

**A CRITICAL EVALUATION OF THE ORGANISATIONAL
LEARNING THAT TAKES PLACE IN A PROJECT
MANAGEMENT ENVIRONMENT**



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ABSTRACT

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This study contends that organisations in the modern day business environment are continuously faced with an increasingly competitive operational milieu that demands constant improvements in the quality of products and services. The study specifically focuses on project management organisations and the fact that for the latter type, organisational quality improvement translates into meeting the customer's requirements within the project's budgetary, time and technical constraints.

It is proposed that it is no longer sufficient for project-based and team-based organisations to rely on traditional project management methodologies. Instead, these types of organisations need to learn from past actions and performances in order to improve future management ability, and consequently the quality of projects delivered and their organisation's competitive edge.

The primary objective of this study is to critically evaluate the phenomenon of organisational learning in the context of a project management environment in order to extract an understanding of its implemental flaws and to suggest a proposed project life cycle model that could address these shortcomings.

To achieve this objective, the study includes a literary review aimed at gaining theoretical knowledge of organisational learning strategies and the implemental shortcomings of these strategies in the creation of a "learning organisation" insofar as it is applicable to a project management environment. This theoretical knowledge and the knowledge gained from a pilot study was then utilised to design the research tools required to meet the objectives of the empirical study. The empirical study, in turn, focuses on critically evaluating the phenomenon of organisational learning in the context of a project management environment so as to extract an understanding of its implemental flaws and to suggest a proposed project life cycle model that could address these shortcomings.

The empirical study utilises a qualitative research approach designed to determine the perceptions of and practices utilised by 21 project management team members across various functional disciplines and from a variety of project management organisations in terms of the learning that takes place in their various organisations.

Results suggest that there is often a chasm between the process during which an organisation acquires knowledge and the path by which improvement takes place as a result of such newly acquired knowledge. This is predominantly attributable to the challenge of transferring organisational knowledge across projects and project phases in such a manner that project team members throughout the organisation can readily obtain and beneficially implement organisational knowledge.

Findings indicated that the biggest shortfall in the transferability of knowledge is not rooted in the availability of transfer tools, but in the application of these tools at various time slots in the project management life cycle. As such the study recommends a revised approach to the project management life cycle, involving the implementation of a learning checklist during each phase of the project life cycle in order to achieve effective integration of project learning activities into the project management life cycle. The latter approach is aimed at designing a project life cycle model that facilitates learning across projects and project phases which is most suited to the relevant organisation based on its unique requirements, competencies and resource constraints. Post-interview clarification sessions with participants in the empirical study are used as a forum to propose a hypothetical project management life cycle model for one of the participant organisations.

SAMEVATTING

SAMEVATTING

Hierdie studie bring aan die lig dat organisasies in die moderne besigheidsomgewing voortdurend geraak word deur 'n verskerpende kompeterende operasionele milieu wat konstante verbetering vereis in die kwaliteit van produkte en dienste. Die studie fokus spesifiek op projekbestuur organisasies en die feit dat in hierdie tipe organisasies, kwaliteit verbetering beteken dat die kliënt se vereistes betyds verwesenlik word binne die perke van 'n begroting en tegniese vermoëns.

Daar word aan die lig gebring dat projek- en spangebaseerde organisasies nie langer op tradisionele projekbestuur metodologie alleen kan staat maak nie. Hierdie tipe organisasies moet in teenstelling leer uit hulle historiese aksies en werksverrigting ter verbetering van hulle toekomstige bestuur vermoëns en daaruit vloeiend dus ook die kwaliteit van hulle produkte en die organisasie se kompeterende voordeel.

Die mees belangrike doel van die studie is die kritiese evaluering van die konsep van organisatoriese leervermoë in die konteks van 'n projekbestuur omgewing in 'n poging om implementering tekortkominge uit te lig en om daaruit volgend voorstelle te maak ten opsigte van 'n projek lewensiklus model wat hierdie tekortkominge sal kan aanspreek.

Om hierdie doelwit te bereik sluit die studie 'n literêre oorsig in wat daarop gemik is om teoretiese kennis in te win rakende organisatoriese leervermoë strategieë en die gepaardgaande tekortkominge van hierdie strategieë in die skepping van 'n "lerende organisasie" tot die mate waarin dit toepaslik is op 'n projekbestuur omgewing. Hierdie teoretiese kennis en die kennis wat opgedoen was uit 'n loodsstudie is aangewend om die navorsing toebehore te ontwikkel vir die empiriese studie wat die doelwitte van hierdie studie sou verwesenlik. Die empiriese studie fokus op die kritiese evaluering van organisatoriese leervermoë in die konteks van 'n projekbestuur omgewing ten einde te verstaan wat die implementering tekortkominge daarvan is en om voorstelle te maak ten opsigte van 'n projek lewensiklus wat hierdie tekortkominge moontlik kan aanspreek.

'n Navorsingsbenadering is ontwikkel vir die empiriese studie om te bepaal wat die persepsies en gebruike van een-en-twintig projek bestuurspanlede regoor verskeie funksionele dissiplines en van verskeie projekbestuur organisasies is in terme van leer groei wat plaasvind in hierdie verskeie organisasies.

Resultate dui daarop dat daar dikwels 'n reuse gaping is tussen die prosesse waardeur organisasies kennis opdoen en die prosedures waardeur verbetering aangebring word as 'n gevolg van hierdie nuutgevonde kennis. Dit kan hoofsaaklik toegeskryf word aan die struikelblokke wat organisasies teëkom gedurende die proses van kennisoordrag tussen projekte en projek fases op so 'n wyse wat dit moontlik maak vir projek deelnemers regoor die organisasie om hierdie kennis maklik te bekom en toe te pas op 'n voordelige manier.

Daar word bevind dat die grootste tekortkominge in die oordrag van kennis nie te wyte is aan, die onbeskikbaarheid van oordrag gebruike nie, maar in die toepassing van hierdie gebruike gedurende die verskeie tydgleuwe in die projek lewensiklus. Dus stel die studie 'n verandering in die benadering tot 'n projekbestuur lewensiklus voor wat die gebruik van 'n kontrolelys insluit gedurende elke fase van die projek lewensiklus ten einde die effektiewe integrasie van leer aktiwiteite in die projek lewensiklus te bewerkstellig. Laasgenoemde benadering is gemik daarop om 'n projek lewensiklus model te ontwikkel wat die leerproses regoor projekte en projek fases aanwend op 'n manier wat die beste pas by die relevante organisasie, gebaseer op sy eie unieke vereistes, vaardighede en hulpbron beperkinge. Onderhoude wat agterna gevoer is met deelnemers aan die empiriese studie om vêrdere duidelikheid te verkry, is gebruik as 'n forum om 'n hipotetiese projekbestuur lewensiklus model voor te stel vir een van die deelnemende organisasies.

TABLE OF CONTENTS

TABLE OF CONTENTS

ACKNOWLEDGEMENTS.....	II
ABSTRACT.....	III
SAMEVATTING	V
TABLE OF CONTENTS	VII
LIST OF FIGURES.....	IX
LIST OF TABLES	X
LIST OF GRAPHS	XI
1 CHAPTER 1 – NATURE AND SCOPE OF THE STUDY	1
1.1 INTRODUCTION AND BACKGROUND.....	1
1.2 PROBLEM STATEMENT	3
1.3 OBJECTIVES OF THE STUDY	4
1.4 SCOPE OF THE STUDY	5
1.5 METHODOLOGY	5
1.6 LITERATURE STUDY	5
1.7 EMPIRICAL STUDY	6
2 CHAPTER 2 – LITERATURE STUDY	9
2.1 INTRODUCTION.....	9
2.2 ORGANISATIONAL LEARNING	11
2.3 THE LEARNING ORGANISATION	21
2.4 ORGANISATIONAL LEARNING IN PROJECT MANAGEMENT ORGANISATIONS	29
2.5 CONCLUSION OF THE LITERATURE STUDY – THE IMPLEMENTAL CONUNDRUM	39
3 CHAPTER 3 – EMPIRICAL STUDY	43
3.1 INTRODUCTION.....	43
3.2 RATIONALE FOR A QUALITATIVE RESEARCH APPROACH	44
3.3 THE RESEARCH SAMPLE	48
3.4 AREAS OF INFORMATION REQUIRED	50
3.5 OVERVIEW OF THE RESEARCH DESIGN.....	55
3.6 METHODS FOR DATA COLLECTION.....	58

3.7	METHODS OF DATA ANALYSIS	60
3.8	ISSUES OF TRUSTWORTHINESS	62
3.9	STUDY LIMITATIONS	64
3.10	CONCLUSION.....	66
4	CHAPTER 4 – RESEARCH FINDINGS.....	67
4.1	INTRODUCTION	67
4.2	RESEARCH QUESTION 1	67
4.3	RESEARCH QUESTION 2	73
4.4	RESEARCH QUESTION 3	74
4.5	RESEARCH QUESTION 4	78
4.6	RESEARCH QUESTION 5	81
4.7	RESEARCH QUESTION 6	83
4.8	RESEARCH QUESTION 7	84
4.9	RESEARCH QUESTION 8	87
4.10	CONCLUSION.....	89
5	CHAPTER 5 - CONCLUSIONS AND RECOMMENDATIONS.....	95
5.1	INTRODUCTION	95
5.2	LITERATURE MEETS REALITY	95
5.3	RECOMMENDATIONS	101
5.4	STUDY EVALUATION	111
5.5	RECOMMENDATIONS FOR FUTURE RESEARCH	112
5.6	CONCLUSION.....	112
6	BIBLIOGRAPHY	115
7	APPENDICES	119
7.1	APPENDIX A - LETTER OF INTRODUCTION	119
7.2	APPENDIX B - SEMI-STRUCTURED INTERVIEW SCHEDULE	123
7.3	APPENDIX C - CONTACT SUMMARY FORM	129
7.4	APPENDIX D - CONTACT SUMMARY FORM	137
7.5	APPENDIX E – RESULT TABLES.....	145

LIST OF FIGURES

LIST OF FIGURES

FIGURE 2.1: HOW ORGANISATIONAL LEARNING AFFECTS ORGANISATION PERFORMANCE	16
FIGURE 2.2: AN ORGANISATION AS AN OPEN SYSTEM	22
FIGURE 2.3: THE STAGES OF LEARNING	27
FIGURE 2.4: THE FOUR PHASES OF THE PROJECT LIFE CYCLE	33
FIGURE 2.5: THE RAMP OF IMPROVEMENT	36
FIGURE 2.6: THE PROJECT LIFE CYCLE OF A PROJECT LEARNING ORGANISATION	38
FIGURE 3.1: THE RESEARCH ACTIVITY FLOW.....	56
FIGURE 5.1: THE LEARNING CHECKLIST.....	102
FIGURE 5.2: PROJECT MANAGEMENT LIFE CYCLE - PROJECT ENQUIRY PHASE.....	105
FIGURE 5.3: PROJECT MANAGEMENT LIFE CYCLE – PROJECT INITIATION AND ANALYSIS PHASE	106
FIGURE 5.4: PROJECT MANAGEMENT LIFE CYCLE – PROJECT PLANNING PHASE	107
FIGURE 5.5: PROJECT MANAGEMENT LIFE CYCLE - PROJECT IMPLEMENTATION AND EXECUTION PHASE	108
FIGURE 5.6: PROJECT MANAGEMENT LIFE CYCLE - PROJECT CLOSURE AND MEASUREMENT PHASE.....	109
FIGURE 5.7: PROJECT MANAGEMENT LIFE CYCLE - PROJECT MEMORISING AND ALIGNMENT PHASE	110

LIST OF TABLES

LIST OF TABLES

TABLE 2.1: DEFINITIONS OF ORGANISATIONAL LEARNING	12
TABLE 2.2: DEFINITIONS OF A LEARNING ORGANISATION.....	23
TABLE 2.3: LEARNING METHODS – TWO EXTREMES.....	26
TABLE 3.1: AREAS OF INFORMATION REQUIRED	50
TABLE 3.2: GENDER ALLOCATION	52
TABLE 4.1: OVERVIEW OF FINDING 1 – PRIMARY LEARNING PRACTICES	68
TABLE 4.2: OVERVIEW OF FINDING 2 – PERFORMANCE INFLUENCE*	73
TABLE 4.3: OVERVIEW OF FINDING 3 – BARRIERS TO LEARNING*	75
TABLE 4.4: OVERVIEW OF FINDING 4 – TYPE OF LEARNING*	79
TABLE 4.5: OVERVIEW OF FINDING 5 – ROLE OF INNOVATION*	82
TABLE 4.6: OVERVIEW OF FINDING 6 – ROLE OF MANAGEMENT*	83
TABLE 4.7: OVERVIEW OF FINDING 7 – LEARNING’S PREVALENCE IN THE PMLC*	85
TABLE 4.8: OVERVIEW OF FINDING 7 - WHERE LEARNING SHOULD BE PREVALENT IN THE PMLC*	86
TABLE 4.9: OVERVIEW OF FINDING 8 - LEARNING ORGANISATION STATUS*	88

LIST OF GRAPHS

LIST OF GRAPHS

GRAPH 3.1: PARTICIPANT AGE RANGE	52
GRAPH 3.2: PARTICIPANTS' FUNCTIONAL DOMAIN	53
GRAPH 3.3: FULL-TIME PROJECT MANAGEMENT STAFF	54
GRAPH 3.4: YEARS PROJECT MANAGEMENT EXPERIENCE	54

CHAPTER 1

NATURE AND SCOPE OF THIS STUDY

1 CHAPTER 1 – NATURE AND SCOPE OF THE STUDY

1.1 INTRODUCTION AND BACKGROUND

Organisations in the modern day business environment are continuously faced with an increasingly competitive operational milieu that demands constant improvement in the quality of products and services. This also holds true for project-based organisations, however, for the latter type organisational quality improvement translates into meeting the customer's requirements within the project's budgetary, time and technical constraints (Kotnour, 2000:393; Wu, 2005:2), a tall order in a landscape where projects are becoming increasingly complex and constrained (Wu, 2005:2).

It is no longer sufficient for project-based and team-based organisations to rely on traditional project management methodologies (Cavaleri & Fearon, 2000:252). Instead, they need to learn from past actions and performances so as to improve future management ability, and consequently the quality of projects delivered and their organisation's competitive edge (Kotnour, 2000:393; Sense, 2004:123).

In this context, Vakola and Rezgui (2000:174) have highlighted that organisations in the construction industry have responded to the ever-growing pressure from clients to deliver high-quality facilities on time and on budget by investing more heavily in the improvement of their business processes. These investments predominantly focus on the introduction of innovative project management systems and supplementary information and communication technology, all structured to facilitate organisational learning (Sense, 2004:123).

Organisational learning as a concept has been subjected to a wide and growing variety of literary discussion and review, not to mention the plethora of definitions proposed in an attempt to give content to this modern day organisational buzzword (Wu, 2005:2; Hong, 1999:173). However, in simple terms, organisational learning is essentially a process during which an organisation strives to improve its performance, to detect and correct errors and to

adapt to its evolving environment through developing knowledge and understanding (Hong, 1999:174). Learning is the key characteristic since it enables the organisation to sense changes emanating from both its internal and external environment and to adapt accordingly in the face of an increasingly discontinuous milieu (Argyris, 1994:8).

To master such a process and to implement it in a manner that results in true and continuous learning, would undeniably present any organisation with a powerful weapon in its striving to achieve and maintain a competitive edge.

The literature on organisational learning propagates approaches that promote the management of the corporate memory of organisations, in an attempt to overcome many of the constraints inherent to creating a learning organisation. Unfortunately the tools implemented to preserve the organisational memory more often than not result in numerous manuals, training programmes, organisational charts and job descriptions that are often worlds apart from the ways in which people actually work (Cavaleri & Fearon, 2000:251).

This begs the question, if organisational learning is such a powerful revolutionary and empowering process, why are organisations continuously failing to transform the rhetoric of organisational learning to the reality of the learning organisation (Reynolds & Ablett, 1998: 174), that is, an organisation which facilitates the learning of all its members and continuously transforms itself?

Vakola and Rezgui (2000:175) review this question in the context of construction companies and conclude that despite the tremendous effort of these organisations to manage corporate knowledge bases leading to a corporate memory culture supportive of organisational learning, these efforts were less visible than expected and seldom brought about the expected improvements in business processes. They ascribe this state of affairs to the following limiting factors that exist in the context of the construction industry (Vakola & Rezgui, 2000:175-176):

- a) Much of the construction knowledge resides in the minds of individuals working on the relevant project;
- b) The intents behind decisions are often not recorded or documented;
- c) Complex processes are required to track and record all project-related data;
- d) Parties responsible for tracking and recording data do not necessarily understand the information needs of the individuals who will use it;

- e) Data are often not managed during the project and whilst created, this is predominantly at the end of the project, often resulting in parties who possess knowledge of the project having left for new projects and not being consulted for their inputs;
- f) Lessons learnt from projects are often not highlighted or organised logically and are predominantly buried in the details; and
- g) Although historical reports and project information are religiously kept and recorded, this predominantly lacks data context, rendering the data of lesser learning value.

Although these are all realities facing project management organisations on a continuous basis, very little has been done to determine how the organisational learning process should be adapted to cater for these realities (Wu, 2005:2).

1.2 PROBLEM STATEMENT

A pilot study was launched amongst a small group of selected senior project managers employed by some of the major project houses located in Gauteng, South Africa, servicing the global mining, petrochemical and information technology industries. The objective of the pilot study was to evaluate and test, in broad terms, the existence and extent of any inadequacies of organisational learning practices in the project management milieu as espoused by literature. The results of the aforementioned pilot study were utilised to demarcate the objectives and scope of this research study more effectively.

The pilot study confirmed that the concept of organisational learning is widely heralded and acknowledged as an essential contributor to improved organisational performance and enhanced competitiveness in the project management environment. It furthermore confirmed that despite this acknowledgement, the reality associated with implementing organisational learning practices and its suspect contribution to performance enhancement has, to a large extent, earmarked this business process as a proverbial white elephant.

Despite the rather gloomy proclamation of organisational learning as a “nice to have”, the pilot study confirmed that project managers have not given up on this business process altogether, and that there was still hope that organisational learning will live up to its much vaunted promise of improved performance and competitive edge. Participants in the pilot study widely confirmed that organisational learning practices have tremendous potential to improve the quality of decision making and the overall quality of the project, however, the

most predominant stumbling block appears to relate to the unknowing reinforcement of cycles of ineffective decision making. The latter was predominantly brought about by a gap between acquiring and recording new knowledge and translating the newly acquired knowledge into strategies that produce more desirable results.

The results of the pilot study do not profess to adequately highlight the problems associated with organisational learning practices in a project management environment, but served the purpose of more effectively providing guiding principles for the formulation of the objectives and scope of this research study.

As such, this study will focus on how both formal and informal methods of sharing project experiences and information can be utilised to create new knowledge that will enable project management organisations to translate new knowledge into revised and more efficient strategies, not to merely learn between projects, but also between project phases and amongst business units - ultimately establishing themselves as learning organisations that can be readily responsive to environmental changes and challenges.

1.3 OBJECTIVES OF THE STUDY

The primary objective of the study is to critically evaluate the phenomenon of organisational learning in the context of a project management environment so as to extract an understanding of its implemental flaws and to suggest a proposed project life cycle model that could address these shortcomings.

In order to achieve the main objective, the secondary objectives of this study are threefold:

Firstly, to present a preliminary review and critical discussion of key concepts in organisational learning literature to elicit a clear understanding of this field, its application in practice and implemental flaws.

Secondly, to explore the relationship between organisational learning and the learning organisation in a project management organisation in order to provide some insight into the obstacles faced by organisations in transforming the rhetoric of organisational learning to the reality of a learning organisation.

Thirdly, to propose a pragmatist view on the way forward for project management organisations that can be utilised to facilitate the transformation from organisational learning pretence to a learning organisation reality and the associated performance benefits.

1.4 SCOPE OF THE STUDY

This study will focus on the organisational learning practices and deficiencies in four major project management houses in Gauteng, South Africa, servicing the mining, petrochemical and information technology industries globally.

1.5 METHODOLOGY

The methodology followed in this study will consist of two parts, namely an extensive literature study and an empirical study.

1.6 LITERATURE STUDY

In order to establish a sound theoretical background to the problem as formulated above, a critical analysis of organisational learning and the concept of a “learning organisation” will be conducted. This analysis will focus predominantly on theory applicable to a project management environment and will include:

- a) Eliciting a clear understanding of organisational learning strategies as applied in practice to serve as performance enhancement business tools;
- b) Exploring the concept of a “learning organisation” and what it entails;
- c) Understanding the extent to which organisational learning strategies have been successful or unsuccessful in the establishment of “learning organisations”;
- d) Identifying the various shortcomings of organisational learning strategies as recognized by the literature; and
- e) Identifying existing theoretical solutions to addressing these shortcomings

The aim of the literature study is thus to gain theoretical knowledge of organisational learning strategies and the implemental shortcomings of these strategies in the creation of a

“learning organisation” insofar as it is applicable to a project management environment. The knowledge gained from the literature study will be used to develop an interview schedule for the empirical investigation.

The literature will consist of relevant textbooks, technical journals, magazine articles and publications on the internet.

1.7 EMPIRICAL STUDY

Pilot Study

During the development of the scope and objectives of this study, a pilot study was launched amongst a select group of senior project managers to evaluate and validate the need for the proposed research and to assist the researcher in the clear delineation of the focus of the research. The pilot study was based on a qualitative research methodology and data collection was achieved by means of individual unstructured interviews with the participants.

The pilot study utilized unstructured interviews to elicit information regarding the organisational learning practices in the various project houses, the strategies utilised to preserve the organisational memory, the value of such strategies for the organisation from the participant's perspective and the shortcomings of these strategies to realise improved performance. The results of the aforementioned pilot study were utilised exclusively to demarcate the objectives and scope of this research study more effectively.

Main Research Study

As mentioned, the main research study was conducted amongst a selection of senior project managers employed by three major project houses in Gauteng, South Africa, servicing the mining, petrochemical and information technology industries globally.

For the purposes of this study, a qualitative research methodology has been applied, utilising a literature study and an interview schedule. The interview schedule was designed and formulated based on the outcomes of the literature study and pilot study and supplemented by an evaluation of the project management organisation's manuals, records, databases and procedures related to organisational learning.

Due to the exploratory nature of this study, hypotheses were not formulated. The study was focussed on understanding the issues and obstacles facing a project management organisation in the context of organisational learning from the viewpoint of the participants, taking due cognisance of their social setting and the practical realities facing the organisation and individuals.

The research was conducted in a relatively unstructured manner and was predominantly descriptive in nature. This entailed that during the early stages of the study, new information and insights led to the purposes or methods of data collection being altered.

