App more user friendly ?**

*** 8. How easy is it to find the information you are looking for in the app?**

- I don't have any of your apps
- Extremely easy
- Very easy
- Moderately easy
- Slightly easy
- Not at all easy

*** 9. How helpful is the app for your everyday job duties?**

- I don't have any of your apps
- Extremely helpful
- Very helpful
- Moderately helpful
- Slightly helpful
- Not at all helpful

Please add comments

*** 10. How likely are you to use the app travelling to/from work to train?**

- I don't have any of your apps
- Extremely likely

- Very likely
- Moderately likely
- Slightly likely
- Not at all likely

*** 11. Is this a better way of delivering information?**

- I don't have any of your apps
- Very Much better
- Better
- No Difference
- Not so good
- Terrible

Please add comments

*** 12. Does this App help to cut down on cultural biases?**

- I don't have any of your apps
- Very Much
- A Little
- No Difference
- Not Much
- Not at all

Please add comments

*** 13. How likely are you to recommend the app to others?**

- I don't have any of your apps
- Extremely likely
- Very likely
- Moderately likely
- Slightly likely
- Not at all likely

*** 14. What changes would most help our app to deliver information?**

Comments on the Exercise from the PDP Course

***15. It was easy to access and read the four accounts of the park incident?**

- Strongly agree
- Agree
- Neutral
- Disagree
- Strongly disagree

Please add comments

***16. The App allowed time for reflection?**

- Strongly agree
- Agree
- Neutral
- Disagree
- Strongly disagree

Please add comments

***17. It was easy for me to share my thoughts with the group using the App?**

- Strongly agree
- Agree
- Neutral
- Disagree
- Strongly disagree

Please add comments

***18. How helpful was the app in terms of obtaining more knowledge and share experience?**

- Extremely helpful
- Very helpful
- Moderately helpful
- Slightly helpful
- Not at all helpful

Please add comments

***19. Did you enjoy using the App in this exercise?**

- Very much
- Moderately
- Neutral
- Not really
- Not at all

Please add comments

Comments on the Use of the Quiz in the PDP Course

*** 20. How easy was it to complete the quiz on the App?**

- Extremely easy
- Very easy
- Moderately easy
- Slightly easy
- Not at all easy

Please add comments

*** 21. How quickly did you get feedback to your quiz answers?**

- Extremely quickly
- Moderately quickly
- Slower than anticipated
- Very slow

Please add comments

*** 22. It was easy to communicate to my tutor about the feedback**

- Extremely easy
- Very easy
- Moderately easy
- Slightly easy
- Not at all easy

Please add comments

*** 23. The feedback motivated me to use the App more?**

- Very much
- A little
- Not at all
- Slightly demotivating

- Very demotivating

Please add comments

*** 24. The course was improved by the use of the App**

- Very mush so
- A little
- Not at all
- Slightly improved
- Not improved at all

Please add comments

M. Data Model for the App.

The diagram below shown in Figure M.1 shows the data entities for the app scope and the entity relationships. This model provides a basis for the stand-alone prototype (no centralised integration). Specifically, we would expect an integrated version to post and receive data and content updates from a training management system. By definition, this system would enable the app to 'log in' using the app owners' credentials, this would be username and password authentication