The research methodology is justified due to the fact that the attitudes, approaches and realities of the participants to organisational learning are best evaluated by research methods such as participant observation and interviews (Struwig & Stead, 2001:11).

The empirical study will focus on:

- a) The organisational learning and knowledge management practices and strategies observable in project management organisations;
- b) Whether these practices and strategies are considered to successfully operate as performance enhancement business tools by those required to implement and utilize them;
- c) If considered unsuccessful, the potential causes for the various practices and strategies' failure (barriers to learning);
- d) The type of learning that occurs in the participants' organisations when weighed against the content given to single-loop, double-loop and triple-loop learning by literature;
- e) The role of innovation in the learning practices of the various participants' organisations;
- f) The role of management in the facilitation of learning practices in the various participants' organisations;
- g) Where in the project management life cycle of the various participants' organisations learning is most prevalent; and
- h) The extent to which members of project management organisations consider their respective organisations to be learning organisations and how participants believe their organisations can improve their status as learning organisations.

The results will be statistically analysed using an appropriate statistical methodology with due consideration of the researcher's subjective influence. As such, all analysed results will be subject to an objective review to ensure reliance and corroboration. The said results will

be used to draw conclusions and recommendations will be made regarding the development of a project life cycle model supportive of organisational learning practices and strategies in a project management environment.

CHAPTER 2

LITERATURE STUDY

2 CHAPTER 2 – LITERATURE STUDY

2.1 INTRODUCTION

"There is nothing more difficult to carry out, nor more doubtful of success, nor more dangerous to handle, than to initiate a new order of things."

Machiavelli

In today's modern business environment characterised by the globalization of competition, changing economic and social values regarding knowledge and intellectual capital, restructuring and de-layering of management structures and ever-evolving technological innovations (Sense, 2004:123; Cunningham *et al.* 2004:vii), business organisations and their leaders are challenged as never before (Argyris, 1994:59). Machiavelli's quote aptly captures this overall apprehension and insecurity amongst employees and managers alike associated with change in organisations – an almost tangible trepidation when the powers (or circumstances) that be, propose changing or tampering with *"the way we do things around here"* (Thornbury, 2003:71).

But since change has become the only constant for most organisations, many business leaders are searching for those organisational strategies that could have an influential role to play in the achievement of excellent organisational performance against the backdrop of an unpredictable operational landscape. Work based learning or organisational learning, as supported by the concept of knowledge management, is one such strategy that has been cited as a means to achieve organisational excellence and a competitive edge (Argyris, 1994:1; Cunningham *et al.* 2004:vii)

Flanagan and Finger (1998:320), with reference to the writings of Mike Marquart on organisational learning as a performance enhancement business tool, stated:

“The survival of the fittest is quickly becoming the survival of the fittest-to-learn.”

The realisation that organisational learning has value to add is by no means a new discovery. As early as 1890, the economist, Alfred Marshall wrote (Cunningham *et al.* 2004:vii):

“Capital consists in a great part of knowledge and organisation... knowledge is our most powerful engine of production.”

However, it is only during the latter years of the 1990s and the start of the twenty first century that knowledge has received its rightful recognition as conducive to wealth creation, coupled with the growing realisation that people are the source of organisational knowledge (Cunningham *et al.* 2004:vii).

It is consequently not surprising that in the modern business environment, organisations are responding to the challenges posed by an evolving operational landscape in an adaptive and flexible way, which places a premium upon learning to facilitate survival and growth (Sense, 2004:123). However, despite the acknowledgement of organisational learning and knowledge as undeniable assets in an organisation’s armour against organisational challenges, one of the most daunting difficulties for most organisations is the ability to learn from experience and to translate such learning into improved performance (Kotnour, 2000:393).

The latter contention seems rather odd considering that the *raison d’être* of organisational learning and its increasing popularity is centred around its ability to improve an organisation’s reaction to operational challenges and to improve performance and competitive edge; however, there often seems to be an implemental chasm between the process during which an organisation acquires knowledge and the path by which improvement takes place as a result of the acquired knowledge (Kotnour, 2000:393).

This is an especially important realisation in the context of project management organisations, given that a project management organisation survives in part on its technical knowledge and that the development of this knowledge from successes and failures is key to the technical profession – project organisations must continuously build their knowledge from experience and translate the knowledge into improved future performance (Kotnour, 2000:394).

To this end the objective of this chapter is to create a better understanding of the concept of organisational learning, inclusive of the various strategies utilized in the implementation of these concepts such as knowledge acquisition and knowledge management. This chapter will furthermore focus on the implemental models for organisational learning strategies as business enhancement tools in project management organisations in order to enable identification of the shortcomings and strengths of these strategies, especially insofar as the concept of acquiring knowledge and implementing improvements based on the newly acquired knowledge seems to be disjointed, with the ultimate objective of making recommendations for improvement.

2.2 ORGANISATIONAL LEARNING

To adequately understand and evaluate the rationale for organisational learning, one should first pause, and evaluate and contextualise this concept in more detail.

The definition of organisational learning is by no means an unambiguous concept, as no one irrefutable definition has to date emerged in literature. Various terms are often used interchangeably to apply to the broad set of activities through which organisations learn and organise knowledge. The concept is further complicated by the need to identify at what stage transformation of organisational learning to a learning organisation is achieved.

Many academics opt to first define the concept of learning before characterizing the extent to which learning becomes “organisational”. Cunningham *et al.* (2004:3) rely on the United Kingdom’s Campaign for Learning and define “learning” as:

“a process of active engagement with experience. It is what people do when they want to make sense of the world. It may involve an increase in skills, knowledge or understanding, a deepening of values or the capacity to reflect. Effective learning will lead to change and a desire to learn more.”

Many base their concept of learning on the definition proposed by Fiol and Lyles as quoted by Kotnour (2000:393) and Vakola and Rezgüi (2000:175):

“Learning is the process by which knowledge is created from experience and the path by which improvement takes place.”

Whereas more recently, Tukul *et al.* (2008:180) have relied on the definition proposed by Badiru, entailing that learning refers to improved efficiency obtained from the repetition of individual tasks.

It seems evident that the concept of learning should at the very least include reference to the assessment of past experience and result in some form of future improvement. Bearing this in mind, several definitions for organisational learning have emerged, attempting to identify the characteristics that would categorise the concept of learning as “organisational”. Some of the most common definitions associated with organisational learning are reflected in Table 2.1.

Table 2.1: Definitions of Organisational Learning

AUTHOR	DEFINITION
Fiol and Lyles (1985:17) as quoted by Kotnour (2000:393) and Vakola and Rezgui (2000:175)	<i>“...the process of improving actions through better knowledge and understanding.”</i>
Argyris (1994:8)	<i>“Organisational learning is defined as occurring under 2 conditions:</i> <i>• When an organisation achieves what is intended; that is, there is a match between its design for action and the actuality or outcome;</i> <i>• When a mismatch between intentions and outcomes is identified and it is corrected, that is, a mismatch is turned into a match.”</i>
Argyris and Schon (1996:16)	<i>“Organisational learning occurs when individuals within an organisation experience a problematic situation and enquire into it on the organisational behalf.”</i>

Reynolts and Ablett (1998:26)	<i>"Organisational learning is where learning takes place that changes behaviour of individuals or groups within the organisation."</i>
Hong (1999:174)	<i>"Organisational learning occurs when the individual members detect the discrepancy between actual and expected results, and try to correct the errors or challenge the underlying assumptions."</i>
Cummings and Worley (2005:497)	<i>"Organisational learning is a change process which enhances an organisation's capability to acquire and develop new knowledge."</i>
Lopéz et al. (2005:227)	<i>"Organisational learning can be defined as a dynamic process of creation, acquisition and integration of knowledge aimed at the development of resources and capabilities that contribute to better organisational performance."</i>

The concept of organisational learning is further confused by the question as to whether it is an individual-level or organisational-level process; that is, does it manifest itself as the aggregate of all individual learning that occurs in an organisation (individual-level learning) or on an organisational level as embedded in the various routines, policies and organisational culture (Snyder & Cummings, 1998:875). Snyder and Cummings (1998:875) propose an integration of these levels of learning and argue that learning is organisational when:

- a) It is done to achieve organisational purposes;
- b) It is shared or distributed among members of the organisation; and
- c) Learning outcomes are embedded in the organisation's systems, structures and culture.

The variances in the numerous conceptualisations of organisational learning are not surprising, as the evaluation of organisational learning issues has been subject to a diversity of perspectives. From an economist's perspective, organisational learning is essentially "*simple quantifiable improvements in activities*" aimed at some positive outcome, whereas the management and business literature equates organisational learning with "*sustainable comparative efficiency*" and the innovation perspective propagates the promotion of "*comparative innovative efficiency*" (López *et al.* 2005:228).

The major shortfall synonymous with these various perspectives relates to their focus on examining the outcomes of learning, rather than exploring what learning actually is and how these outcomes are achieved. A traditional evaluation of organisational learning practices typically tended to evaluate the processes involved in knowledge acquisition and its distribution throughout the organisation (López *et al.* 2005:228). From an organisational perspective, organisational learning theory should focus on identifying and examining the processes of learning and the outcomes associated with these processes so as to ultimately determine whether the various outcomes are aligned with and supportive of the collective strategic objectives of the organisation (López *et al.* 2005:228).

Based on an extensive review of the various theoretical contentions of the concept of organisational learning, López *et al.* (2005:229) identify a set of common dimensions or phases generally associated with organisational learning:

- a) Knowledge acquisition through external sources or internal development;
- b) Distribution processes by means of which knowledge is spread among the members of the organisation;
- c) Interpretation activities during which individuals share and incorporate aspects of their knowledge which are not common to all of them, achieving a shared understanding as well as co-ordination in decision-making; and
- d) Organisational memory development which has the aim of storing knowledge for future use, either in organisational systems designed for this purpose or in the form of rules, procedures and other systems.

Whereas these dimensions or phases expand on the traditional emphasis placed on knowledge acquisition and distribution processes, it is the author's respectful view that the picture is by no means complete. The phases/dimensions lack incorporation of the processes involved in adjusting the corporate memory to conform with the variances in both the external and internal environment in which organisations operate, and the

communication of these adjustments to all the individuals in the organisation that would be required to align their behaviour or actions accordingly; hence a fifth and sixth dimension are proposed:

- e) Evaluation of organisational memory against newly acquired information and adjustment of the stored knowledge as incorporated in organisational systems designed for this purpose or in the form of rules, procedures and other systems; and
- f) Distribution processes by means of which revised knowledge is spread among the members of the organisation so as to coordinate decision-making in accordance with newly acquired knowledge and consequent organisational change.

The addition of a fifth and sixth dimension introduces a supplementary concept in the realm of organisational learning, that is, knowledge management. Many organisational development theorists use the terms organisational learning and knowledge management interchangeably when conceptualising the broad set of activities through which organisations learn, acquire and organise knowledge (Cummings & Worley, 2005:497-498), whereas the focus in organisational learning interventions falls mainly on the organisational structures and social processes that facilitate learning and the sharing of knowledge amongst employees and teams. Knowledge management interventions, on the other hand, focus on the tools and techniques utilised by organisations to collect, organise and translate information into useful implementable knowledge (Cummings & Worley, 2005:498). As such, knowledge management and the organisational knowledge it generates is largely a key outcome of and dependent on the organisational learning practices of the organisation (Cummings & Worley, 2005:505).

This distinction draws attention to a likely division in the traditional organisational structure from which these two interventions or organisational tools draw their conceptualisation and resources: organisational learning interventions originating predominantly from the human resources function of the organisation and knowledge management interventions, predominantly from the information systems function of the organisation (Cummings & Worley, 2005:498).

The implication of such a division is that an organisation striving to implement effective organisational learning and improved performance will have to ensure that it eliminates departmental and structural barriers to the sharing of information, ideas and knowledge amongst organisational members and teams (Kreitner & Kinicki, 2004:639).

In order to elicit a clear understanding of how organisational learning strategies can serve as a performance enhancement tool, one must consider how organisational learning affects organisational performance. In this regard some reliance is placed on the model proposed by Snyder and Cummings (1998:875-876) as expanded by Cummings and Worley (2005:498-505). Figure 2.1 provides an integrative framework for understanding the role of organisational learning and knowledge management interventions in the achievement of organisational performance and illustrates the interrelated nature of organisational learning and knowledge management as business enhancement tools.

Figure 2.1: How Organisational Learning Affects Organisation Performance

As shown in Figure 2.1, there are several characteristics of an organisation that influence the effectiveness of the organisational learning processes. As indicated before, organisational learning and knowledge management processes draw from different parts of the organisation's structure, that is, the human resources and information systems functions. It follows that the effectiveness of the interactions and co-operation between these parts of the organisation's structure will determine the success of the resultant organisational learning processes.

There is a growing consensus amongst researchers that the following five interrelated categories of organisational characteristics are supportive of more effective organisational learning practices and processes (Cummings & Worley, 2005:498 and Nevis *et al.* 1995:73-74):

- a) **Structure** – the organisational structure is conducive to teamwork, networking across the organisational boundaries, both internally and externally, and is based on a flattened structure with few layers and strong lateral relations;
- b) **Information Systems** – the organisation's information systems provide an infrastructure supportive of organisational learning initiatives and cater for rapid information acquisition, processing, sharing and knowledge management that facilitate competitive advantage;
- c) **Human Resources Practices** – human resources processes such as training, appraisals and rewards are designed to account for long-term performance and knowledge development that reinforces the acquisition and sharing of new skills;
- d) **Organisation Culture** – strong culture that promotes openness, creativity and experimentation amongst the organisational members and lays the foundation for successful learning practices; and
- e) **Leadership** – organisational learning and knowledge management interventions rely on strong leadership throughout the organisation that models the learning practices the organisation is aspiring to and provides the required leadership support to ensure its effective implementation.

These characteristics to a large extent determine the nature of an organisation's learning practices, the manner in which it occurs and the overall effectiveness of the organisational learning processes (Nevis *et al.* 1995:75; Cummings & Worley, 2005:500).

The model depicted in Figure 2.1 illustrates that organisational learning occurs once the various characteristics of the organisation mutually reinforces the organisational learning processes (Cummings & Worley, 2005:500). Since the organisational characteristics of each organisation are unique, it follows that organisational learning processes would also vary. For instance, basic assumptions about the *learning culture* lead to *learning values* and investments that produce a different learning style form a culture with another pattern of values and investment (Nevis *et al.* 1995:76). The various organisational learning

processes, discovery, invention, production and generalisation are consequently unique to every organisation, and are in turn interrelated and determinant of the organisational knowledge (Snyder & Cummings, 1998:875-876).

In essence, most organisations' learning processes can be classified under the four categories of organisational learning processes as depicted in Figure 2.1. Drawing on an analogous set of processes — enactment, selection and retention — identified by Campbell, Snyder and Cummings (1998:876) refer to these learning processes as “*recipes for organising*” and aptly summarise the operation and interaction of the various learning processes as follows:

“Successful learning occurs when organisations complete all four processes: they discover errors or dissonance between their desired state and their current state; diagnose the causes of this gap and invent appropriate solutions to alleviate it; produce the solutions through organisational actions and document the results; draw conclusions about the effects of the solutions and generalise the learning to relevant situations.”

Snyder and Cummings' summary of the various learning processes can be applied to three types of learning: single-loop, double-loop and deuterio learning (Cummings & Worley, 2005:501). The concept of double-loop learning was first introduced by Argyris and Schön's book, “*Organizational Learning*”, in 1978 (Cavaleri & Fearon, 2000:252; Argyris, 1994:9).

The various applications of learning processes to the three types of learning can be summarised as follows (Cummings & Worley, 2005:501; Cavaleri & Fearon, 2000:252; Argyris, 1994:8-9):

- a) **Single-loop Learning** – this occurs when errors are detected and corrected and organisations continue with the present status quo without modifying present policies and goals. In essence, single-loop learning focuses on improving the status quo through small incremental changes in how the organisation functions;
- b) **Double-loop Learning** – is aimed at challenging and changing the status quo and the existing assumptions and conditions within which the existing single-loop learning operates. It occurs when, in addition to the detection and correction of errors, the organisation questions and modifies its existing norms, procedures, policies and objectives and can lead to transformational change that radically alters the status quo;

c) **Deutero Learning** – this type of learning involves “*learning how to learn*” and occurs when organisations learn how to carry out both single-loop and double-loop learning. Deutero type learning focuses on the learning process itself and seeks to improve how organisations perform single- and double-loop learning.

In Figure 2.1, double-loop learning is depicted in the latter part of the model flow, when organisational knowledge acquired reflects changes in the external or internal environment of the organisation and requires the organisation to alter its competitive strategy and objectives to best react to the shifting conditions and to maintain its competitive edge – hence the adaptation of the model originally proposed by Cummings and Worley (2005:499).

Once the organisational learning processes translate into the organisational knowledge required to change and improve the organisation, the process of knowledge management has occurred, thus establishing knowledge management and the organisational knowledge it generates as a key outcome of the organisational learning practices of the organisation (Cummings & Worley, 2005:501 and 505).

Organisational knowledge manifests itself both explicitly as codifications such as documents, manuals and databases, and tacitly, as part of the organisation members’ skills, memories and intuitions (Cummings & Worley, 2005:505). However, whether evolving organisational knowledge will translate into organisational performance will largely depend on the manner in which the organisation utilises the knowledge, the timeframe within which it establishes new strategies to react to changes in the environment and whether such reactions are limited to obtaining short-term relief or aimed at long-term solutions that pre-empt the future trend.

Organisations relying simply on their traditional competence in cost and differential strategy find it increasingly difficult to sustain competitive advantage (Wang & Ahmed, 2003:13). Utilising organisational knowledge to facilitate a strategy of continual incremental improvement is not necessarily the solution to organisations which operate in hyper-dynamic markets (Wang & Ahmed, 2003:13) such as the technology driven and high risk markets of project management and construction in the mining and petrochemical industries. Innovations by competitors can undermine an organisation’s area of competence overnight and the traditional reactive strategies based on doing the same things better and cheaper are simply no longer adequate. It follows that organisational learning and knowledge management strategies based on problem-solving and information-processing will

simultaneously require a more innovative and pro-active approach (Wang & Ahmed, 2003:13).

Organisations need to step up and remove their deficiencies in terms of flexibility, pro-activeness and innovation required to succeed in a new business environment where today's status quo is unlikely to be that of tomorrow. This requires a shift in an organisation's learning focus towards innovation and creativity (Wang & Ahmed, 2003:13).

In order to circumvent incremental improvements, undermining competitive innovation and tardy responsiveness to environmental changes, Wang and Ahmed (2003:13-14) propose a shift in organisational learning focus to include innovation and creativity, characterised by features such as triple-loop learning and organisational unlearning that are supportive of creative thinking and organisational sustainability.

Triple-loop learning refers to the application of organisational knowledge by constantly questioning existing products, processes and systems and by strategically asking where the organisation should be positioned in the future marketplace (Wang & Ahmed, 2003:13). Triple loop learning goes beyond single and double loop learning by considering organisational knowledge based on a long-term strategic view of the organisation's future. For example, triple-loop learning will require the organisation to make incremental changes to facilitate its immediate competitiveness (single-loop learning), coupled with double-loop learning in order to determine how to adjust existing norms, policies, procedures and objectives to ensure transformational change. In addition, it will require a consideration of how the present transformation position which the organisation adopts for the future is based on the anticipated changes to the environment in which it operates. The third consideration could result in further pre-emptive transformational activities aimed at not only correcting current errors, but also at anticipating and avoiding future errors.

Closely linked to the concept of triple-loop learning is the requirement that organisations exercise organisational unlearning. In order to embrace incoming knowledge and use it productively a critical mass of knowledge and skills must already be present in the organisation. Without an appropriate knowledge base, new knowledge cannot be absorbed (Rebernik & Širec, 2007:416). However, existing knowledge and skills will be retained by individuals for as long as these produce positive results, despite the availability of new knowledge that can produce even better results (Wang & Ahmed, 2003:13). New knowledge and its potential for improved performance often only obtains recognition once existing knowledge and practices fail, and organisations need to understand the process of creating

and using new knowledge, while discarding obsolete knowledge to ensure innovative behaviour is fostered prior to the failure of existing practices (Wang & Ahmed, 2003:13; Rebernik & Širec, 2007:416).

In summary, organisational learning constitutes a distinctive and complex capability difficult to imitate, replicate and transfer. It results from the change and evolution through the specific history of each organisation. Moreover, organisational learning depends not only on the strategic and investment efforts of an organisation, but also on its previously accumulated knowledge or experience (absorptive capacity). Furthermore, the learning process is intrinsically social and collective and occurs not only through the imitation and emulation of individuals, but also by collaboration and interaction in understanding complex problems. The knowledge generated in this way is translated into new models of activity, routines and logic in the organisation.

2.3 THE LEARNING ORGANISATION

In order to create a better understanding of the concept "learning organisation", one must first evaluate the basic evolution of organisational systems over the years.

Organisational models have evolved and essentially developed from so-called closed systems to open systems (Kreitner & Kinicki, 2004:638).

Kreitner and Kinicki (2004:638) define a closed system as a *"self-sufficient entity"* that is *"closed to the surrounding environment,"* whereas an open system is dependent on *"constant interaction with the environment for survival"*. They argue that all worldly systems are partly closed and partly open, dependent on the role environmental changes play in the functioning of the system (2004:638).

Historically, management theorists believed that environmental uncertainty could be eliminated from the organisational milieu through rigorous control and planning; however this proved unrealistic (Kreitner & Kinicki, 2004:638). Founded in general systems theory that emerged during the 1950s, management theorists began to equate organisations to the human body, presenting organisations as living organisms that transform inputs into various outputs (Kreitner & Kinicki, 2004:638). This concept can be best understood with reference to Figure 2.2 depicting the organisation as a living organism that is able to transform various inputs into several outputs due to the permeability of its outer boundary (Kreitner & Kinicki,

2004:638). As such, the organisation is able to interact with its environment and able to respond to the variances it detects (Kreitner & Kinicki, 2004:638).

The interaction between an organisation and its external and internal environment as depicted in Figure 2.2 is closely linked to and strengthened by the latter part of the model flow depicted in Figure 2.1, when organisational knowledge acquired reflects changes in the external or internal environment of the organisation and requires the organisation to alter its competitive strategy and objectives so as to best react to the shifting conditions and to maintain its competitive edge. An open system perspective on organisations in essence attributes cognitive like functions to the organisation as it credits organisations with the capacity to perceive and interpret, solve problems and learn from experience (Kreitner & Kinicki, 2004:638).

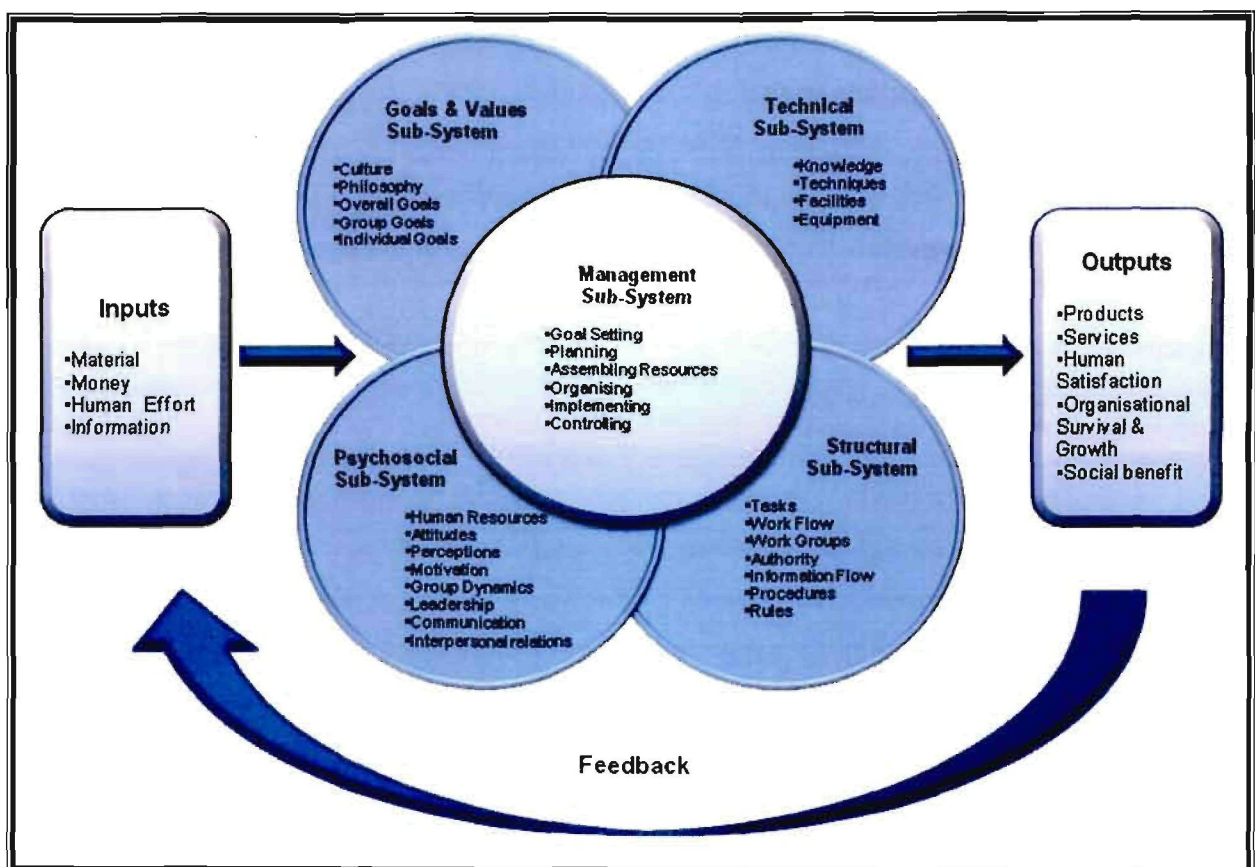


Figure 2.2: An Organisation as an Open System

Adapted from *Organisational Behaviour* (Kreitner & Kinicki, 2004:639)

Kreitner and Kinicki (2004:638-639) associate the open system perspective of an organisation and its human-like cognitive ability with the concept of a learning organisation which they define as:

“... one that proactively creates, acquires, and transfers knowledge and that changes its behaviour on the basis of new knowledge and insights.”

As was the case with the concept of organisational behaviour, the *“learning organisation”* is an equally elusive term that has been the subject of numerous attempts to define the core attributes of an organisation that can classify it as a so-called learning organisation. From the definition proposed by Kreitner and Kinicki (2004:638-639) it is evident that a learning organisation has the ability to perceive, interpret and solve problems and to learn from past experiences. Table 2.2 summarises the more common definitions attached to the concept of a learning organisation:

Table 2.2: Definitions of a Learning Organisation

	DEFINITION
Senge (1990:14)	<i>“... an organisation continually expanding its capacity to create its future.”</i>
Garvin (1993:80)	<i>“... an organisation skilled at creating, acquiring and transferring knowledge, and at modifying its behaviour to reflect new knowledge and insights.”</i>
Reynolts and Ablett (1998:26)	With reference to the definition proposed by Tjepkema and Wognum (1996) Reynolts and Ablett propose the following working definition: <i>“where learning is taking place that changes the behaviour of the organisation itself. Hence organisational learning has reached the stage of successful adaptation to change and uncertainty through the development of new solutions.”</i>
Evans	<i>“A learning organisation is one that promotes learning among its</i>

(1998:201)	<i>employees – but, more importantly, is an organisation that itself learns from that learning.”</i>
Hong (1999:174)	<i>“... an organisation where people continually expand their capacity to create the result they truly desire, where new and expansive patterns of thinking are nurtured, where collective aspiration is set free and where people are continually learning how to learn together.”</i>

It is apparent from the various definitions, that a learning organisation is one that displays certain characteristics. Evans (1998:201) attempts to summarise the characteristics most commonly attributed to learning organisations as:

- a) Lacking a highly formalised and clearly evident command and control structure;
- b) Valuing individual and organisational learning as a prime means of delivering the organisational mission;
- c) Not viewing the workforce as a collection of passive, hired hands;
- d) Not believing that technology will solve future organisational problems;
- e) Involving all their members through continuous reflection in a process of continual review and improvement; and
- f) Structuring work in such a way that work tasks are used as opportunities for continuous learning.

Whereas the aforementioned characteristics are all highly commendable traits of a learning organisation, Reynolds and Ablett (1998:28) emphasise the importance of empowerment as key to any organisation’s ability to respond to a changing environment and identify a set of preconditions required for the transformation from organisational learning to a learning organisation – *“organisations need to think in new ways, to leverage new tools, to travel through new territories and to reframe organisational assumptions”*.

In theory, the transformation to a learning organisation appears to be such an attainable feat; however, the management paradigm of the learning organisation has not gained wide acceptance in isolation. Some of the more common implemental stumbling blocks have been highlighted by the research of Reynolds and Ablett (1998:30):

- a) Difficulty in interpreting some of the initiatives – outcomes were promised but the route was unclear;
- b) Lack of clarity of some outcomes making evaluation impossible;
- c) Inappropriate and rigid organisational structures and systems;
- d) Inadequate diagnosis of initial behaviours, skills, values and systems;
- e) Insufficient time scales; and
- f) Difficulties associated with the implementation of human resource development initiatives in isolation.

However, sweet are the recollections of difficulties overcome – so how do organisations go about transformation into the elusive learning organisation?

To date organisational learning scholars have been unable to conclusively define what an ideal learning system would be for any particular organisation (Buckler, 1998:17). However, substantial agreement exists that learning processes are at the heart of any such intervention process (Buckler, 1998:17; Reynolds & Ablett, 1998:26).

Buckler (1998:17-21) has compiled a learning process model based on researching a number of recognised theories relating to learning and change in organisations on which the author will briefly reflect in order to illustrate the key elements of the proposed model and its practical application.

By way of introduction, Buckler's (1998:17) proposed model starts off by reflecting on the two extremes in terms of learning methodologies, that is, taught methodologies versus discovery or innovation driven methodologies. A tabulated comparison of these two extremes is presented in Table 2.3. With reference to the earlier summary by Evans (1998:201) of the various characteristics associated with learning organisations, it is evident that taught methodologies may severely conflict with these inherent characteristics. However, Buckler (1998:17) acknowledges that taught methodologies have a role to play in terms of certain manufacturing processes where conformity to a specification is essential and innovation is limited to the province of the research and development department.

Insofar as transformation into a learning organisation is concerned, it follows that organisations prone to taught learning methodologies would require a far more revolutionary transformational change approach versus smaller and incremental changes to acquire the

discovery and innovation driven characteristics called for in most learning organisations, especially in terms of culture and empowerment structures.

Table 2.3: Learning Methods – Two Extremes

Adapted from Organisational Behaviour, (Buckler, 1998:17)

	Taught 	Discovery
Model	• Learn theory based on research. • Test by application. • Change behaviour. • Teach others, until better theory is developed.	• Identify problems. • Experiment to discover solutions. • Develop theory. • Change behaviour. • Apply to similar situations.
Focus	• Teacher-centred. • Learning managed by the organisation.	• Learner-centred. • Learning managed by the individual.
Motivation	• Extrinsic.	• Intrinsic.
Culture	• Controlled. • Bureaucratic.	• Empowered. • Autonomous.
Theoretical Basis	• Behaviourist school – Skinner <i>et al.</i> • Determinism.	• Gestalt school – Kohler <i>et al.</i> • Free will.
Advantages	• Consistency. • Conformity.	• Creativity. • Innovation.

	• Low risk.	• Responsiveness to customers.
Disadvantages	• Can stifle intrinsic motivation. • Can cause conditional responses which create barriers to change and learning.	• Can focus on personal rather than organisational objectives. • Higher risk of failure.

Buckler (1998:18-19) then turns to the actual learning process and explores the various stages involved as depicted in Figure 2.3.

In Buckler's (1998:18) proposed process, individuals will move through the learning stages, driven by their inherent individual motivation to learn, but restrained by real or imagined barriers to learning. In situations where the driving and restraining forces are matched, learning will not take place. In transforming an organisation into a learning organisation, it will be important to identify and eliminate these barriers to learning.

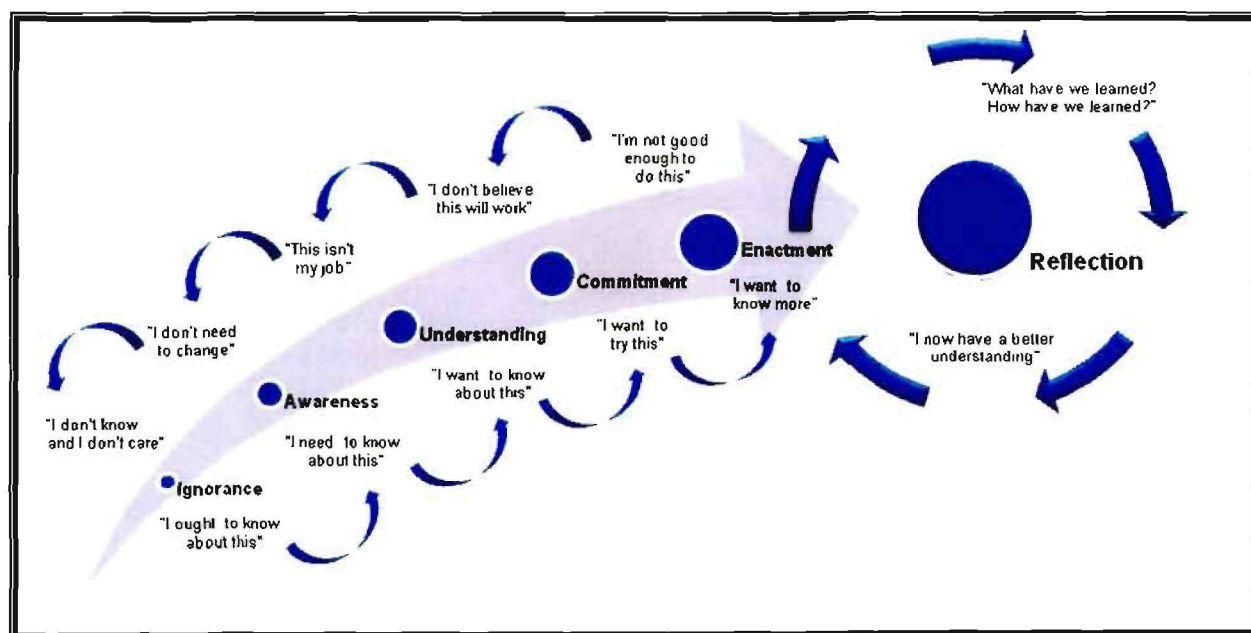


Figure 2.3: The Stages of Learning

Adapted from *Practical Steps Towards a Learning Organisation* (Buckler, 1998:19)

For organisational learning to result in performance improvement, behavioural change is required, which will only occur when the enactment stage of the learning process is reached

as depicted in Figure 2.3. However, in order to establish whether those actions are effective, it will be necessary to pass through the reflection stage.

Taught learning methodologies (Table 2.3), and the control orientated and bureaucratic mindset which often accompanies them, can create a massive barrier, preventing movement to the reflection stage. However, without reflection there is unlikely to be continual improvement.

Buckler (1998:19-20) expands on the learning process model as depicted in Figure 2.3 by adding a leadership dimension and arguing that the role of the organisational leaders in facilitating movement through the learning process, by interacting with individuals and teams, is crucial for success.

For the learning process as depicted in Figure 2.3 to be effective, there is a need for interaction between teacher (manager) and pupil (staff), working together to (Buckler, 1998:18-19):

- a) Develop a shared vision of what they are trying to achieve;
- b) Identify and remove barriers to learning; and
- c) Enable new ideas to be tried and evaluated, whilst managing the associated risks.

This style of leadership does not sit easily with a control orientated and bureaucratic mindset and managers will need to change their behaviour if they are to manage the learning process effectively (Buckler, 1998:19). In addition, Buckler (1998:19) warns that the difficulty which organisational members may experience in altering behaviour which has resulted from years of conditioning by the “culture” of an organisation should also not be underestimated.

By developing a deep understanding of the learning process, managers will be capable of the change in behaviour which will be necessary to design and implement a systemic approach to learning in an organisation and the ultimate transformation to a learning organisation.

Transformation into a learning organisation clearly entails something different for each individual organisation as it will depend on their existing structures, culture, external and internal environment and approaches to learning. The essence of what would constitute a learning organisation is, however, paramount and aptly summarised by Kreitner and Kinicki (2004:639):

“Learning organisations actively try to infuse their organisations with new ideas and information. They do this by constantly scanning their external environments, hiring new talent and expertise when needed, and by devoting significant resources to train and develop their employees. Next, new knowledge must be transferred throughout the organisation. Learning organisations strive to reduce structural, process, and interpersonal barriers to the sharing of information, ideas and knowledge among organisational members. Finally, behaviour must change as a result of new knowledge. Learning organisations are results oriented. They foster an environment in which employees are encouraged to use new behaviours and operational processes to achieve corporate goals.”

2.4 ORGANISATIONAL LEARNING IN PROJECT MANAGEMENT ORGANISATIONS

The focus of this study is directed at organisations that manage construction projects as a core business and that operate in a project management environment. Being concerned with overseeing substantial projects on a regular and recurrent basis, it is therefore essential that these organisations learn from experience so that they may achieve continuous improvement and maintain a competitive edge, that is, to ensure that they are not getting worse at what they do.

Based on our discussion of organisational learning and the learning organisation, project-based organisations appear ideally positioned to operate as learning organisations since project team members work on the same goals and share joint responsibility for a particular project.

However, project-based organisations also have limitations. Projects are typically identified by the key element of being a one-off task with a finite completion (Wu, 2005:1; Kasvi *et al.* 2002:571). This may cause project teams to become isolated from one another as they focus on their specific project team and goals, largely ignorant of what happens in the external realm of their project (Wu, 2005:2). Whereas such a situation might seem ideal for internal communications amongst team members, it simultaneously creates the potential for a team to become dismissive of the ideas generated by other teams. In addition, the members of the specific project team establish an internal culture of “how we do things” which could lead to the inability to create new ideas and innovations (Wu, 2005:2; Ajmal *et al.* 2007:6-7).

As projects are becoming more complex and constrained (in terms of increasingly tighter schedules, budgets and higher quality or specifications required by clients), organisations need to learn how to share the knowledge and experiences of their team members; not only among members in a specific project but also between projects within an organisation and between project phases (Wu, 2005:2). For project management organisations it has become pertinent to understand what constitutes the organisation's learning capacity since this might be its only sustainable competitive advantage (Wu, 2005:2; Ajmal *et al.* 2007:2).

This study attempts to gain a preliminary understanding of the state of learning in project management organisations by examining whether organisations facilitate sharing of project experiences, how they do it (i.e. what formal and/or informal methods are applied) and whether the methods they use are effective in solving problems and improving performance. There is a limited amount of literature available dealing specifically with project management organisations as learning organisations – hence this section will highlight only some of the more pertinent theories that apply to the objectives of the study. However, the results obtained from the empirical study conducted in terms of Chapter 3 will serve as a supplementary foundation to provide some insight into the obstacles faced by project management organisations in transforming the rhetoric of organisational learning to the reality of a learning organisation.

The learning process and its fundamental importance in organisational learning initiatives have been addressed under Sections 2.2 and 2.3 respectively. In a project management environment, project team members learn by executing a task which results in improved performance in the task at hand as well as in succeeding tasks (Tukel *et al.* 2008:180). Improved performance is typically achieved by reducing task times, project cost savings, and reduced project duration (Tukel *et al.* 2008:180; Kotnour, 2000:394). The accumulated learning on a particular project represents the knowledge generated during the implementation of that project; however, for such knowledge to have value for the organisation it must be transferrable to other projects (Tukel *et al.* 2008:180).

By transferring the knowledge to other projects and challenging and modifying the existing norms, procedures and policies prevalent in the organisation and in other projects, the organisation will achieve double-loop learning as discussed previously under Section 2.2

A variety of methods to transfer knowledge have been suggested by the literature that include personnel movement (Tukel *et al.* 2008:180), personnel observation through peer

group interaction and review meetings (Kotnour, 2000:395), technology transfer (Tukel *et al.* 2008:180), alliances, training, patents and publications (Tukel *et al.* 2008:180).

Tukel *et al.* (2008:180) argue that each time a new project begins, learning does not necessarily commence from the beginning. Project team members can transfer previous skills and knowledge to new operations. In addition, Koskinen *et al.* (2003:285-288) suggest that tacit knowledge is a critical part of the project management organisation and can be shared and utilized through the interaction of the members of a project team, provided such interaction is based on appropriate language and communication channels, trust and corporeal proximity. However, team members may be reassigned to other projects before an existing project completely shuts down (Kasvi *et al.* 2002:571) and these authors recommend project close-out documents as a means of collecting the knowledge generated during a project, which can then be transferred to future projects (Koskinen *et al.* 2003:285-286).

At the commencement of every new project, the point at which learning begins anew is dependent on the similarity of the new task and previously performed tasks, as well as the extent to which “lessons-learned” from past projects were transferred and made available to the project members of the new project (Kotnour, 2000:396).

Tukel *et al.* (2008:181) furthermore propose that the length of time between the executions of successive projects will influence the quality and relevance of the transferred knowledge. They argue that long lapses between projects expose the knowledge gained from one project to changes in the project environment such as personnel turnover and technology revolutions, affecting the contextualisation of previously acquired knowledge and, in some instances, making previously acquired knowledge obsolete (Tukel *et al.* 2008:181).

A traditional and widely supported perspective on the project management life cycle proposes four basic phases (Wideman, 2004:4; Kasvi *et al.* 2003:573; Flanagan & Finger, 1998:298-299):

- a) **Project initiation** — within the initiation phase, the business problem or opportunity is identified, a solution is defined, a project is formed and a project team is appointed to build and deliver the solution to the customer;
- b) **Project planning:** once the scope of the project has been defined in the terms of reference, the project enters the planning phase. This involves creating a:

- i. Project plan outlining the activities, tasks, dependencies and timeframes;
- ii. Resource plan listing the labour, equipment and materials required;
- iii. Financial plan identifying the labour, equipment and materials costs;
- iv. Quality plan providing quality targets, assurance and control measures;
- v. Risk plan highlighting potential risks and actions to be taken to mitigate those risks;
- vi. Acceptance plan listing the criteria to be met to gain customer acceptance;
- vii. Communications plan describing the information needed to inform stakeholders;
and
- viii. Procurement plan identifying products to be sourced from external suppliers.

At this point the project will have been planned in some detail and is ready to be executed;

- c) **Project execution:** This phase involves implementing the plans created during the project planning phase. While each plan is being executed, a series of management processes are undertaken to monitor and control the deliverables being output by the project. This includes identifying change, risks and issues, reviewing deliverable quality and measuring each deliverable produced against the acceptance criteria. Once all of the deliverables have been produced and the customer has accepted the final solution, the project is ready for closure; and
- d) **Project closure:** Project closure involves releasing the final deliverables to the customer, handing over project documentation to the business, terminating supplier contracts, releasing project resources and communicating the closure of the project to all stakeholders. The last remaining step is to undertake a post implementation review to quantify the level of project success and identify any lessons learnt for future projects.

The typical traditional project management life cycle is depicted in Figure 2.4, and although it allows for a post implementation review at the end of the project's life cycle, hardly any defined step or slot for organisational learning activities is included. As discussed later in this section, the positioning of organisational learning initiatives at the conclusion of a project life cycle is subject to criticism and could detract from the value of knowledge gained during the project.

In order to assess how organisational learning practices are integrated in the project management environment in a manner that will enable project management organisations to

learn from past project experiences and to improve project knowledge and performance, one must first review the learning framework which defines the learning processes typically applicable in a project management environment. In this regard, the plan-do-study-act (PDSA) model, as proposed by Kotnour (2000:394-397), shall be used to examine the learning processes typically associated with a project management environment.