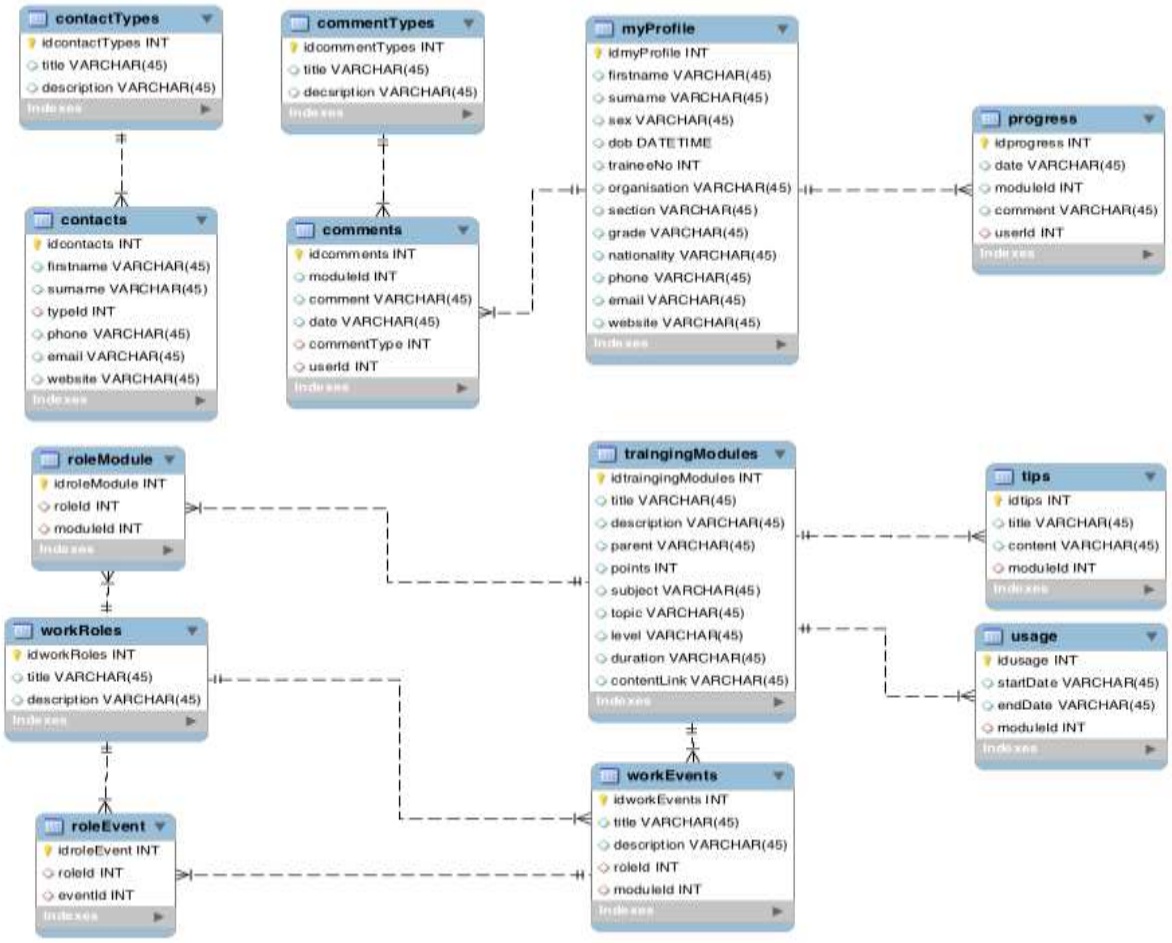


Figure M.1 Data Model

Source: Created by the Researcher

N. App Development Schedule.

The following schedule detail the main activities and checkpoints planned to rapidly develop the prototype. The red ‘week indicators’ identify when end-user trials were expected to take place.

No	Activity Desciption	Phase	week1	week2	week3	week4	week5	week6	week7	week8	week9	week10	week11	week12
C1	Agree concept & scope	Concept												
R1	Agree detailed requirements	Requirements												
R2	Agree technology choices	Requirements												
D1	Architectural HL design	Design												
D2	Data Model	Design												
D3	Look and Feel Interface design	Design												
D4	Checkpoint 1 - design	Design												
B1	Local database	Build & Test												
B2	forms structure	Build & Test												
B3	Content population	Build & Test												
B4	M 1 - training consumption	Build & Test												
B5	Checkpoint 2 - M1 review & rework	Build & Test												
B6	M 2 - Contextual Tips	Build & Test												
B7	Checkpoint 2 - M2 review & rework	Build & Test												
B8	M 3 - Reflection Log	Build & Test												
B9	Checkpoint 3 - M1 review & rework	Build & Test												
B10	M 4 - Sharing	Build & Test												
B11	Checkpoint 4 - M1 review & rework	Build & Test												
B12	M 5 - Progress	Build & Test												
B13	Checkpoint 5 - M1 review & rework	Build & Test												
B14	Checkpoint 6 - Sign-off	Build & Test												

O. App Screen Shots.

The images below show a selection of screen designs for the prototype app with functional descriptions.