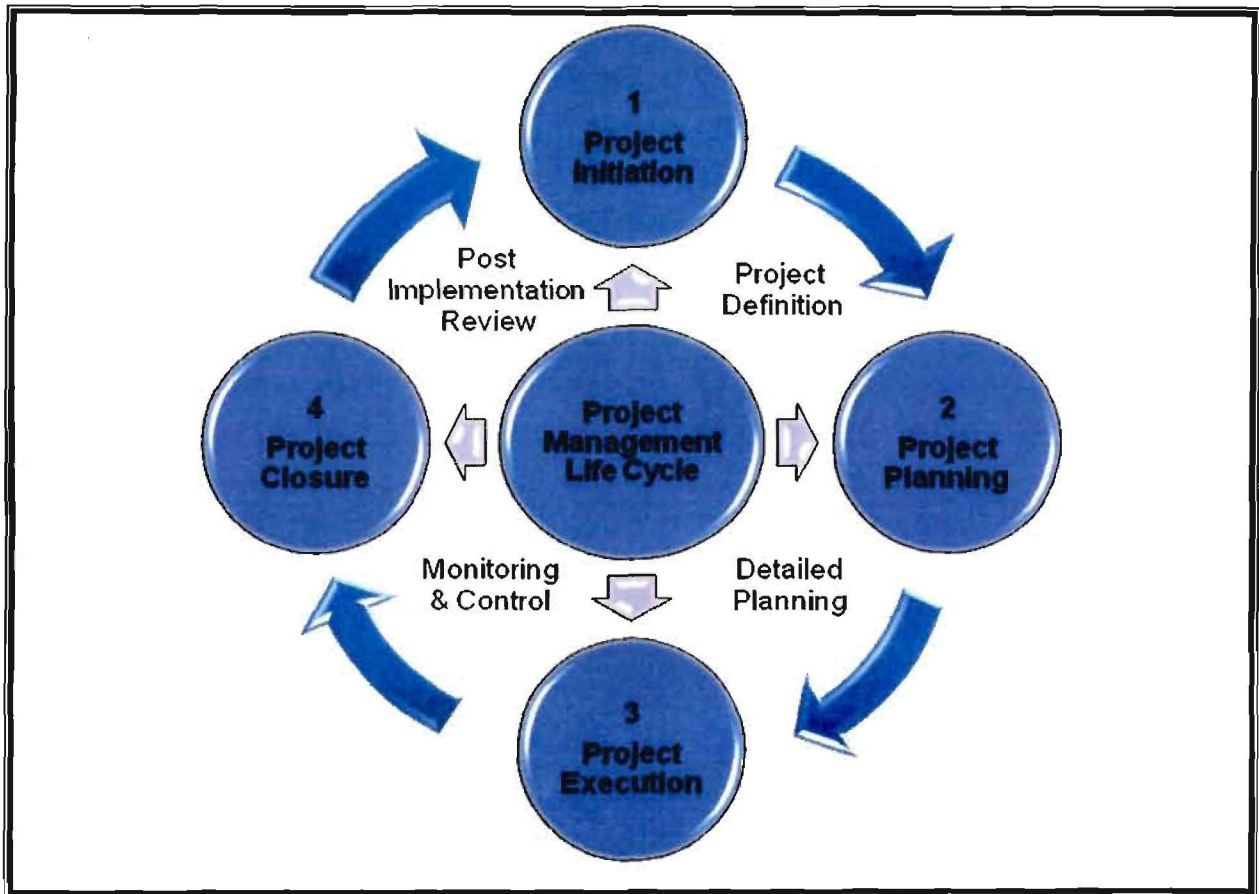


Figure 2.4: The Four Phases of the Project Life Cycle

Adapted from *A Management Framework for Project, Program and Portfolio Integration* (Wideman, 2004:4)

Kotnour and Vergopia's (2005:1) research provides a theoretical description of the relationship between project management barriers and organisational learning. It assumes that the project organisation requires knowledge and questions how the project manager can support the creation and sharing of knowledge. Their theory offers knowledge management as an approach to foster learning in project organisations (Kotnour & Vergopia's, 2005:1).

As discussed previously under Section 2.2, knowledge management interventions focus on the tools and techniques utilised by organisations to collect, organise and translate

information into useful implementable knowledge (Cummings & Worley, 2005:498). Kotnour and Vergopia (2005:1) assert that for multi-project organisations, in other words, those that execute multiple projects in sequence and/or concurrently, there is an urgency to build a learning organisation through knowledge management. They argue, that by sharing knowledge developed across projects, multi-project organisations will be able to increase their knowledge and capabilities while improving performance and remaining competitive (Kotnour and Vergopia, 2005:1; Kotnour, 2000:395).

Kotnour's PDSA model (2000:394) views project management and learning processes as integrated and serves to represent the learning process in a project environment (Kotnour & Vergopia, 2005:2).

In accordance with the model, learning in the project environment can be described using four steps (Kotnour, 2000:394-395; Kotnour & Vergopia, 2005:2):

- a) In the "plan" step, the project team determines the nature of the problem and constructs a plan. The plan is a set of expectations about the set of steps to take and the expected results;
- b) In the "do" step, the project team implements the plan. Implementation produces a set of results about the expected and unexpected actions taken, and associated performance such as cost, schedule, or technical performance. These results are used to understand project status and to move the project forward;
- c) In the "study" step, the project team reflects on the associated plans and results in order to determine the good and bad instances. The output of the "study" step is a lesson learned; and
- d) The "act" step is the closing of the loop to show the decision to continue with or abandon the process of improvement.

Kotnour and Vergopia (2005:2) emphasize that the learning process may fail in the "plan" step by not developing an initial, realistic plan that provides a baseline to which one can compare actual results, or by not reviewing past plans and lessons learned to apply to the current project.

In the "do" step, learning might break down if the project members do not follow the plan or fail to collect data on the performance and changes to the plan (Kotnour & Vergopia, 2005:2). Learning can fail in the "study" phase by not analyzing project performance with project control processes/tools, not completing lessons learned, or not completing those that

focus on the three processes of project management, product, or learning (Kotnour & Vergopia, 2005:2). Finally, the learning can fail in the "act" step if project members do not share with or incorporate lessons learned into the next project (Kotnour & Vergopia, 2005:2).

The PDSA model is often depicted as a *"ramp of improvement"* — as each full PDSA cycle comes to completion, a new and slightly more complex project can be undertaken based on the knowledge garnered from the previous cycle as depicted in Figure 2.5. This rolling over feature is integral to the *continual* improvement process (Dartmouth College, 2008).

Kotnour and Vergopia (2005:2) profess that the production of lessons learned assists in the learning process in project management organisations as it facilitates the transfer of lessons learned from one project cycle to the next and to new projects. They describe a lesson learned as a *"catchall phrase describing what has been learned from experience"* and as *"a tool for learning"* (2005:2). The barriers to organisational learning and knowledge dissemination are bridged by a lesson learned regarding several material facets (Kotnour, 2000:396):

- a) The process of developing a lesson learned provides an opportunity for the project team to take reflective time to gain a full understanding of project results.
- b) The process of building lessons learned via the PDSA cycle represents the process of identifying actions as desirable or undesirable and devising procedures for overcoming or achieving the actions. The lesson learned should describe the actions to take or avoid on similar projects;
- c) A lesson learned is a mechanism to document the learning to share with others. For example, lessons learned support the planning function in the PDSA cycle by providing information and knowledge gained from one PDSA cycle to another either within the current project or another project.

Despite the value ascribed to lessons learned as an organisational learning tool, Kotnour and Vergopia (2005:2) acknowledge that its contribution is impaired by the organisational practice of postponing lessons learned to the end of a project as part of the post-project review process and by the unavoidable bias of project members when selecting themes for the creation of the lessons learned.

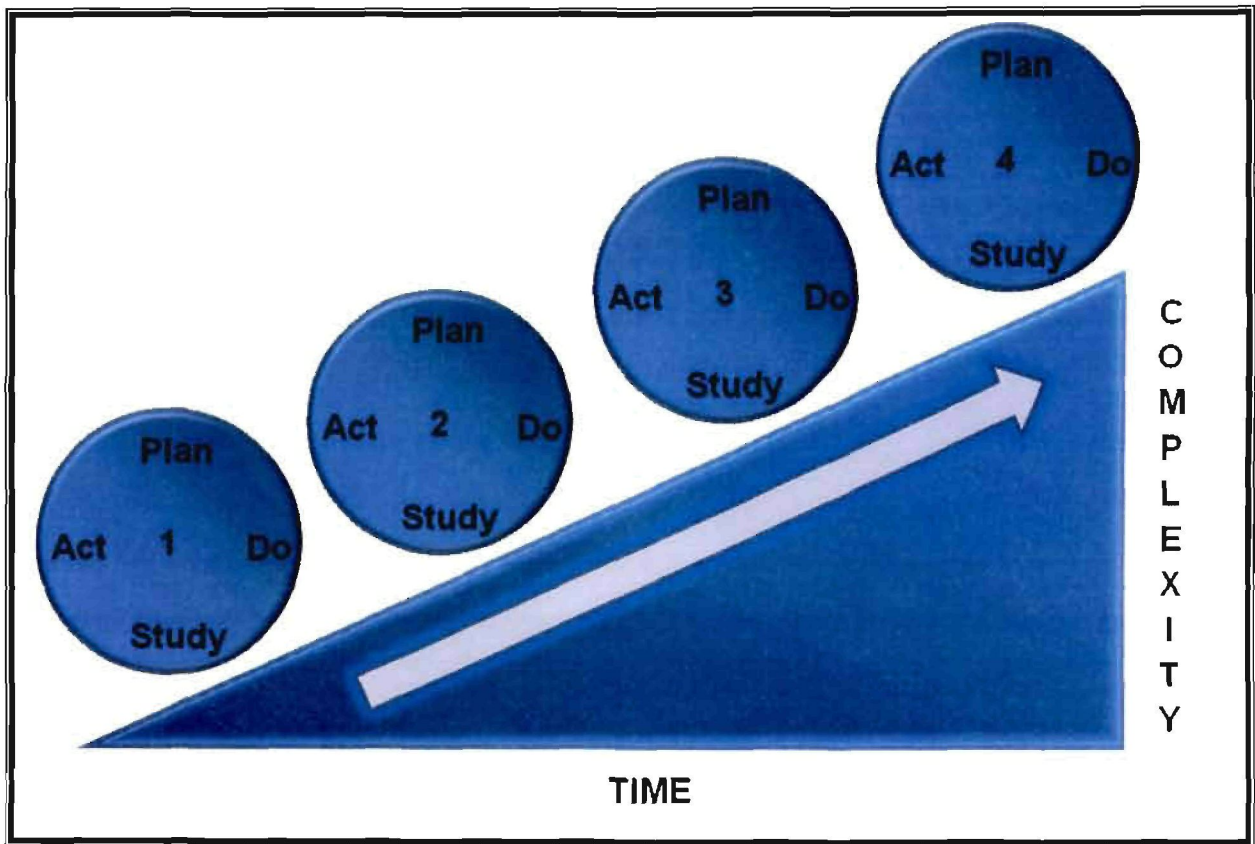


Figure 2.5: The Ramp of Improvement

Adapted from *The Clinician's Bag of Quality Improvement Tools* (Dartmouth College, 2008)

In the first instance, the postponement of the creation of lessons learned to the completion of the project limits its value in terms of transferring knowledge between project phases, coupled with the inherent risk of information being lost or incomplete due to the normal forgetfulness associated with the passing of time. In the latter instance, the bias of project team members when selecting issues for which lessons learned should be generated could distort the results as these might be limited to more recent and more memorable events and to the exclusion of those issues for which the relevant individual feels accountable. This serves to emphasize the need for less bureaucratic and controlled organisational structures and cultures as characteristic of the learning organisation and as discussed in more detail in Section 2.3

Similar shortcomings to those associated with lessons learned, are associated with the post-project review (PPR) process, and Kotnour and Vergopia (2005:2) propose that the ongoing PPRs, throughout the life of a project, possibly at the conclusion of specific tasks of phases, could alleviate some of these deficiencies.

Cuel and Manfredi (2006:262) explored the transformation of project based organisations to what they termed “*project learning organisations*” and, through the use and integration of various knowledge management solutions, expanded on the traditional project life cycle as addressed above (Figure 2.4). Cuel and Manfredi (2006:262-263) propose that the project life cycle of a project learning organisation should be structured in five phases:

Phase I

The analysis phase that is composed of:

- a) definition of the goal, namely the statement of work;
- b) generation of a shared understanding among the team members (such as the customer consultation);
- c) identification of technical and managerial resources (such as time, budget, etc.); and
- d) definition of the typology of the project.

Phase II

The planning phase that is based on:

- a) investigation into the availability of knowledge internal to and available outside the organisation;
- b) knowledge creation activities (such as brainstorming, brain writing team learning and team building activities); and
- c) scheduling of resources to manage.

Phase III

The action – implementation phase that consists of:

- a) programme execution; and
- b) problem-solving interventions.

Phase IV

The measurement - results control phase:

- a) if the result is satisfactory, the project will pass to the last phase; and
- b) if the result is rejected, the project will return to the planning or to the action phases.

Phase V

The memorizing and alignment phase – experts' knowledge should be spread across the organisation through best practices (codification strategy), storytelling (personalisation strategy), and formal/informal meeting and interaction.

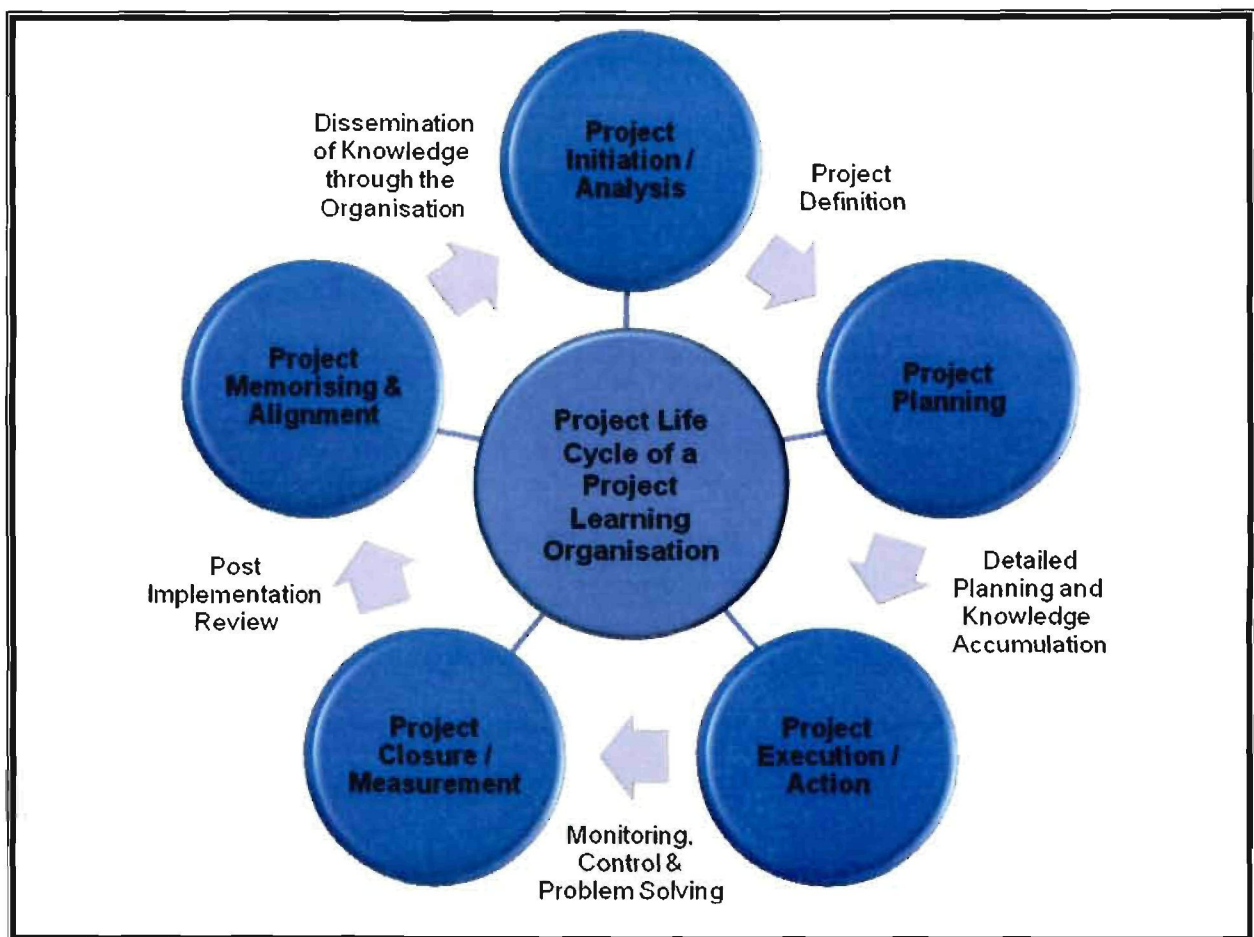


Figure 2.6: The Project Life Cycle of a Project Learning Organisation

Adapted from *A Management Framework for Project, Program and Portfolio Integration* (Wideman, 2004:4) and *The Project Life Cycle for the Project Learning Organisation* (Cuel & Manfredi, 2006:262-263)

Consequently, the four phases of the project life cycle as presented in Figure 2.4 would adapt and expand to give effect to Phase V – the memorizing and alignment phase included

in the project life cycle of project learning organisations and would be more accurately represented by Figure 2.6.

It is apparent that there are various theoretical applications of various organisational learning and knowledge management interventions that could be applied to transform organisations into learning organisations, or, in the case of project management organisations, to project learning organisations.

To date, organisational learning scholars have been unable to define conclusively what an ideal learning system would be for any particular organisation. Because learning processes are inextricably interrelated, it is more expedient to identify learning problems than to specify in practical or theoretical terms what an ideal learning system looks like for any specific organisation. Hence there is a need to summarise the key deficiencies in organisational learning strategies when attempting to implement these strategies in a project management organisation – the implemental conundrum.

2.5 CONCLUSION OF THE LITERATURE STUDY – THE IMPLEMENTAL CONUNDRUM

Chapter 2 represents a discussion of the literature study that was conducted in order to:

- a) Present a preliminary review and critical discussion of the key concepts in organisational learning literature and to elicit an understanding of this field, its application and implemental flaws;
- b) Explore the relationship between organisational learning and the concept of a learning organisation;
- c) Identify the various shortcomings of organisational learning strategies as recognized by literature; and
- d) Identify the existing theoretical solutions to addressing the deficiencies highlighted.

The aim of the literature study was thus to gain theoretical knowledge of organisational learning strategies and the implemental shortcomings of these strategies in the creation of a “learning organisation” insofar as it is applicable to a project management environment.

The concepts of organisational learning and the learning organisation were studied in greater detail in terms of the various elements consisting of the characteristics ascribable to these and the applicable implemental stratagems.

The evaluation of organisational learning highlighted that there is often a chasm between the process during which an organisation acquires knowledge and the path by which improvement takes place as a result of such newly acquired knowledge. This failure is partially attributed to the focus on the outcomes of learning rather than on exploring what learning really is and how the outcomes of learning are achieved.

The deficiencies in the various phases of organisational learning were identified as being ignorance of the processes involved in adjusting an organisation's corporate memory to conform to the variances in the internal and external environments to which the organisation is exposed and to adjust the organisational actions accordingly. This addition in turn focussed the attention on the importance of knowledge management in an organisation, emphasizing the organisation's need for tools and techniques to collect, organise and translate information into valuable implementable knowledge and to ensure that organisational members can obtain rapid access thereto.

The introduction of the concept of organisational knowledge, emphasized the need for organisational structures to allow for teamwork and networking across organisational boundaries since learning processes and knowledge management are often grouped under completely exclusive structures.

The vital roles of organisational leadership and organisational culture in the organisational learning processes became apparent and underlined the need for empowerment and openness to be encouraged and valued in order to facilitate creativity and innovation. These roles were coupled with the concept of triple-loop learning, requiring the organisation to challenge the status quo, not only in terms of short-term transformation, but also in terms of long-term positioning of the organisation.

The phenomenon of a learning organisation was explored and many of the organisational requirements highlighted under organisational learning practices were attributed to the repertoire of such an organisation. Of specific importance, were the various stages of learning normally associated with a learning organisation and the diagrammatic depiction thereof in Figure 2.3.

In the context of a project management organisation, the unique structure and characteristics of project management organisations came to the forefront, such as independent project team structures and their potential for isolation from the remainder of the organisation and ignorance of external organisational knowledge.

A major challenge facing all multi-project organisations, is the transfer of organisational knowledge across projects and project phases. Various solutions are offered by the literature, including:

- a) Personnel movement;
- b) Peer group interactions;
- c) Review meetings;
- d) Technology transfers;
- e) Training;
- f) Publications and patents; and
- g) Compilation of project close-out documentation.

Whereas all the various proposed solutions have some merit in terms of facilitating organisational knowledge transfer across projects and phases, the biggest shortfall in the transferability of knowledge was not rooted in the availability of transfer tools, but in the application of these tools at various time slots in the project life cycle. As such, the traditional project life cycle and its deficiencies in terms of allocating time towards organisational learning practices were evaluated in light of the PDSA model proposed by Kotnour (2000:394).

The potential areas for failure in the PDSA model were accentuated, with specific emphasis on the use of lessons learned and post-project reviews. In conclusion, the proposed phases of a so-called "*project learning organisation*" as proposed by Cuel and Manfredi (2006:262-263) were assessed and utilized to propose a revised project life cycle for project learning organisations that could address the deficiencies ascribed to the traditional project life cycle.

The knowledge gained from the literature study will be applied during the empirical study as discussed in Chapter 3, and for the conclusions and recommendations in Chapter 4.

CHAPTER 3

EMPIRICAL STUDY

3 CHAPTER 3 – EMPIRICAL STUDY

3.1 INTRODUCTION

The primary objective of the study, as mentioned, is to critically evaluate the phenomenon of organisational learning in the context of a project management environment so as to extract an understanding of its implemental flaws and to suggest a proposed project life cycle model that could address these shortcomings.

To this end, this study will explore the following supportive research questions:

- a) The organisational learning and knowledge management practices and strategies observable in project management organisations;
- b) Whether these practices and strategies are considered to successfully operate as performance enhancement business tools by those required to implement and utilize them;
- c) If considered unsuccessful, the potential causes for the various practices and strategies' failure (barriers to learning);
- d) The type of learning that occurs in the participants' organisations when weighed against the content given to single-loop learning, double-loop learning and triple-loop learning by literature;
- e) The role of innovation in the learning practices of the various participants' organisations;
- f) The role of management in the facilitation of learning practices in the said organisations;
- g) Where in the project management life cycle of the various participants' organisations learning is most prevalent; and
- h) The extent to which members of project management organisations consider their respective organisations to be learning organisations and how participants believe their organisations can improve their status as learning organisations.

The aforementioned objective and supportive research questions were developed based on information obtained from the literary review detailed in Chapter 2 and the results of a pilot study that was launched among a select group of senior project managers, to evaluate and validate the need for the proposed research and to assist the researcher in the clear delineation of the focus of the research. The results of the aforementioned pilot study were utilised exclusively to more effectively demarcate the objectives and scope of this study.

This chapter describes the research methodology utilized in respect of the main study to address the aforementioned objective and supportive research questions and will in particular focus on:

- a) The rationale for a qualitative research approach;
- b) The research sample;
- c) The various areas of information required;
- d) An overview of the research design;
- e) Methods for data collection;
- f) Methods of data analysis;
- g) Issues of trustworthiness; and
- h) Study limitations.

3.2 RATIONALE FOR A QUALITATIVE RESEARCH APPROACH

"The choice of research practices depends upon the questions that are asked." (Denzin & Lincoln, 2003:6). This study primarily asks the question – what are the implemental flaws or shortcomings when applying organisational learning practices and initiatives in a project management environment and how can these shortcomings be eliminated to facilitate effective organisational learning?

This essential research objective and the supportive research questions identified above required that the researcher elicit and explore the meanings research participants ascribed to their experiences from their own perspective, through a qualitative research design.

Qualitative research is concerned with developing explanations of social phenomena and focuses on understanding the processes by which phenomena are constructed and understood, the context within which these constructions emerge, and the need for the

researcher and the participant to interact in order to co-construct meaning from these processes and contexts (Hancock, 2002:1).

Qualitative research is accordingly concerned with finding the answers to questions which begin with why, how and in what way? Quantitative research processes, on the other hand, is driven by hypothesis formulation and deduction. Empirical observation is employed to identify “indisputable” facts and outcomes and research is considered valid when it can be replicated and generalized to larger populations (Struwig & Stead, 2001:16-18). As such, quantitative research is more concerned with questions about how much, how many, how often and to what extent?

Hancock (2002:2) lists the additional features of qualitative research and how it differs from quantitative research as follows:

- a) Qualitative research is concerned with the opinions, experiences and feelings of individuals producing subjective data;
- b) Qualitative research describes social phenomena as they occur naturally. No attempt is made to manipulate the situation under study as is the case with experimental quantitative research;
- c) Understanding of a situation is gained through a holistic perspective whereas quantitative research depends on the ability to identify a set of variables;
- d) Data are used to develop concepts and theories that help us to understand the social world. This is an inductive approach to the development of theory. Quantitative research is deductive in that it tests theories which have already been proposed;
- e) Qualitative data are collected through direct encounters with individuals, through one to one interviews or group interviews or by observation, and data collection is time consuming;
- f) The intensive and time consuming nature of data collection necessitates the use of relatively small samples in qualitative research;
- g) Different sampling techniques are used in quantitative research. Sampling seeks to demonstrate representativeness of findings through random selection of subjects. Qualitative sampling techniques are concerned with seeking information from specific groups and subgroups in the population; and
- h) Criteria used to assess reliability and validity differ from those used in quantitative research;

Hancock (2002:3) suggests that each of the various features of qualitative research may be viewed as either a strength or a weakness, an evaluation that will be dependent on the purpose of the relevant study. For instance, Hancock (2002:3) refers to one common criticism levied at qualitative research – that the results of a study may not be generalized to a larger population because the sample group is generally small and the subjects are not chosen randomly. However, she counters this criticism by emphasising that:

“the original research question may have sought insight into a specific subgroup of the population, not the general population because the subgroup is “special” or different from the general population and that specialness is the focus of the research.”

In such studies, generalization of the findings to a wider, more diverse population is not an aim.

Historically, quantitative data enjoyed widespread conviction as being ultimately valid and of high quality (Lincoln & Guba, 1994:106). In recent times, however, strong arguments against quantification have emerged that warrant the reconsideration of the utility of qualitative data and that challenge the assumptions on which the reputed superiority of quantification has been based (Lincoln & Guba, 1994:106).

Lincoln and Guba (1994:106) describe these challenges to conventional wisdom (referred to only insofar as they apply to the present research):

- a) **Context Stripping** – Precise quantitative approaches that focus on selected subsets of variables, by means of appropriate controls and randomization, eradicate from consideration other variables that exist in the context. If allowed to do so, such additional variables could dramatically alter the research findings. Such an exclusionary design detracts from the study’s relevance as by implication, the applicability and generalization of the results to other circumstances would be limited to similarly contextually stripped situations. These authors argue that qualitative data can redress this imbalance;
- b) **Exclusion of Meaning and Purpose** – Human behaviour cannot be understood without reference to the meanings and purposes attached by human actors to their activities. As such, the said authors assert that qualitative data can provide rich insight into human behaviour;

- c) **Exclusion of the Discovery Dimension in Inquiry** – Quantitative normative methodology takes precedence over the insights of creative and divergent thinkers. Qualitative inputs could address this imbalance.

The nature and scope of this study as addressed in chapter 1 emphasize the exploratory nature of this study and the need to understand the issues and obstacles facing a project management organisation in the context of organisational learning from the viewpoint of the participants, taking due cognisance of their social setting and the practical realities facing the organisation and individuals. Furthermore, the nature of organisational learning practices, as discussed in chapter 2, underpinned the socially embedded character of organisational learning initiatives. As such, the framework for this research is based on the fundamental assumption of the socially constructed nature of organisational reality and its entrenchment within social groupings. The latter assumptions are consistent with the constructivist paradigmatic viewpoint (Lincoln & Guba, 1994:110).

Lincoln and Guba (1994:108) point out that inquiry paradigms define for inquirers and the researcher that which falls within and outside the limits of legitimate inquiry. They furthermore assert that each inquiry paradigm can be defined by asking the following questions (Lincoln & Guba, 1994:108):

- a) The Ontological Question – What is the form and nature of reality, the *“nature of being”* and, therefore, what is there that can be known about it?
- b) The Epistemological Question – What is the nature of the relationship between the knower or would-be knower and what can be known?
- c) The Methodological Question – How can the inquirer go about finding out whatever he or she believes can be known?

When applied to the constructivist paradigm, its ontological position is *“relativist”* and assumes that realities are *“socially and experientially based,”* local and specific and *“dependent for their form and content on the individual persons or groups holding the constructions”* (Lincoln & Guba, 1994:110-111).

This fundamental viewpoint underlying the research therefore does not assume that there is an objective reality awaiting discovery by the researcher, as the epistemological position is *“transactional and subjectivist”* (Lincoln & Guba, 1994:111). The investigator and the object of investigation are assumed to be interactively linked so that the *“findings are literally created as the investigation proceeds”* (Lincoln & Guba, 1994:111).

When posing the methodological question, Lincoln and Guba (1994:111) emphasize the variable and personal nature of social constructions and suggest that *“individual constructions can be elicited and refined and through interaction between and among investigator [researcher] and respondents [research participants]”*.

The final aim of constructivist research is to *“distil a consensus construction that is more informed and sophisticated than any of the predecessor constructions”* (Lincoln & Guba, 1994:111). Consistent with this aim, this research made use of multiple methods to triangulate the data in order to secure an in-depth understanding of the phenomenon in question.

In relation to the present research study, ontologically this study concerns the *“nature of [the] being”* of organisational learning practices in project management environments. Epistemologically the task is one of interpretation. The researcher is involved in interacting with the participants and interpreting their perceptions that represents multiple constructs of reality. These multiple perceptions will contribute to a constructivist view where the contradictions emerge, become interdependent and are a unity (Lincoln & Guba, 1994:114).

Denzin and Lincoln (1998:8) argue, *“the word qualitative implies an emphasis on processes and meanings that are not rigorously examined or measured (if measured at all), in terms of quantity, amount, intensity, or frequency”*. A qualitative research approach was most suited for this study, as its purpose was to understand the perceptions and activities of participants and to derive meaning from their everyday experiences.

3.3 THE RESEARCH SAMPLE

This study sought to investigate the perceptions and activities of project management team members from a variety of project management organisations and a variety of functional domains in order to:

- a) Increase the transferability of the findings across functional domains and organisations;
and
- b) Ensure no one person or company was identifiable within the results.

The study originally included twenty three project management organisation members from a variety of operational industries including mining, petrochemical and information technology. Two of the original twenty three participants were rejected when it became apparent that they did not meet the selection criteria for participants as identified herein below, reducing the research sample to twenty one candidates.

Selection criteria for participating project management organisations included:

- a) The employment of project management as a core business activity; and
- b) Multi-project exposure.

Selection criteria for interview participants included:

- a) Experience in working as part of a project management team from project enquiry to project close-out;
- b) In depth knowledge of the project management practices implemented in the organisation throughout the life of a project; and
- c) Understanding of the project life-cycle applicable in the interviewee's relevant organisation.

Three target project management organisations were selected, based on the researcher's past association or interaction with these entities, while compliance with the required selection criteria was confirmed through enquiry and discussion. Permission was obtained from the relevant organisations to approach individuals in their employ for the latter to participate in the research. The anonymity of the participating organisations and interviewees had to be guaranteed in order to secure the required permission and cooperation.

Prospective interview participants were initially identified through the researcher's contacts and /or past associations with the relevant organisations. A snowball sampling strategy was subsequently used whereby the researcher asked respondents and contacts to provide referrals to individuals who might meet the selection criteria.

Prospective participants were approached in person and by telephone and if they confirmed their willingness to participate, the required criteria for inclusion were confirmed by the relevant individual and verified by the relevant participating organisation. Prospective

participants were furthermore provided with a Letter of Introduction (see Appendix A) prior to the interview.

3.4 AREAS OF INFORMATION REQUIRED

In order to investigate the study's core objective and supportive research questions, contextual, demographic and perceptual information were collected by means of pre-interview discussion and participant interviews. Table 3.1 provides a summary of the information collected, by data source.

Table 3.1: Areas of Information Required

AREAS OF INFORMATION REQUIRED	PRE-INTERVIEW DISCUSSION	INTERVIEW	POST-INTERVIEW CLARIFICATION
<i>Demographic</i>			
Gender	X		
Age	X		
<i>Contextual</i>			
Company name	X		
Title / job description	X		
Number of employees	X		
Number of full-time staff in project management	X		
Number of projects supported by company	X		
<i>Perceptual</i>			
Interview Schedule (attached as Appendix B):			

Section A - The organisational learning and knowledge management practices and strategies in the various participants' organisations		X	X
Section B - Whether these practices and strategies are considered to operate as performance enhancement business tools and the extent to which participants' considered these practices and strategies to be successful / unsuccessful		X	X
Section C – Level of learning facilitation in the relevant organisation		X	X
Section D – The project life cycle of the organisation, the learning life cycle and the extent to which participants consider their respective organisations to be “learning organisations		X	X

Demographic Information

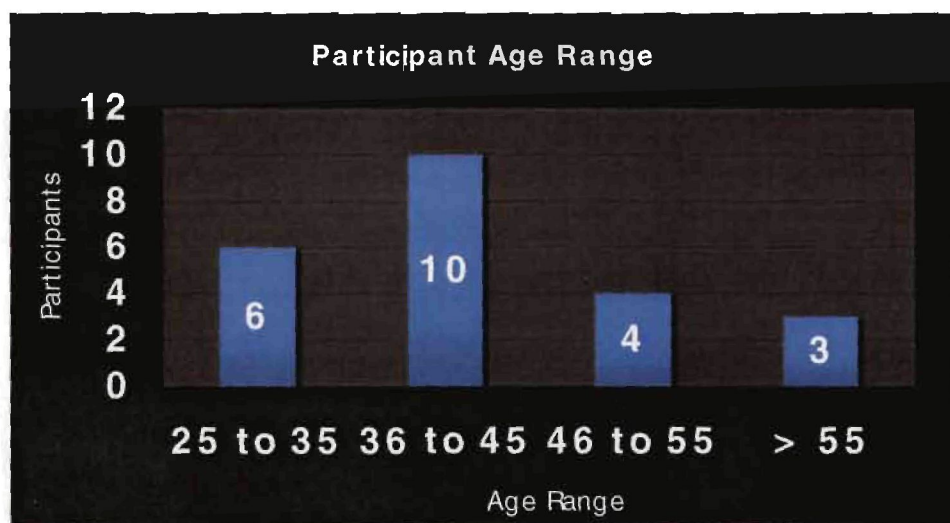
Basic demographic information was gathered from participants in this study inclusive of age and gender. The majority of the participants were male, aged between 36 and 45 years. Graph 3.1 and Table 3.2 highlight these demographics. The lack of female participants could be ascribed to the fact that females were traditionally excluded from the mining,

engineering and construction industries; however, all the participants confirmed that this status quo was rapidly changing.

Table 3.2: Gender Allocation

Gender Allocation	
Men	87%
Women	13%

Graph 3.1: Participant Age Range

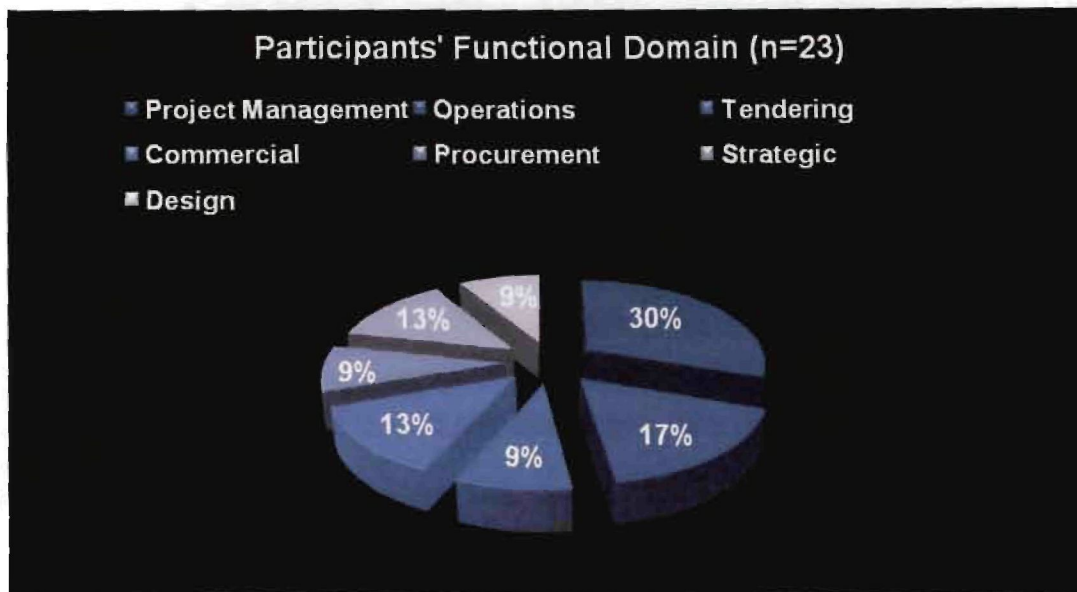


Contextual Information

For each participant, contextual information collected included a description of the respondent's company and work environment, the respondent's job title and description (functional domain), the number of full-time project management staff and the number of current projects serviced by the organisation. This information served to provide insight into the scale and scope of the respondent's work environment, formal responsibilities and hierarchical position.

The functional domains within which the research participants worked included project management, tendering, procurement, design, operations, commercial and strategic management.

Graph 3.2: Participants' Functional Domain

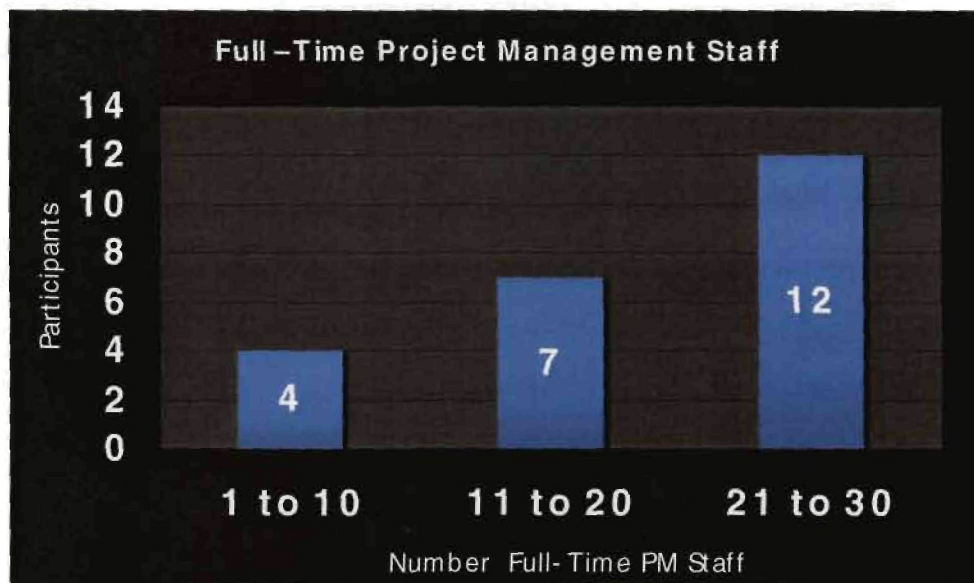


The research attempted to represent the heterogeneity of functional domains; however, a large number of the participants (30%) who agreed to participate worked within the project management setting. The functional domain allocation of the various participants is reflected in Graph 3.2.

Despite the relatively large number of projects managed by the various participating organisations simultaneously, they employed a somewhat moderate amount of full-time project management staff. Graph 3.3 indicates the levels of full-time management staff employed by each of the participant organisations.

However, all the participating organisations supplemented project management teams from various functional domains, allowing project management staff the freedom to manage multiple projects concurrently.

Graph 3.3: Full-Time Project Management Staff



The majority of the research participants have substantial project management experience. Their years of experience are reflected in Graph 3.4.

Graph 3.4: Years Project Management Experience



This wealth of experience assisted in eliciting and highlighting organisational learning constraints in the project management environment that has to date largely been ignored by the available literature. One such constraint is the impact on organisational learning of the severe skills shortage prevalent in South Africa and globally, specifically in the engineering

discipline, coupled with a high turnover of individuals supported by the global demand for skills. This issue will be discussed in more detail in Chapter 4.

Perceptual Information

The study's main objective and supportive research questions, the literature review, pilot study and the nature and scope of the study as delineated in Chapter 1 guided the perceptual information to be gathered for the purposes of the study.

Interviews with project management team members, based on the Interview Schedule attached as Appendix B hereto, provided information to address the research objective and supportive research questions. After completion of the interviews and compilation of the preliminary findings, some of the research participants were approached for a second time to assist in corroboration and clarification of the research data against the research findings and an objective external review of the interview data and findings were conducted.

3.5 OVERVIEW OF THE RESEARCH DESIGN

The empirical aspects of this research was qualitative in nature and focussed on a study of the perceptions, experiences and activities of project management organisation members as these relate to cross-project and project phase learning in project management organisations. Figure 3.1 depicts the overall flow of the research process.

The following procedures were utilized to complete the study:

- a) Previous research relating to organisational learning and specifically, organisational learning in project management environments, was reviewed in order to understand what organisations have attempted to do in order to foster cross-project and project cross-phase learning and identify the barriers or stumbling blocks prohibiting effective learning. The concepts of organisational learning and the learning organisation were studied in terms of the various elements consisting of the characteristics ascribable to them and the implemental stratagems applicable.
- b) The researcher conducted a pilot study amongst a select group of senior project managers in order to evaluate and validate the need for the proposed research and to assist the researcher in the clear delineation of the focus of the research. The pilot study

utilized unstructured interviews to elicit information regarding the organisational learning practices in the various project houses, the strategies utilised to preserve the organisational memory, the value of such strategies for the organisation from the participant's perspective and the shortcomings of these strategies to realise improved performance. The results of the aforementioned pilot study were utilised exclusively to demarcate the objectives and scope of this research study more effectively.

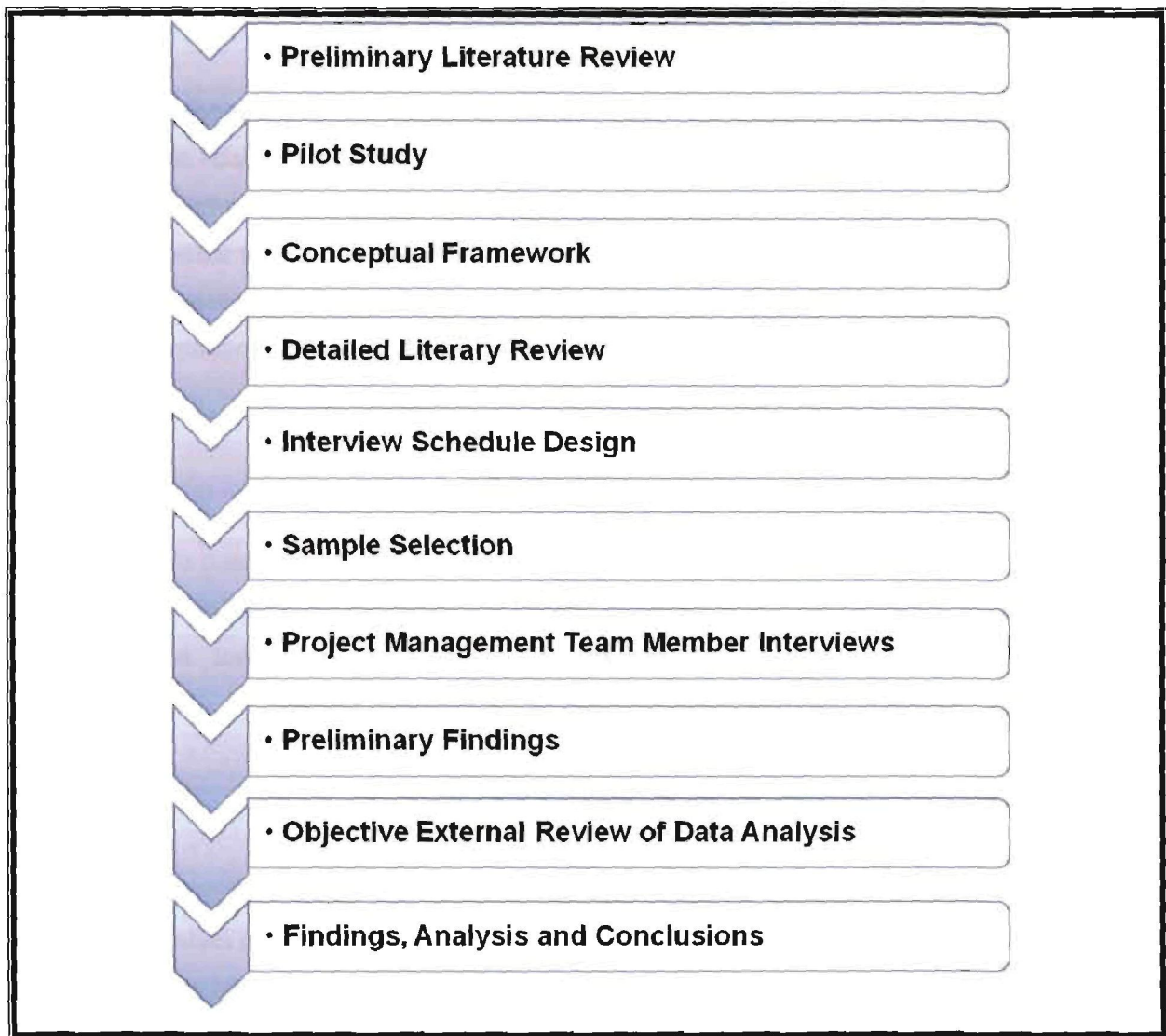


Figure 3.1: The Research Activity Flow

- c) Once the conceptual framework was completed, it was submitted to the researcher's study leader for approval. The study's conceptual framework and proposed research strategy were subsequently approved.
- d) An in depth literary study was conducted and utilized to compile the summarised results of the literary research as presented in Chapter 2.