O.1 Home Screen

Figure O.1 Home screen

Source: Created by the Researcher

The home screen (see Figure O.1) provides the entry point into the app. The app will do several tasks behind the scenes when the app is opened, such as connecting to the local database and updating the presentation from latest saved data and any incoming data.

The home screen should show any push-notifications received since the last time the app was opened.

O.2 My Profile Screen and Progress

Figure O.2 My Profile and Progress Screens

Source: Created by the Researcher

The ‘Profile’ and ‘Progress’ screens (see Figure O.2) enables the user to set up their details to enable interaction with other contacts. Users can create and edit their data. The progress button provides an overview of progress against assigned training modules.

O.3 Events and Event Tips

Figure O.3 Events Screen
Source: Created by the Researcher

The events screens (see Figure O.3) enable the user to choose an event associated with a specific training scenario or general work situation. Browse the events and retrieve any tips associated with that event (these may be created by the user themselves). User can read or listen to tips associated with particular work events (may add video later).

O.4 Share Learning and Comments

Figure O.4 Share Screens
Source: Created by the Researcher

The ‘Share’ screens (see Figure O.4) enable the user to choose one or more colleagues to share a training experience or learning event with. Initially this will need to utilise in-built device communications facilities such as email and text or posting to a social media site. Eventually the system

could use its own private data sharing (via a central service) that will make information easier to find (associated with different learning topics), all shared comments will be logged locally so the user can review at a later date.

O.5 Training Comments

Figure O.5 Training Comments

Screens Source: Created by the Researcher

The ‘Training Comments’ screens (see Figure O.5) enable the user to choose a training module and component, and record a comment or observation either by typing or voice recording. Future requirements may include tagging video or photographs to specific modules or learning experiences.

O.6 Learn Screen

Figure O.6 Learn Screens

Source: Created by the Researcher

The ‘Learn’ screens (see Figure O.6) enable the user to choose a training module and component, and consume the training. This could be text, audio, video or a link to web content etc.

O.7 Early Design Qualification by Potential Users

At the time of writing the application development is held in the design stage while funding is sought for the full development cycle.

The intention is to get early user feedback by targeted student user groups during the different training programmes organised for the other modules. Feedback from these sessions will further inform the design process prior to full development commencing.

O.8 App Distribution and Consumption

Mobile applications are normally distributed for worldwide public access through ‘app stores’ such as Apples iTunes (iOS) or Google Play (Android). Apple also provide the ability to have closed distribution via there ‘enterprise’ configuration (extra cost) and Android apps can also be distributed privately via a website.

The training application will be distributed initially within the scope of the prototype study team and working group as a pre-release version. A production app as envisaged when fully integrated would most likely be rolled out as an ‘enterprise’ app in relation to the targeted enterprise training structure and organisation.

Thought should be given to the future commercial potential of the application to be used in a more generic way as a portal to commercial training ecosystems. This opportunity is explored further in the future developments section.

P. An Exercise on Reflection.

The aim of this exercise is to enable participants, to recognise that reflection can vary in depth and that there is more potential for learning from deeper rather than superficial reflection. The exercise is developed in response to the observation that students, who are asked to reflect, tend to reflect rather superficially. In the exercise there are four accounts of an incident in a park. They are recounted by Annie, who was involved in the incident herself. The accounts are written at different depths of reflection.