- e) The research methodology and research tools were designed based on the insights offered by the pilot study results and the literary review. The resultant interview schedule and proposed data analysis process was subsequently approved.
- f) Potential participant organisations were contacted by the researcher to determine their willingness to participate as target organisations for the research and to obtain permission to approach a selection of their employees for the purpose of conducting interviews. The selection of organisations contacted was based on the researcher's contacts at these organisations and on additional recommendations and introductions facilitated by them. Of the initial four organisations that indicated their willingness to participate and that met the required selection criteria for participant organisations, only three yielded sufficient volunteers that met the selection criteria for interview participants together with adequate spread across various functional domains.
- g) Confirmed research participants were sent a Letter of Introduction (see Appendix A) via e-mail. This outlined the purpose of the research, the time required and the anonymity of the participant's contributions.
- h) Confirmed participants were contacted telephonically prior to each interview for a pre-interview discussion in order to solicit demographic and contextual information as outlined in Table 3.1.
- i) Interviews were conducted in person and varied in length from thirty minutes to one hour. The interviews were semi-structured and were guided by the Interview Schedule (see Appendix B). Each participant's consent to record the interviews was obtained and interviews were digitally recorded and partially transcribed by means of completion of a Contact Summary Form (see Appendix C) for each participant.
- j) Contact Summary Forms were coded based on a preliminary coding system designed during the original research design phase. Additional coding requirements were identified where specific patterns and categories emerged from the review of the raw data. Inter-rater reliability was sought among fellow MBA candidates in the MBA programme at the Potchefstroom Business School.
- k) Upon completion of the preliminary findings, post-interview clarification sessions were conducted with four of the research participants who illustrated exceptional insights in

their organisation's learning strategies and practices. The purpose of the post-interview clarification sessions was predominantly to test the practical probability of preliminary findings and to obtain additional clarification where required. This process furthermore served as a first opportunity to triangulate the interview data.

- l) Upon completion of the post-interview clarification sessions, the data analysis and findings were discussed with Mr. Maurice Kerrigan of Maurice Kerrigan Presentations, an organisation that specializes in the facilitation of unique and practical learning solutions which integrate the strategic and operational process dimensions with the people dimension of an organisation. The purpose of the external review was to determine whether the research findings were supported by the analyzed research results and to provide a second opportunity for triangulation of the interview data.
- m) Lastly, the findings of the literary review and empirical study were evaluated to facilitate the compilation of conclusions and recommendations where applicable.

3.6 METHODS FOR DATA COLLECTION

The following is a discussion of the data collection methods chosen for this study and an explanation of how these methods were developed and implemented to perform the research.

Pre-Interview Discussions

The research participants were contacted telephonically and via e-mail prior to the scheduled interviews. The Letter of Introduction (see Appendix A) was made available to the participants at this stage. The purpose of this instrument was to collect basic demographic and contextual information from participants. Areas of information requested included age, gender, years of experience in a project management environment, the participant's job description and title, the number of full-time project management staff and the number of projects currently being serviced by the organisation and the relevant participant.

This information provided the researcher with a sense of the participant's organisational environment and functional responsibility within that environment.

Interviews

One-on-one interviews were the primary means of collecting information about the organisational learning strategies and practices employed by the various participants' organisations, their perceptions of its success or failure, the most predominant barriers to effective learning in a project management environment and what actions they perceived as potential tools for improvement. The Interview Schedule (see Appendix B) was refined through consultation with fellow MBA candidates and continuously improved through interaction with interview participants.

Interviews lasted between thirty minutes and one hour and were all conducted in person. Participants were briefed with regards to the purpose of the interview and assurances of confidentiality were reinforced to provide a comfortable and relaxed atmosphere. Each interview was digitally recorded with the permission of the relevant participant and partially transcribed in the Contact Summary Form format (see Appendix C).

During the course of each interview, field notes were compiled which were utilised in conjunction with the recordings to complete a Contact Summary Form for each participant.

Patton (1990:196) explains that we interview people to *"find out from them those things we cannot directly observe"*. Struwig and Stead (2001:12) states that *"often the behaviours of individuals are inextricably related to the environments in which they are situated"* and that the researcher is trying to *"see through the eyes of the participants"*. It is for these reasons that interviews served as the cornerstone for understanding participants' perceptions and activities.

Post-Interview Clarification

After compilation of the preliminary findings, the researcher approached four of the research participants who displayed exceptional insight into their organisation's learning practices and the barriers to learning in a project management environment. The practical probability of the preliminary findings was "tested" with these individuals by allowing them an opportunity to review the preliminary findings and to provide insights and opinions as to why the results were likely to be representative and probable.

During these post-interview clarification sessions, the relevant participants were confronted with inconsistencies and obscurities in the raw interview data in order to obtain clarification and further insights.

The insights provided during the post-interview clarifications enabled the researcher to add additional categories to the preliminary coding scheme designed for data analysis and served as a first phase for data triangulation.

External Review of Data Analysis

As a second phase of data triangulation, as previously mentioned, the researcher approached Mr. Maurice Kerrigan of Maurice Kerrigan Presentations. Mr Kerrigan was ideally suited to the required review, as his organisation and life's work has been focussed on facilitating practical learning solutions for organisations and, as such, could provide valuable insights for purposes of verifying data analysis as supportive of the research findings, as well as of the relevant conclusions to be drawn from the findings.

3.7 METHODS OF DATA ANALYSIS

Qualitative analysis involves systematic interpretation of data from a variety of methods to construct meaningful concepts and explanations of the phenomena in question (Hancock, 1998:2). The collection of words generated by interviews and observations needs to be portrayed and summarised. The researcher seeks relationships between the various themes that have been identified, or to relate behaviour or ideas to biographical characteristics of respondents such as age or gender (Lacey & Luff, 2007:6).

The data analysis process followed for all empirical data collected during this research study was based on the process proposed by Lacey and Luff (2007:6-7):

- a) Familiarisation with the data through review, reading and listening;
- b) Partial transcription of digital recorded material (Contact Summary Form);
- c) Organisation and indexing of data for easy retrieval and identification;
- d) Sterilisation of data in terms of participant organisation and interview participant details;
- e) Coding;
- f) Identification of themes;
- g) Re-coding;
- h) Development of provisional categories;
- i) Exploration of relationships between categories;
- j) Refinement of themes and categories;
- k) Development of theory and incorporation of pre-existing knowledge;
- l) Testing of theory against the data; and
- m) Report writing, including excerpts from original data if appropriate (e.g. quotes from interviews).

A framework analysis technique was utilized in processing the data collected. The benefit of framework analysis is that it provides systematic and visible stages to the analysis process. Although the general approach in framework analysis is inductive, this form of analysis allows for the inclusion of *a priori* as well as emergent concepts, for example during coding (Lacey & Luff, 2007:13).

The pre-interview discussions were utilized to record demographic and contextual information. The main interviews served as the primary source to identify patterns and themes for coding and categorisation.

The researcher commenced analysis by familiarising herself with the data through reading field notes, listening to interview recordings and by preparing and reading the partial transcripts as recorded in the Contact Summary Forms. The Contact Summary Form served as a tool to organise and index data for easy retrieval and identification.

Since some of the research participants were known to the researcher, Contact Summary Forms were sterilised by blacking out all personal information and by randomly allocating participant numbers to each Contact Summary Form. This eliminated subjective presumption regarding individual participants' perceptions by the researcher.

The Contact Summary Forms and their content were utilised to compile a preliminary coding scheme. The initial coding process identified themes that required further sub-categorisation and this was achieved by re-listening to the various recordings and identifying further patterns and sub-categories for inclusion. Colleagues participating in the MBA programme assisted in the review of the preliminary coding scheme and confirmed or proposed amendments to the ultimate final Coding Scheme (see Appendix D).

The researcher proceeded to identify relationships between categories and how these relationships posed potential solutions or theories to the research questions at hand. The latter process resulted in a refinement of categories and themes which required a final re-coding of the raw data.

After compilation of the final Coding Scheme, the coded results were deduced to Result Tables based on individual themes and categories (see Result Tables, Tables E1-E13 as presented in Appendix E hereto).

The result tables and Contact Summary Forms were utilized to determine findings to the research objective and supportive research questions as presented in Chapter 4.

During the data triangulation phases as referred to herein before, disconfirming data were scrutinized and emergent themes were identified in order to augment and refine the study's findings and conclusions.

3.8 ISSUES OF TRUSTWORTHINESS

Moss (2004:362) in reference to the work of Guba and Lincoln identifies credibility, dependability and transferability as the three criteria from which to judge the trustworthiness of constructivist research.

Strategies used to address each of these criteria in the research process will now be discussed.

Credibility

The criterion of credibility is closely related to the traditional concept of validity. Lacey and Luff (2007:27) state that in qualitative research *"the emphasis is on the validity of the interpretation. The ability of the findings to represent the 'truth' may not be appropriate if we accept the existence and importance of multiple 'truths'. Rather, validity will be judged by the extent to which an account seems to fairly and accurately represent the data collected"*.

Struwig and Stead (2001:144-145) propose a number of strategies to enhance validity, including descriptive, interpretative, theoretical validity and triangulation.

Descriptive validity relates to the factual accuracy and comprehensiveness of the data collected and can be achieved by involving other researchers or the participants to verify the accuracy of the data (Struwig and Stead, 2001:144). Whereas the present research did not rely on additional researchers during the collection of the data, preliminary findings were presented and discussed with a limited number of the participants, which allowed these individuals an opportunity to verify the inputs provided by them during the data collection process. Since all the research participants were not available for a second opportunity during which to verify the accuracy of the recorded data, a limited number of participants (19%) were secured to validate the data collected and to triangulate findings as being supported by the data. The latter process, to a limited extent, also served as interpretative and theoretical validation of the data since some of the participants were invited to comment on the initial research findings (Struwig and Stead, 2001:144).

Struwig and Stead (2001:145) define triangulation as *"the extent to which independent measures confirm or contradict the findings"*. As indicated before, participant involvement served as triangulation, albeit to a limited extent. Triangulation was achieved more effectively by discussing the data, coding and findings with an objective third party for evaluation and to confirm whether the findings were supported by the research results.

To this end, Mr. Maurice Kerrigan was requested to explore the correlation between the empirical research results and the research findings. Mr. Kerrigan's observations resulted in the inclusion of additional conclusions that proved valuable in meeting the study's research objectives.

Dependability

Dependability is closely linked to the concept of reliability and emphasizes the reliability of the research methods employed (Lacey and Luff, 2007:26).

In this research study, the researcher attempted to make the research process clear by explaining to participants what the research was about, the researcher's background and the study objectives. As indicated before, triangulation was utilized to enhance credibility, and also to ensure dependability. External parties involved in triangulation were fully briefed regarding the methodologies applied in terms of developing each of the research instruments and the analysis of the resultant data.

An audit trail was created by the ongoing use of journal notes, recordings and the use of the Contact Summary Form (see Appendix C). These recordings allow external parties to understand in detail how data was collected, categories derived and decisions made during each step of the research process.

Transferability

Transferability or generalisability *"refers to the degree to which the data can be generalised within a group (similar to internal validity) or to other groups (similar to external validity)"* (Struwig and Stead, 2001:145).

In this study, participants were drawn from more than one organisation and from a variety of industries. The participants were furthermore drawn from various functional domains; however, a significant number (30%) of the participants who volunteered to participate in the study originated from the project management domain. The transferability to other domains outside of project management may therefore be limited.

3.9 STUDY LIMITATIONS

The limitations of this research relate to the following key areas:

- a) The researcher as an instrument;
- b) The partiality of participants as representatives of their organisations;
- c) The transferability of the findings to broader populations; and

d) The challenge of making interviewee's tacit knowledge explicit.

The researcher was familiar with all the participant organisations and has been associated with some of them in an employment capacity. As such, the researcher held assumptions, interests and perceptions that related to past individual experiences at these organisations. As a result, it was assumed that the researcher might attempt to reflect on these biases and assumptions as the research proceeded.

Furthermore, some of the research participants were personally and professionally known to the researcher and were expected to have biases about what the researcher was looking for, and it was assumed that they might attempt to provide answers consistent with their pre-conceived biases and perceptions.

The partiality of participants as members of their organisations was addressed in this research by continuously assuring members that both the participant organisations and interview participants' identities were kept strictly anonymous. Participants were encouraged to highlight problems and frustrations as perceived by them personally and to avoid reflection of the group perspective in the organisation.

The third limitation of the research relates to the transferability of the findings to other project management organisations. The population included in this study cannot be understood as a representative sample in general. Given this limitation, however, the study was designed to represent a diverse population of participants in order to increase the likelihood of transferability.

Themes that emerged from this research study could cut across individual situations and experiences and be of relevance to research consumers. The latter should, however, carefully evaluate whether the themes present in this study should be considered relevant and applicable to their individual situations.

The final limitation relates to the ability to assist respondents in making their tacit knowledge explicit via the interview process. Respondents may have shared project lessons learned in ways that were unconscious and not easily translated into words during the interview and their knowledge may therefore have gone unrecognised.

The researcher attempted to elicit tacit knowledge by posing open ended questions that invited the participant to reflect on his/her own perceptions and to highlight examples or

stories. These specific incidents were then explored to probe for tacit knowledge more effectively.

3.10 CONCLUSION

This discussion on the methodological issues that are appropriate to this study prepares the way for examining the research findings and will be dealt with in Chapter 4.

CHAPTER 4 RESEARCH FINDINGS

4 CHAPTER 4 – RESEARCH FINDINGS

4.1 INTRODUCTION

The purpose of this study has been described.

This chapter presents the key findings that have emerged from in depth interviews with twenty one project management team members operational in a project management environment.

Tables depicting the categories, sub-categories and their frequency of occurrence across participants for all findings are included in Appendices E1 to E13.

Pseudonyms are used to ensure participant confidentiality.

4.2 RESEARCH QUESTION 1

THE ORGANISATIONAL LEARNING AND KNOWLEDGE MANAGEMENT PRACTICES AND STRATEGIES OBSERVABLE IN PROJECT MANAGEMENT ORGANISATIONS

Finding 1: Overview

This finding is based on the responses to interview questions which focussed on the identification of the organisational learning practices and strategies employed by the participant project management organisations.

In order to assist the reader in understanding the researcher's approach to this research question, the following should be noted:

- a) It was vital to first understand the application of organisational learning practices in a project management environment before potential learning barriers and possible solutions could be explored;
- b) This research question went beyond merely exploring and identifying the most prevalent practices and learning facilitation tools employed by project management organisations. It also sought to determine the distinction between practices utilised to acquire and capture data from internal and external sources, the practices employed to interpret and contextualise raw data and the methods employed to distribute data to all relevant role players.
- c) By allowing participants to identify the practices utilised by their respective organisations for information acquisition, capturing, interpretation and distribution of the acquired knowledge, the researcher elicited a better understanding of the level of sophistication of learning practices employed by project management organisations;
- d) In exploring the learning practices employed by their respective organisations, participants volunteered much tacit knowledge pertaining to the level of enforcement associated with these practices, their preferences for the various practices and their perceptions regarding the success and failure of these practices. This created a good platform for research question 2 (Section 4.3), dealing with the participants' perception of the practices as business enhancement tools.

Table 4.1 provides an overview of the framework for reporting Finding 1 and is supported by the result tables presented in Appendix E1 to E4.

Table 4.1: Overview of Finding 1 – Primary Learning Practices*

	Research sub-question	Finding
1.	Primary practices for the acquisition and capturing of data from internal sources (see Appendix E1)	➤ 71% of participants perceived project review/status/progress meetings as a prevalent practice to acquire and capture data internally; ➤ 51% of participants perceived project team interaction as a prevalent practice to acquire and capture data internally; ➤ 48% of participants perceived an integrated database

		and a lessons learned register as prevalent practices to acquire and capture data internally; ➤ 45% of participants perceived execution principles, standards and procedures as a prevalent practice to acquire and capture data internally; ➤ 38% of participants perceived post-project reviews/post-mortems as prevalent practices to acquire and capture data internally; ➤ 24% of participants perceived project progress reports and brainstorming as prevalent practices to acquire and capture data internally; ➤ An insignificant number of participants referred to project close-out reports, project specific databases, site visits and team member field notes and photographic and video materials as prevalent practices to acquire and capture data internally;
2.	Primary practices for the acquisition and capturing of data from external sources (see Appendix E2)	➤ 29% of participants perceived the recruitment or sub-contracting of subject experts as a prevalent practice to acquire and capture data from external sources; ➤ An insignificant number of participants referred to interaction with clients and potential clients, research in academic/industry databases and internet sites and benchmarking against competitors as prevalent practices to acquire and capture data internally; ➤ Only 52% of participants were able to identify prevalent practices for acquiring and capturing data from external sources;
3.	Primary practices for the interpretation of data (see Appendix E3)	➤ 67% of participants perceived project review/status/progress meetings as a prevalent practice to interpret data; ➤ 48% of participants perceived the continuous updating of execution principles, standards and procedures as a prevalent practice to interpret data; ➤ 33% of participants perceived planning meetings and internal team data analysis as prevalent practices to interpret data;

		➤ 14% of participants perceived the use of specialist data analysts as a prevalent practice to interpret data; ➤ An insignificant number of participants referred to post-project reviews/post-mortems, client interaction, implemental follow-up and benchmarking against the original tender or plan as prevalent practices to interpret data;
4.	Primary distribution processes of knowledge gained (see Appendix E4)	➤ 48% of participants perceived project review/status/progress meetings, an integrated database and team interaction and discussion as prevalent practices for the distribution of knowledge gained; ➤ 43% of participants perceived circulation of reports regarding lessons learned as a prevalent practice for the distribution of knowledge gained; ➤ 33% of participants perceived company-wide cross-project feedback and the updating of execution principles, standards and procedures as prevalent practices for the distribution of knowledge gained; ➤ 24% of participants perceived mandatory project reflection sessions as a prevalent practice for the distribution of knowledge gained; ➤ An insignificant number of participants referred to circulation of meeting minutes, project specific databases, mentorships and briefing of new employees on past projects/lessons learned;

*n = 21 participants

In the case of acquisition and capturing of data, data interpretation and knowledge distribution, participants in all three categories identified project review/status/progress meetings as the most prevalent practice for data acquisition/capture, interpretation and distribution in their respective organisations. Planning meetings as a tool for data acquisition and capture and data interpretation were similarly rated very highly by participants. It seems evident that interaction through meetings is an important and common practice in the project management organisations in question.

The latter finding would have been expected to be indicative of a high prevalence of distribution of meeting minutes, the production and circulation of a “lessons learned” register, the circulation of project progress reports and incorporation of these items into an integrated database or a even a project specific database. This expectation is supported by the relatively significant to high prevalence of the lessons learned register (48%), integrated database (48%) and project progress reports (24%) as sources of data acquisition and capturing. However, when evaluating the practices for distribution of knowledge gained, the circulation of meeting minutes is a practice employed by only 19% of the participants.

A far wider use of the circulation of reports concerning lessons learned is prevalent, being employed by 43% of participants, whereas an integrated database serves as a knowledge distribution tool for 48% of participants. From the latter results one would expect that “lessons learned” reports and inputs into an integrated database would be outputs of project review/status/progress and planning meetings. This issue was explored with the participants during the interviews as well as the post-interview clarification sessions and responses included the following.:

Participant 1 indicated that:

“I require my project team members to record on a daily basis those practices that worked and added value and those practices that did not achieve anything and amounted to a paper exercise. These recordings are captured by each individual in a project specific database that I have set up for this purpose, basically an Excel spreadsheet. The input fields are limited as I want to try and force them to interpret that which they want to record before inserting it otherwise it will digress into a load of useless facts that means nothing to the next guy. The problem is, although I encourage continuous inputs in this fashion, it only becomes a real deliverable at the end of the project, so many people leave it until the last minute, ending up recording their best recollection which isn't always that good.”

By this participant's own admission, the fact that inputs become a deliverable at the end of the project, detract greatly from the value it adds. The gap between reliance on meeting outputs, as referred to above, and actually having access to those outputs, in this case, seems to be related to the time lapse between the meeting, generation of the output and recording the output in a format accessible by others.

Participant 4 indicated that:

"We distribute our weekly progress reports via e-mail, it goes to the Managing Director and through the ranks down to the guys on site. Problem is that some of the guys on site do not have access to e-mail so I'm not always sure the message filters down to them. These reports are also captured on the integrated database."

Participant 7 indicated that:

"On our project we use lessons learned and we have feedback sessions or meetings to put all the information on the table. We do record it and I think it gets fed into a database, but to be honest, we mostly file and forget about it."

Meeting outputs are often, as in the case of Participant 4 and 7, *"filed and forgotten"*, insinuating that many project team members perceive these practices as an unnecessary and valueless paper exercise.

Participant 9 indicated that:

"All data is recorded in our integrated database, we call it a dashboard. Here we record all the lessons learned, solutions to problems, methodologies, risks identified, changes to the project scope, milestones and just about everything you can think of. Our data base index serves as the agenda for meetings and we update it during the meeting once everyone has agreed on the necessary input. It is very comprehensive and the system is not yet live, so not everyone has access, but we plan on changing that."

The process followed by Participant 9's organisation aims at keeping captured data current and interpreting it as a team before input. This is an excellent methodology to ensure data is fairly accurate and somewhat contextualised when captured.

Participant 17 indicated that:

"Oh yes, we record data, but I don't think you'll really be able to use what you find on the database. All the functional design document really focuses on is costs and it is most definitely not going to tell me much about how issues were solved in the past or what constituted good practices."

Participant 17's frustration is a theme common amongst many of the participants, emphasising that information at their disposal is too discipline specific or of no contextual value to them.

It is noteworthy that only one candidate (5%) proposed implemental follow-up as a practice for the distribution of knowledge gained, especially in light of the apparent shortfall in mobilising newly gained knowledge into activity.

4.3 RESEARCH QUESTION 2

WHETHER THE PRACTICES AND STRATEGIES IDENTIFIED UNDER FINDING 1 ARE CONSIDERED TO SUCCESSFULLY OPERATE AS PERFORMANCE ENHANCEMENT BUSINESS TOOLS BY THOSE REQUIRED TO IMPLEMENT AND UTILIZE THEM

Finding 2: Overview

This finding is based on the responses to interview questions which focussed on the participants' perceptions regarding the impact of the practices and strategies identified under research question 1 (Section 4.2) on their personal, project and organisation performance.

Table 4.2 provides an overview of the framework for reporting Finding 2 and is supported by the results table presented in Appendix E5.

Table 4.2: Overview of Finding 2 – Performance Influence*

	Research sub-question	Finding
1.	The learning practices and strategies identified improve my personal performance	71% of the participants confirmed that the practices and strategies identified in response to research question 1 assisted in improving their personal performance;
2.	The learning practices and strategies improves project performance	81% of the participants confirmed that the practices and strategies identified in response to research question 1 assisted in improving project performance;
3.	The learning practices and strategies improves organisational performance	81% of the participants confirmed that the practices and strategies identified in response to research question 1 assisted in improving organisational performance;

*See Appendix E5 – n = 21 participants.

It is evident that the participants perceived the learning practices and strategies in their organisations as adding value and as tools for business enhancement. However, post-interview clarifications emphasised that the practices and strategies identified under research question 1 were only perceived as performance enhancing when implemented as intended. Participant 1 reflected on this when stating:

“Over the last decade there has been a tremendous change in how we deal with information. We have numerous systems, procedures and capacity to collect more and more, so we create this information overload that we don’t know how, nor have the resources to deal with. Having a bulk of information has become a novelty, but we have done very little to ensure that we can deal with it effectively and make it value-adding.”

Participants generally indicated that project performance and organisational performance go hand-in hand in the project management environment. This is evident from the perfect correlation between the participant’s responses regarding the impact of learning practices and strategies on project and organisational performance. However, Participant 4 cautioned that this correlation is subject to the proviso that *“successful projects don’t end up carrying their less successful counterparts.”*

4.4 RESEARCH QUESTION 3

IF PRACTICES AND STRATEGIES CONSIDERED UNSUCCESSFUL UNDER FINDING 2, THE POTENTIAL CAUSES FOR THE VARIOUS PRACTICES AND STRATEGIES’ FAILURE (BARRIERS TO LEARNING)

Finding 3: Overview

The objective of this finding is crucial to the overall objective of this research study and aims to identify the stumbling blocks and frustrations identified by participants as hampering the implementation of the identified practices and strategies and the facilitation of organisational learning cross-project and across project phases.

Table 4.3 provides an overview of the framework for reporting Finding 3 and is supported by the Results Table presented in Appendix E6.

Table 4.3: Overview of Finding 3 – Barriers to Learning*

Barriers to cross-project and project cross-phase learning	
1.	52% of participants perceived insufficient, or the lack of, specialist/skilled resources to utilise in training initiatives and the lack of interpretation and contextualisation of information as barriers to cross-project and project cross-phase learning;
2.	38% of participants perceived insufficient time and resources to maintain learning practices and strategies as a barrier to cross-project and project cross-phase learning;
3.	33% of participants perceived the fact that standards and procedure implementation were not being enforced and insufficient inter-disciplinary interaction as barriers to cross-project and project cross-phase learning;
4.	24% of participants perceived the organisational culture's misalignment with the organisation's learning principles and the fact that the organisation does not ensure that new knowledge is mobilised and actioned as barriers to cross-project and project cross-phase learning;
5.	19% of participants perceived the fact that learning practices are developed ad hoc and not as an integrated organisation-wide system as a barrier to cross-project and project cross-phase learning;
6.	Individual participants furthermore identified the following barriers: a) Lack of mentoring programmes; b) Reluctance by project team members to admit to mistakes for fear of retribution; c) Internal politics and hierarchical structures forming barriers to communication; d) Project review and project close-out procedures not being compulsory; e) Not capturing and distributing lessons learned as and when it happens.

*See Appendix E6 – n = 21 participants.

A majority of participants highlighted insufficient, or the lack of, specialist/skilled resources to utilise in training initiatives and the lack of interpretation and contextualisation of information as barriers to cross-project and project cross-phase learning.

Participants placed special emphasis on the skills shortage prevalent in South Africa and globally, when referring to the lack of skilled resources to utilise in training initiatives as a barrier to organisational learning. Participant 2, in reference to the mining industry stated that:

“Eksterne opleiding het ’n geweldige knou weg die laaste paar jaar, ons kry net nie meer dieselfde kwaliteit vakleerlinge vir praktiese opleiding nie. Die gevolg is dat ons verplig word

om meer interne opleiding te doen. Om interne opleiding te doen beteken dat ons die ervaar ambagsmanne se tyd moet afstaan aan opleiding of elke ambagsman met 'n paar vakleerlinge moet opsaal. Hierdie ouens is reeds oorwerk and ons kan doodeenvoudig nie bekostig om hulle van projekte te onttrek vir opleiding nie. Byvoorbeeld, die algemene ouderdom van ambagsmanne in the Suid-Afrikaanse myn industrie is 54, dit beteken dat ons binnekort met een helse tekort gaan sit."

However, most participants who highlighted the skills shortage as a severe barrier to learning conceded that despite the pressures of existing projects, more skilled personnel would have to be dedicated to training and mentorships to avoid exacerbating the problem in future.

The lack of interpretation and contextualisation of information was similarly identified as a major barrier to effective learning practices. Interpretation of data in itself is a learning facilitating practice as discussed under Finding 1 and one has to presume that if it is identified as a barrier to learning by a majority of the participants, this information interpretation is not occurring or not occurring effectively. This links closely with what was stated regarding meeting outputs in the discussion under Finding 1 – *"the gap between reliance on meeting outputs and actually having access to those outputs, in this case, seems to be related to the time lapse between the meeting, generation of the output and recording the output in a format accessible by others."*

Numerous participants expressed their frustration when searching for information on past projects only to realise that the information recorded provided no insight in terms of the situation it was intended to portray.

In this regard, Participant 5 indicated that:

"when looking for specific information the problem does not lie with access to an information resource, however, the value-add of the information that you eventually find is doubtful, even suspect – there is just no contextualisation of structure and you would be better off to just address the issue from scratch."

On a similar trend, Participant 15 stated that:

"When looking for information on past projects, your best bet is the electronic database as no hard copy archiving system exists. Problem is that use of the electronic database is

dependent on how much information you already have about the specific project you need to access for assistance, probably by first sourcing some of the individuals that was involved on the relevant project to steer you in the right direction with a project name, number of classification, even a closure date can help. If you don't have any clue which project data you need to access, or just want to do a general search, you can forget it. I waste a lot of time looking for historical information with only about a 50% success rate."

A significant percentage of participants (38%) perceived insufficient time and resources to maintain learning practices and strategies as a barrier to cross-project and project cross-phase learning. Lacking resources is confirmed by the earlier emphasis on the skills shortage in the project management environment. However, participants' reference to the lack of resources also focussed on the lack of resources to facilitate learning practices.

Participant 10 indicated that:

"Due to not having the right people and sufficient time available, past project information is not always properly recorded or captured, and even when they are captured, it often happens at the end of the project and are limited to the major issues recalled by the project team. A lot gets lost because we just don't always have the luxury of time to administrate it. This does not mean we do not learn from unrecorded projects, the learning is then just limited to the parties involved in the project, and even then, only to those team members who actually dealt with the issue."

Participant 19 stated that:

"Because resources are so lacking, newly acquired knowledge must be incorporated into standards and procedures, this creates uniformity in the way people operate and essentially enforces the implementation of new knowledge. Problem is that resources are generally so lacking that the question becomes – who will incorporate it into the standards and procedures and how is the new standards and procedures going to be made known to all project teams?"

A similar sentiment was expressed by Participant 14 who regarded continuous incorporation of new knowledge into standards and procedures as, *"unknown to the project team members, forcing them to implement new knowledge and to essentially learn. The problem remains capturing the new knowledge from ground level where it originates."*

Participant 7, however, cautions that *“learning practices should be developed with due consideration of size, complexity and budget of the relevant project – a full suite of systems and procedures to facilitate learning could kill a small project purely because it does not have adequate resources to deal with such intensive administration.”*

The lack of inter-disciplinary interaction was highlighted by several participants as a barrier to effective learning practices. The most common complaint was that *“the one hand does not know what the other one is doing”*. This was especially prevalent amongst participants operating in functional domains supportive to the project, such as tendering and procurement. This aspect will be further emphasized when dealing with learning as part of the project life cycle under Finding 7.

The lack of a holistic organisation-wide approach to learning practices was raised by 19% of participants as a barrier to learning in a project management environment. As this result was limited to one of the participant organisations, it is not deemed to be of sufficient significance to be addressed in detail for purposes of this study.

4.5 RESEARCH QUESTION 4

THE TYPE OF LEARNING THAT OCCURS IN THE PARTICIPANTS' ORGANISATIONS WHEN WEIGHED AGAINST THE CONTENT GIVEN TO SINGLE-LOOP LEARNING, DOUBLE-LOOP LEARNING AND TRIPLE-LOOP LEARNING BY LITERATURE

Finding 4: Overview

This finding is based on the responses to interview questions which focussed on the type of learning prevalent in the participants' organisations with specific reference to single-loop learning, double-loop learning and triple-loop learning.

In order to assist the reader in understanding the researcher's approach to this research question, the following should be noted:

- a) Each participant was given a brief overview of the content given to the concepts of single-loop, double-loop and triple-loop learning. In this regard, the definitions provided by Cummings and Worley (2005:501), Cavaleri and Fearon (2000:252), Argyris (1994:8-9) and Wang and Ahmed (2003:13) under Section 2.2 were explained to participants in

simple terms. Where necessary, examples of the various types of learning were provided to ensure the participants' clear understanding;

- b) Participants generally perceived these types of learning as an interesting concept and actively engaged in providing their perceived classifications.

Table 4.4 provides an overview of the framework for reporting Finding 4 and is supported by the results tables presented in Appendix E7.

Table 4.4: Overview of Finding 4 – Type of Learning*

	Research Sub-Question	Finding
1.	Single-loop learning is prevalent	86% of participants perceived single-loop learning as being prevalent in their organisation;
2.	Double-loop learning is prevalent	81% of participants perceived double-loop learning to be prevalent in their organisation;
3.	Triple-loop learning is prevalent throughout all levels of the organisation	10% of participants perceived triple-loop learning to be prevalent throughout all levels of their organisation;
4	Triple-loop learning is prevalent only in the highest/executive levels of the organisation	29% of participants perceived triple-loop learning to be prevalent only in the highest/executive levels of the organisation;

*See Appendix E7 – n = 21 participants.

86% of participants perceived single-loop learning to be prevalent in their respective organisations. The reasoning offered by some of the participants included:

- a) Lack of resources is often the root cause for crisis management instead of more transformational action; and
- b) Level of learning is closely linked to the level of the individual in the organisation, lower level employees tend to facilitate single-loop learning most of the time due to a lack of strategic insight to the overall impact on the business.

81% of participants perceived double-loop learning to be prevalent in their respective organisations. The reasoning offered by some of the participants included:

- a) Projects are systems driven and standards and procedures are continuously updated to incorporate new and better procedures;
- b) Double-loop learning is supported by our continuous drive to update systems and procedures; and
- c) In general we learn due to necessity and when time and resources become available we update systems and procedures to reflect the learning.

76% of candidates perceived both single-loop and double-loop learning to be prevalent in their organisations.

29% of participants believed that triple-loop learning took place on an executive level as they equated strategic planning and management with their executive team's responsibilities, whereas only 10% perceived triple-loop learning to be prevalent throughout their organisations. The reasoning offered by participants included:

- a) A longer-term perspective as required for triple-loop learning is difficult as we never know what our next project will be;
- b) Triple-loop learning is sometimes facilitated by customer feedback;
- c) The learning practices in our organisation are sufficiently integrated and advanced to incorporate all three types of learning;
- d) Facilitation of double-loop learning requires executive management to operate at operational levels more often than they should and results in triple-loop learning falling by the wayside; and
- e) As an organisation we invest substantially in triple-loop learning facilitation as our competitiveness is dependent on our strategic foresight.

A noteworthy finding in terms of the acquisition of data from external sources as presented under Finding 1, Section 4.2, is that only 1 candidate (5%) highlighted benchmarking against competitors as a data acquisition tool. This correlates significantly with the lack of triple-loop learning prevalent as perceived by the participants.

4.6 RESEARCH QUESTION 5

THE ROLE OF INNOVATION IN THE LEARNING PRACTICES OF THE VARIOUS PARTICIPANTS' ORGANISATIONS

Finding 5: Overview

This finding is based on the responses to interview questions which focussed on innovation being perceived as being encouraged in the participants' organisations.

In order to assist the reader in understanding the researcher's approach to this research question, the following should be noted:

Buckler's (1998:17) proposed model as discussed under Section 2.3 reflects on the two extremes in terms of learning methodologies, that is, taught methodologies versus discovery or innovation driven methodologies. As concluded in Section 2.3, it is evident that taught methodologies have the potential to severely conflict with the inherent characteristics of a learning organisation, hence the need to reflect on the role of innovation in the participants' organisations and the potential impact it could have on the learning practices and strategies in these organisations;

Table 4.5 provides an overview of the framework for reporting Finding 5 and is supported by the results tables presented in Appendix E8.

Table 4.5: Overview of Finding 5 – Role of Innovation*

	Research Sub-Question	Finding
1.	Innovation is encouraged in my organisation	71% of participants perceived innovation to be encouraged in their organisation
2.	Innovation is not encouraged in my organisation	29% of participants did not perceive innovation to be encouraged in their organisation.

*See Appendix E8 – n = 21 participants.

Despite the fact that a significant majority of participants' believed that their organisations encouraged innovation, the reasoning for these findings is far more enlightening.

In reference to a further analysis of this finding as included in Appendix E9, the reasoning for participants to affirm their organisations as encouraging towards innovation included the following:

- a) 33% of participants believed that because their organisation is not learning efficiently, employees are forced to be innovative. Participant 1 aptly summarised it when he stated that *"we are innovative by necessity, because if we don't learn from one project to the next, we are forced to re-invent the wheel continuously in order to deliver."* Interestingly, 33% of participants who believed their organisation discouraged innovation ascribed it to a similar reason.
- b) 27% of participants ascribed their organisation's encouraging attitude to innovation to the fact that project team members are empowered to explore new ideas and concepts. In turn, 33% of participants who perceived their organisation as discouraging of innovation ascribed it to the lack of empowerment;
- c) 7% of participants cautioned that employee resistance to change could influence the encouragement of innovation, whereas 50% of participants who perceived their organisation as discouraging of innovation ascribed it to employee resistance to innovation and change;
- d) 27% of participants indicated that their organisations had specific forums to facilitate the tabling of innovative approaches and ideas;
- e) 7% of participants ascribed their organisation's encouragement of innovation to the role it plays in terms of strategic partnering.

It is evident that resistance to change and the lack of empowerment are major inhibitors of innovation and possibly learning in participant organisations. However, the participant organisations seem to become innovative out of necessity, owing to the fact that they do learn efficiently from past projects. The latter type of activity being labelled as innovative is, however, questionable, as it is hardly innovative for an organisation to re-invent something that has been achieved or delivered previously.

4.7 RESEARCH QUESTION 6

THE ROLE OF MANAGEMENT IN THE FACILITATION OF LEARNING PRACTICES IN THE VARIOUS PARTICIPANTS' ORGANISATIONS

Finding 6: Overview

This finding is based on the responses to interview questions which focussed on the perceived role of management in facilitating learning in the participants' organisations.

Table 4.6 provides an overview of the framework for reporting Finding 6 and is supported by the results tables presented in Appendix E10.

Table 4.6: Overview of Finding 6 – Role of Management*

Management's role in facilitating learning	
1.	52% of participants perceived management's role in facilitating learning as the management of resources to facilitate learning initiatives;
2.	29% of participants perceived management's role in facilitating learning as that of structuring the organisation and hierarchies so as to not discourage learning among colleagues;
3.	19% of participants perceived management's role in facilitating learning as an appreciation of the need to create opportunities for project reflection and evaluation;

*See Appendix E10 – n = 21 participants.

Considering the emphasis placed by participants on lacking resources and time to maintain learning practices and strategies as a barrier to learning under Finding 3, the majority participants' perception of management's role in this regard is hardly surprising.

Management's role in terms of structuring the organisation to avoid disabling hierarchies is, however, somewhat unexpected as only two participants perceived hierarchical structures as a barrier to learning.

Participants' perception of management's role as being appreciative of the need to create opportunities for project reflection and evaluation harks back to the need identified for additional time and resources and to the importance placed on project review/status/progress meetings.

4.8 RESEARCH QUESTION 7

WHERE IN THE PROJECT MANAGEMENT LIFE CYCLE OF THE VARIOUS PARTICIPANTS' ORGANISATIONS LEARNING IS MOST PREVALENT

Finding 7:

Overview

This finding is based on the responses to interview questions which focussed on where in the project management life cycle the participants' learning is perceived to be most prevalent.

In order to assist the reader in understanding the researcher's approach to this research question, the following should be noted:

- a) The researcher presented participants with Figure 2.4 as discussed under Section 2.4 – the traditional and widely supported perspective on the project management life cycle presenting the life cycle as four basic phases (Wideman, 2004:4; Kasvi *et al.* 2003:573; Flanagan & Finger, 1998:298-299);
- b) Participants were required to explain their own project management life cycle and to indicate whether Figure 2.4 is an acceptable presentation of the basic project management life cycle in their respective organisations; and
- c) All the participants confirmed the application of Figure 2.4 to their organisations' project management life cycle; however, Participants 1, 7, 11 and 14 indicated that they generally become involved in a feasibility study or even pre-feasibility study that precedes the traditional planning phase.

Tables 4.7 and 4.8 provide an overview of the framework for reporting Finding 7 and are supported by the results tables presented in Appendix E11 and E12.

Table 4.7: Overview of Finding 7 – Learning’s Prevalence in the PMLC*

	Where in the Project Management Life Cycle is Learning Most Prevalent?
1	33% of participants perceived learning to be most prevalent throughout all the phases of the project management life cycle;
2.	29% of participants perceived learning to be most prevalent during the project close-out/post-mortem/post-project review phase of the project management life cycle;
3.	14% of participants perceived learning to be most prevalent during the project planning phase of the project management life cycle;
4.	14% of participants perceived learning to be most prevalent during the project execution phase of the project management life cycle;
5.	10% of participants perceived learning to be most prevalent during a combination of the project planning and execution phase of the project management life cycle;

*See Appendix E11 – n = 21 participants.

A significant number of participants (33%) perceived learning to take place throughout their organisation’s project management life cycle; however, with the exception of one participant, all the participants in this category were associated with the same organisation. The 29% of participants who perceived learning to be most prevalent during the project close-out/post-mortem/post-project review phase of the project management life cycle presented a far wider spread across the various organisations, and as such, they represent a more indicative perception of the research sample.

Under Finding 3, the lack of inter-disciplinary interaction was highlighted by several participants as a barrier to effective learning practices. This was especially prevalent amongst participants operating in functional domains supportive of the project, such as tendering and procurement. When discussing the learning opportunities during the participants’ organisations project management life cycle, the theme of inter-disciplinary interaction re-emerged.

Participants involved in the tendering phase complained that they are not given an opportunity to remain involved in latter phases such as execution and project close-out. This

results in tendering missing out on the information gathered during the project that could assist them in improving costing, scheduling and general commercial terms of contract.

Participant 3 indicated that:

"We [tendering] would have wanted to be involved throughout the project, but there's just no way we can make someone available for each project, we're hardly coping with our resources as is. It would help if operations and project managers involved is more at key milestones in the project or just give us feedback on the things in the tender submission that came back to bite them. The finical feedback we get, but I'm talking about other stuff, like labour compliments, methodologies proposed and scheduling."

Procurement participants raised similar complaints and expressed a need to receive more information regarding the project procurement needs in advance as this would enable procurement to secure suppliers, manage lead times and manage cash flow associated with procurement spend.

Table 4.8: Overview of Finding 7 - Where Learning Should be Prevalent in the PMLC*

	Where in the Project Management Life Cycle Should Learning be Most Prevalent?
1	57% of participants proposed that learning should be most prevalent throughout all the phases of the project management life cycle;
2.	24% of participants proposed that learning should be most prevalent during the project planning phase of the project management life cycle;
3.	19% of participants proposed that learning should be most prevalent during a combination of the project planning and execution phase of the project management life cycle.

*See Appendix E12 – n = 21 participants.

A majority of participants (57%) indicated that learning should be taking place throughout the project management life cycle while a significant number (24%) emphasised learning during the planning phase.

Supporters of learning throughout the project management life cycle motivated their choice in reference to a tendency to leave learning to the end of the project and the amount of information lost due to poor recall or team members leaving the project.

Participant 17 stated that:

"The project management life cycle must be a continuous process of improvement and the only way that can happen is if the team continuously learn from their actions. At the end of the day, most projects are a bit like trial and error, however, no client will tolerate the same mistakes being made over and over on the same project."

Participant 7 reiterated this sentiment and averred that *"we learn by getting burned"*.

The importance of the planning phase as a learning platform was supported by the contention that it presents the phase where a difference can still be made, as contended by Participant 10:

"Planning is very important. This is where we need to learn as much as possible to avoid that we end up planning to fail."

4.9 RESEARCH QUESTION 8

THE EXTENT TO WHICH MEMBERS OF PROJECT MANAGEMENT ORGANISATIONS CONSIDER THEIR RESPECTIVE ORGANISATIONS TO BE LEARNING ORGANISATIONS AND HOW PARTICIPANTS BELIEVE THEIR ORGANISATIONS CAN IMPROVE THEIR STATUS AS LEARNING ORGANISATIONS

Finding 8: Overview

This finding is based on the responses to interview questions which focussed on whether participants perceived their respective organisations to be "learning organisations".

In order to assist the reader in understanding the researcher's approach to this research question, the following should be noted:

- a) Participants were presented with the essence of what would constitute a "learning organisation" as summarised by Kreitner and Kinicki (2004:639) under Section 2.3;
- b) Against this approximate backdrop, participants were required to determine whether they perceived their respective organisations as "learning organisations";

- c) Participants were furthermore required to indicate what they believed their respective organisations could do in order to improve their status as “learning organisations”;
- d) The purpose of this research question was to force candidates to compare their own organisations against the characteristics normally associated with a “learning organisation” by literature. As pointed out in Section 2.3, the ideal “learning organisation” is going to be something different for each individual organisation based on their structure, culture and needs. Consequently, this research question did not attempt to obtain a rating of participant organisations against an ideal, but merely prompted participants to consider what their respective organisations were “missing” in terms of learning and what could be done to transform them into a “learning organisation”, whatever that state of being might be in the mind of the participant.

Table 4.9 provides an overview of the framework for reporting Finding 8 and is supported by the Results Table presented in Appendix E13.

Table 4.9: Overview of Finding 8 - Learning Organisation Status*

	Research Sub-Question	Finding
1.	I perceive my organisation to be a “learning organisation”	71% of participants perceived their organisations to be “learning organisations”
2.	I do not perceive my organisation as a “learning organisation”	29% of participants did not perceive their organisations to be “learning organisations”

*See Appendix E13 – n = 21 participants.