The Park (1)

I went through the park the other day. The sun shone sometimes but large clouds floated across the sky in a breeze. It reminded me of a time that I was walking on St David's Head in Wales – when there was a hard and bright light and anything I looked at was bright. It was really quite hot – so much nicer than the day before which was rainy. I went over to the children's playing field. I had not been there for a while and wanted to see the improvements. There were several children there and one, in particular, I noticed, was in too many clothes for the heat. The children were running about and this child became red in the face and began to slow down and then he sat. He must have been about 10. Some of the others called him up again and he got to his feet. He stumbled into the game for a few moments, tripping once or twice. It seemed to me that he had just not got the energy to lift his feet. Eventually he stumbled down and did not get up but he was still moving and he shuffled into a half sitting and half lying position watching the other children and I think he was calling out to them. I don't know.

The Park (2)

I went to the park the other day. I was going to the supermarket to get some meat to make the chilli that I had promised the children. They were having one of their end-of-term celebrations with friends. I wonder what drew me to the playground and why I ended up standing and watching those children playing with a rough old football. I am not sure as I don't usually look at other people's children – I just did. Anyway, there were a number of kids there. I noticed, in particular, one child who seemed to be very overdressed for the weather. I try now to recall what he looked like - his face was red. He was a boy of around 10 – not unlike Charlie was at that age – maybe that is why I noticed him to start with when he was running around with the others. But then he was beginning to look distressed. I felt uneasy about him – sort of maternal but I did not do anything. What could I have done? I remember thinking, I had little time and the supermarket would get crowded. What a strange way of thinking, in the circumstances!

The Park (3)

The incident happened in Ingle Park and it is very much still on my mind. There was a child playing with others. He looked hot and unfit and kept sitting down but the other children kept on getting him back up and making him play with them. I was on my way to the shop and only watched the children for a while before I walked on. Next day it was reported in the paper that the child had been taken to hospital seriously ill – very seriously ill. The report said that there were several passers-by in the park who had seen the child looking ill and who had done nothing. It was a scathing report about those who do not take action in such situations.

The Park (4)

It happened in Ingle Park and this event is very much still on my mind. It feels significant. There was a child playing with others. He looked hot and unfit and kept sitting down but the other children kept on getting him back up and making him play with them. I was on my way to the shop and only watched the children for a while before I walked on. Next day it was reported in the paper that the child had been taken to hospital seriously ill – very seriously ill. The report said that there were several passers-by in the park who had seen the child looking ill and who had done nothing. It was a scathing report about those who do not take action in such situation.

Instructions for use of the exercise.

The procedure for the exercise is described as a group process, though it can be used individually. The process works best when it has a facilitator, who is not engaged in the exercise. It takes around an hour. It is important that the pages are not leafed through in advance, other than as instructed - and the exercise works better when people follow the instructions. In particular, they should not begin the discussions until everyone has read the relevant account. The facilitator needs to control this. The groups can be told that there are four accounts of an incident, and that they will be reading them one after the other, with time after each session of reading for discussion about the reflective content of the account.

- The exercise is introduced as means to demonstrate that there are different depths in reflection and that deeper reflection probably equates with better learning.
- Small groups are formed (no more than six in each).
- The groups are told to turn to the first account and read it quietly to themselves considering what features that they think are reflective.
- When it is evident that most people have read the first account, the groups are invited to discuss the account and identify where and how it is reflective. They are given about seven minutes for each discussion session. They may need less time for the earlier accounts.
- After the discussion session, the participants are asked to read the next account in the sequence (and they are reminded not to turn pages beyond the account in hand).
- After the last account has been read and discussed, groups are asked to go back through all of the accounts and to identify features of the reflection that progressively change through the accounts. For example, the accounts change from being ‘story’ to focusing on issues in the incident. In the later accounts there is more recognition that there are multiple perspectives etc. The groups are asked to list (e.g. on flip chart paper) the ways in which the accounts ‘deepen’.
- In a plenary, the groups share their lists (as above) and discuss the whole exercise.

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