A large majority of participants (71%) perceived their respective organisations to be “learning organisations.” Of more importance, however, is what participants believed their organisations should do to improve their status as “learning organisations”. A brief summary of the participants’ proposals in this regard follows:

- a) Provide team members with more time and resources to facilitate learning initiatives;
- b) Require more inter-disciplinary interaction throughout the project life cycle;

- c) Required to focus more on the successful initiatives and learn from our successes rather than only focussing on our mistakes;
- d) Learning initiatives and practices should be established formally and upfront;
- e) Learning should be part and parcel of the project deliverables;
- f) Launch a change initiative that focuses on establishing a learning culture;
- g) Learning should be complemented by conforming actions and implementation; and
- h) The skills shortage and lack of on-the-job training opportunities should be supplemented by enforced systems and procedures that tacitly introduce the new/improved way of doing things;

The three most frequently supported initiatives which were proposed related to more time and resources to facilitate learning initiatives, the establishment of learning initiatives formally and upfront and the launching of a change initiative that focuses on establishing a learning culture.

4.10 CONCLUSION

This chapter presented the findings obtained from interviews with 21 project management team members. Each finding provides a response to each of the study's eight supportive research questions as follows:

Supportive research question 1 – What are the organisational learning and knowledge management practices and strategies observable in project management organisations?

Finding 1:

A majority of participants perceived project review/status/progress meetings as a primary method to acquire and capture data internally, while slightly more than half perceived project team interaction as a prevalent practice to acquire and capture data internally. Other methods for the acquisition and capturing of data internally included the use of integrated databases, registers of lessons learned, compilation of principles, standards and procedures, post-project reviews/post-mortems, project progress reports and brainstorming.

The recruitment or sub-contracting of subject experts was identified as a prevalent practice to acquire and capture data from external sources by a majority of the participants; however, only slightly more than half of participants were able to identify such prevalent practices.

A large majority of the participants perceived project review/status/progress meetings as a prevalent practice to interpret data while just less than half of participants perceived the continuous updating of execution principles, standards and procedures as a data interpretation tool. Other measures for the interpretation of data included planning meetings, internal team data analysis and the use of specialist data analysts.

Slightly less than half of the participants perceived project review/status/progress meetings, an integrated database and team interaction and discussion as prevalent practices for the distribution of knowledge gained, whereas a significant number of participants perceived circulation of reports regarding lessons learned as a prevalent practice in this regard. Other measures for the distribution of knowledge gained included company-wide cross-project feedback, the updating of execution principles, standards and procedures and mandatory project reflection sessions.

Supportive research question 2 – Whether these practices and strategies are considered to successfully operate as performance enhancement business tools by those required to implement and utilize them.

Finding 2:

A significant majority of the participants confirmed that the practices and strategies identified in response to research question 1 assisted in improving project performance and organisational performance, whilst a slightly smaller number of participants believed the practices and strategies to be supportive of personal performance. Overall the candidates believed that the practices and strategies improved performance on several levels.

Supportive research question 3 – If considered unsuccessful or less successful, what are the potential causes for the failure of the various practices and strategies (barriers to learning)?

Finding 3:

Just over half of the participants perceived insufficient, or the lack of, specialist/skilled resources to utilise in training initiatives and the lack of information interpretation and contextualisation as the most significant barriers to cross-project and project cross-phase learning.

Additional barriers identified by a significant number of participants included insufficient time and resources to maintain learning practices and strategies, the fact that standards and procedure implementation were not being enforced, insufficient inter-disciplinary interaction, the organisational culture's misalignment with the organisation's learning principles, the fact that the organisation does not ensure that new knowledge is mobilised and actioned and the fact that learning practices are developed ad hoc and not as an integrated organisation-wide system.

Individual participants furthermore identified the following barriers:

- a) Lack of mentoring programmes;
- b) Reluctance by project team members to admit to mistakes in fear of retribution;
- c) Internal politics and hierarchical structures forming barriers to communication;
- d) Project review and project close-out procedures not being compulsory; and
- e) Not capturing and distributing lessons learned as and when these occur;

Supportive research question 4 – What is the type of learning that occurs in the participants' organisations when weighed against the content given to single-loop learning, double-loop learning and triple-loop learning by literature?

Finding 4:

A significant majority of participants perceived single-loop learning, or a combination of single and double-loop learning, as being prevalent in their organisation.

Just under a third of participants believed that triple-loop learning took place on an executive level as they equated strategic planning and management with their executive team's responsibilities, whereas a small percentage of participants perceived triple-loop learning to be prevalent throughout their organisations.

Supportive research question 5 – What is the role of innovation in the learning practices of the various participants' organisations?

Finding 5:

A significant majority perceived innovation to be encouraged in their organisation.

The encouragement of innovation was largely ascribed to necessity due to the lack of efficient learning and to the fact that project team members are empowered to explore new ideas and concepts. Specific forums to facilitate innovation were described as an enabler of innovativeness, whereas employee resistance to change was earmarked as a major barrier.

Supportive research question 6 – The role of management in the facilitation of learning practices in the various participants' organisations?

Finding 6:

Just over half of participants perceived management's role in facilitating learning as the management of resources to facilitate learning initiatives, whereas a significant number of participants perceived management's role as structuring the organisation and hierarchies so as not to discourage learning among colleagues.

Supportive research question 7 – Where in the project management life cycle of the various participants' organisations is learning most prevalent?

Finding 7:

A significant number of participants perceived learning to take place throughout their organisation's project management life cycle; however, with the exception of one participant, all the participants in this category were associated with the same organisation. The percentage of participants who perceived learning to be most prevalent during the project close-out/post-mortem/post-project review phase of the project management life cycle embodied a far wider spread across the various organisations, and as such, they represent a more indicative perception held by the research sample.

A majority of participants indicated that learning should be taking place throughout the project management life cycle and a significant number of participants emphasised learning during the planning phase.

Supportive research question 8 – To what extent do members of project management organisations consider their respective organisations to be learning organisations and how do participants believe their organisations can improve their status as learning organisations?

Finding 8:

A large majority of participants perceived their respective organisations to be “learning organisations” and made several proposals for the improvement of their organisation’s status in this regard.

In the next chapter, the researcher endeavours to analyze and interpret this study’s findings in light of the literature study and to make recommendations where appropriate.

CHAPTER 5

CONCLUSIONS AND RECOMMENDATIONS

5 CHAPTER 5 - CONCLUSIONS AND RECOMMENDATIONS

5.1 INTRODUCTION

In this final chapter, conclusions and recommendations will be made relating to the objectives of the study. Initially the conclusions reached from the empirical and literature studies will be discussed, whereafter recommendations will be made for a proposed project life cycle model that could address the shortcomings identified. These recommendations will be based on the following:

- a) The knowledge of experts and researchers as discussed in the literature study (Chapter 2); and
- b) Results gained from the empirical investigation on the implemental flaws prevalent when implementing organisational learning practices and strategies in a project management environment (Chapter 4).

Finally, a brief evaluation will be carried out to confirm that the objectives of this study have been met and recommendations will be made for future potential research.

5.2 LITERATURE MEETS REALITY

The literature study as presented in Chapter 2 that was conducted in order to:

- a) Present a preliminary review and critical discussion of the key concepts in organisational learning literature and to elicit an understanding of this field, its application and implemental flaws;
- b) Explore the relationship between organisational learning and the concept of a learning organisation;
- c) Identify the various shortcomings of organisational learning strategies as recognized by literature; and

- d) Identify the existing theoretical solutions to addressing the deficiencies highlighted.

The aim of the literature study was thus to gain theoretical knowledge of organisational learning strategies and the implemental shortcomings of these strategies in the creation of a “learning organisation” insofar as it is applicable to a project management environment. This theoretical knowledge and the knowledge gained from the pilot study were then utilised to design the research tools required to meet the objectives of the empirical study.

The empirical study’s primary objective in turn was to critically evaluate the phenomenon of organisational learning in the context of a project management environment to extract an understanding of its implemental flaws and to suggest a proposed project life cycle model that could address these shortcomings.

To this end, the empirical study explored the following supportive research questions:

- a) The organisational learning and knowledge management practices and strategies observable in project management organisations;
- b) Whether these practices and strategies are considered to successfully operate as performance enhancement business tools by those required to implement and utilize it;
- c) If considered unsuccessful, the potential causes for the failure of the various practices and strategies (barriers to learning);
- d) The type of learning that occurs in the participants’ organisations when weighed against the content given to single-loop, double-loop and triple-loop learning by literature;
- e) The role of innovation in the learning practices of the various participants’ organisations;
- f) The role of management in the facilitation of learning practices in the various participants’ organisations;
- g) Where in the project management life cycle of the various participants’ organisations learning is most prevalent; and
- h) The extent to which members of project management organisations consider their respective organisations to be learning organisations and how participants believe their organisations can improve their status as learning organisations.

In the literature study, the critical evaluation of organisational learning highlighted that there is often a chasm between the process during which an organisation acquires knowledge and the path by which improvement takes place as a result of such newly acquired knowledge. This failure is partially attributed to the focus on the outcomes of learning rather than exploring what learning really is and how the outcomes of learning are achieved.

The deficiencies in the various phases of organisational learning were identified as ignorance of the processes involved in adjusting an organisation's corporate memory to conform to the variances in the internal and external environment to which the organisation is exposed and to adjust the organisational actions accordingly. This focussed one's attention on the importance of knowledge management in an organisation, emphasizing the organisation's need for tools and techniques to collect, organise and translate information into valuable implementable knowledge and to ensure that organisational members can obtain rapid access thereto.

When reflecting on the results obtained in Finding 1 of the empirical study, the researcher has indeed been able to confirm that there are various tools and techniques to collect, organise, translate and distribute information. However, whether these tools do in fact translate information into valuable implementable knowledge and ensure that organisational members can obtain rapid access thereto is more doubtful.

In terms of Finding 1, in the case of acquisition and capturing of data, data interpretation and knowledge distribution, participants in all three cases identified project review/status/progress meetings as the most prevalent practice in their respective organisations. Planning meetings as a tool for data acquisition and capture and data interpretation were similarly rated very highly by participants. As indicated in Chapter 4, it seems evident that interaction through meetings is an important and common practice in the project management organisations in question.

As highlighted previously, the latter finding would have been expected to be indicative of a high prevalence of distribution of meetings' minutes, the production and circulation of a "lessons learned" register, the circulation of project progress reports and incorporation of these items into a integrated database or even a project specific database. This was, however, not the case, especially not in the case of distribution of meeting minutes, whereas the circulation of "lessons learned" reports and the use of integrated databases were practised by less than half of the participants.

As explained in the literature study presented in Chapter 3, the introduction of organisational knowledge emphasised the need for organisational structures to allow for teamwork and networking across organisational boundaries as learning processes and knowledge management are often grouped under completely exclusive structures. The literature study furthermore reflected on the *project management organisation and the unique structure and characteristics* of such organisations that came to the forefront, such as independent project

team structures and their potential for isolation from the remainder of the organisation, and ignorance of external organisation knowledge. The empirical structure, although in a slightly different context, highlighted this need for interaction across organisational boundaries in practice.

In terms of Finding 3, the lack of inter-disciplinary interaction was emphasised by several participants as a barrier to effective learning practices. As discussed in Chapter 4, this was especially prevalent amongst participants operating in functional domains supportive to the project, such as tendering and procurement. This theme re-emerged in Findings 7 and 8. Under Finding 7 participants indicated that, dependent on the relevant project management team member's functional domain, they are not always given an opportunity to remain involved in other phases of the project, such as execution and project close-out. In terms of Finding 8, participants indicated that more inter-disciplinary interaction throughout the project life cycle could assist in improving the organisation's status as a "learning organisation."

During the literature study the vital roles of organisational leadership and organisational culture in the organisational learning processes became apparent and underlined the need for empowerment and openness to be encouraged and valued in order to facilitate creativity and innovation. These roles were coupled with the concept of triple-loop learning, requiring the organisation to challenge the status quo, not only in terms of short-term transformation, but also in terms of long-term positioning of the organisation.

Leadership and organisational culture were explored during the empirical study. In terms of Finding 5, a third of the participants who perceived their organisations as discouraging with regards to innovation ascribed this to the lack of empowerment. A further concern relates to the fact that although a large majority of participants considered their organisations as encouraging innovation, one third of such participants conceded that innovation was borne out of necessity, largely attributable to the lack of efficient learning.

The issue of empowerment also moved to the forefront under Finding 6 where a significant number of participants perceived management's role in facilitating learning as structuring the organisation and hierarchies so as to not discourage learning amongst colleagues. However, the research findings did not identify organisational structure or the lack of empowerment as a significant barrier to learning.

The literature study explored the phenomenon of a learning organisation and many of the organisational requirements highlighted under organisational learning practices were

attributed to the repertoire of such an organisation. Of specific importance, were the various stages of learning normally associated with a learning organisation as diagrammatically depicted in Figure 2.3.

Buckler (1998:18) proposed that individuals will move through the learning stages, driven by their inherent individual motivation to learn, but restrained by real or imagined barriers to learning. In situations where the driving and restraining forces are matched, learning will not take place. When reflecting on the barriers to learning identified by participants to the empirical study under Finding 3, it seems unlikely that participants would be able to move past the understanding phase without sufficient drive to overcome these barriers.

Buckler (1998:19-20) expanded on the learning process model as depicted in Figure 2.3 by adding a leadership dimension and arguing that the role of the organisational leaders in facilitating movement through the learning process, by interacting with individuals and teams, is crucial for success. Buckler (1998:19) cautioned that this style of leadership does not sit easily with a control orientated and bureaucratic mindset or culture.

The empirical study's findings did not emphasize the exceptionally strong presence of a control orientated and bureaucratic culture or leadership style in any of the participant organisations, save for Finding 6 indicating that participants perceived it as management's role to avoid such cultures and as reflected on previously. Hence it seems likely that the participants, provided there is sufficient leadership drive in their various organisations, would be able to overcome the various barriers that block movement through the various learning stages.

A major challenge facing all multi-project organisations is the transfer of organisational knowledge across projects and project phases. Various solutions are offered by literature, including:

- a) Personnel movement;
- b) Peer group interactions;
- c) Review meetings;
- d) Technology transfers;
- e) Training;
- f) Publications and patents; and
- g) Compilation of project close-out documentation.

While all the various proposed solutions have some merit in terms of facilitating organisational knowledge transfer across projects and phases, the biggest shortfall in the transferability of knowledge was not rooted in the availability of transfer tools, but in the application of these tools at various time slots in the project life cycle. This was also confirmed by the empirical study in numerous respects. As such the traditional project life cycle and its deficiencies in terms of allocating time towards organisational learning practices were evaluated during the literature study in light of the PDSA model proposed by Kotnour (2000:394).

The potential areas for failure in the PDSA model were accentuated, with a specific emphasis on the use of lessons learned and post-project reviews. The proposed phases of a so-called "*project learning organisation*" as proposed by Cuel and Manfredi (2006:262-263) were assessed during the literature study and utilized to propose a revised project life cycle for project learning organisations that could address the deficiencies ascribed to the traditional project life cycle.

The empirical study also tested the use of Kotnour's (2000:394) PDSA model and with the exception of the respondents from one of the participant organisations, who emphasised his company's involvement in feasibility and pre-feasibility studies, all participants confirmed that Kotnour's PDSA model is representative of the project management life cycle prevalent in their own organisations.

During the empirical study, under Finding 7, an attempt was made to establish where in the project management life cycle learning was most prevalent in the participant organisations and where participants perceived learning should be most prevalent.

Based on the results obtained in Finding 7 and an overall reflection on the results obtained from the empirical study, with due consideration of the proposed phases of a so-called "*project learning organisation*" as proposed by Cuel and Manfredi (2006:262-263), this research aims to propose a project life cycle model that could address the barriers to learning as identified in both the literature and empirical research results. The latter proposal will form the basis of the recommendations of the researcher as presented under Section 5.3

5.3 RECOMMENDATIONS

To date, organisational learning scholars have been unable to define conclusively what an ideal learning system would be for any particular organisation. Whereas all the various proposed solutions as discussed during the literature study have some merit in terms of facilitating organisation knowledge transfer across projects and phases, the biggest shortfall in the transferability of knowledge was not rooted in the availability of transfer tools, but in the application of these tools at various time slots in the project life cycle. As organisations are all unique, there's no "one size fits all" project management life cycle that can be tailor made and applied to meet the needs of all organisations. The complexity, budgetary and other resource constraints of the relevant organisation will largely determine the format and complexity of such a model.

As such, the literature study evaluated the traditional project life cycle and its deficiencies in terms of allocating time towards organisational learning practices in light of the PDSA model proposed by Kotnour (2000:394).

The potential areas for failure in the PDSA model were accentuated, with specific emphasis on the use of lessons learned and post-project reviews. In conclusion the proposed phases of a so-called "*project learning organisation*" as proposed by Cuel and Manfredi (2006:262-263) were assessed and utilized to propose a revised project life cycle for project learning organisations that could address the deficiencies ascribed to the traditional project life cycle.

Kotnour's PDSA model (2000:394) views project management and learning processes as integrated and serves to represent the learning process in a project environment (Kotnour & Vergopia, 2005:2).

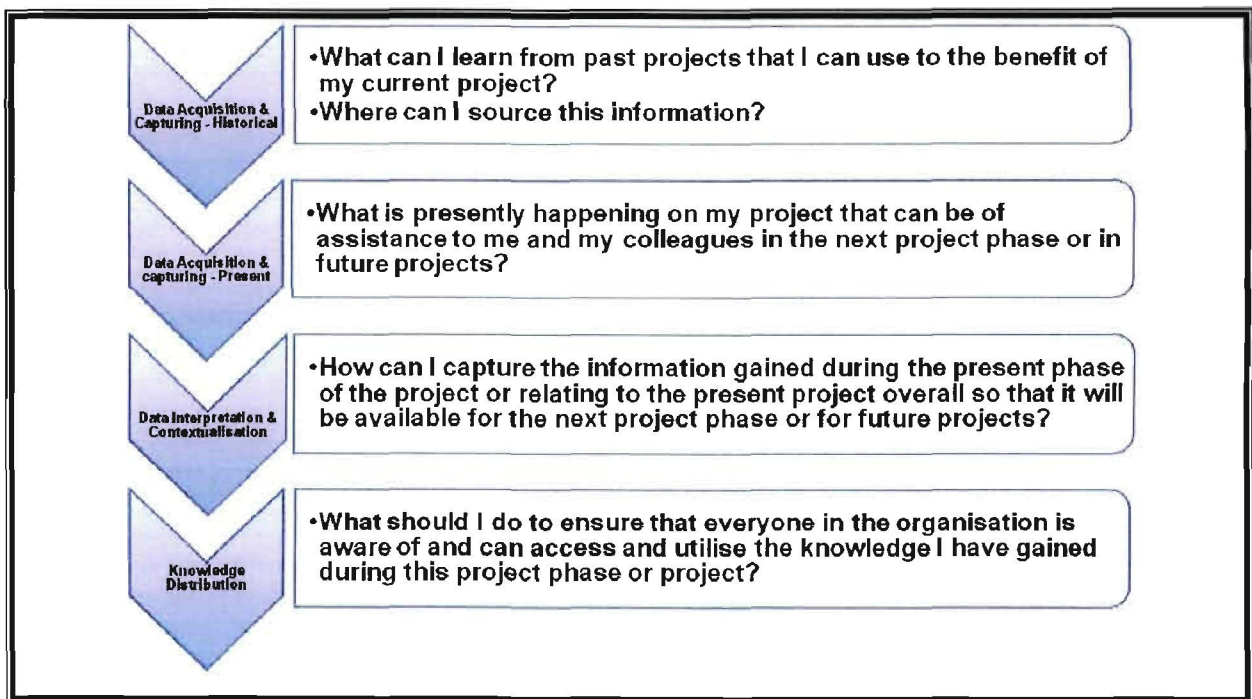
As indicated during the literature study, in accordance with the model, learning in the project environment can be described using the four steps of "Plan," "Do," "Study," and "Act" (Kotnour, 2000:394-395; Kotnour & Vergopia, 2005:2):

The PDSA cycle as proposed by Kotnour proclaims that it constitutes an integration of the learning and project management processes in a project management environment; however, the PDSA cycle does little more than produce lessons learned based on reflection in terms of problem solving initiatives. This research study concludes that learning and project management processes should indeed be integrated; however, the researcher

proposes that the only way to achieve such integration successfully, is to incorporate learning practices into the project management life cycle activities of the relevant organisation.

The format of such integration will differ for each and every organisation and project based on the complexity and size thereof, the resource constraints, the schedule for completion and numerous additional peculiarities tied to the uniqueness of the relevant project and the relevant organisation. However, to determine where and what learning processes should be integrated into the project management life cycle of the organisation, this research study recommends that the organisation strive to create a learning culture supportive of employees implementing the learning checklist proposed in Figure 5.1 during each phase of the project.

Figure 5.1: The Learning Checklist



As indicated during the empirical study, after completion of the interviews and compilation of the preliminary findings, some of the research participants were approached for a second time to assist in corroboration and clarification of the research data against the research findings. During these post-interview clarification sessions, participants were presented with the checklist depicted in Figure 5.1. The researcher requested participants to apply the checklist during each phase of a typical project management life cycle and to give feedback on what this process would entail. Based on the feedback during post-interview clarification sessions, this research study proposes that the project life cycle model depicted in Figures

5.2 to 5.7, each representative of a project phase, could address and circumvent some of the barriers to learning.

It should, however, be emphasised that the proposed project life cycle is merely a *guideline* in terms of the manner in which project management organisations could incorporate and integrate learning activities and procedures into daily project management activities and the complexity and extent of the integration will largely be dictated by the organisation or project's size, complexity and value and the available justifiable resources.

In Figures 5.2 to 5.7, each phase of a project is depicted as a two-pronged set of activities, general project management activities being depicted on the left side of each diagram and learning activities on the right side.

Although depicted separately, the two sets of activities do not necessarily occur in isolation and are generally *facilitated concurrently and in an integrated fashion*. When project management activities trigger or result in a learning process or activity, the flow is depicted by the arrows or colour bands.

All learning activities are grouped into one or more bands (viewed vertically), identifying them as either the acquisition or capturing of data from internal and external sources, activities related to data interpretation or contextualisation or activities relating to knowledge distribution and implementation.

In this regard, Figure 5.2 depicts the project enquiry phase as involving the receipt of a tender of enquiry document from a client, often inclusive of data generated by a feasibility study preceding the project. This project management activity in turn triggers the project learning activities reflected on the right hand side of the diagram, following the flow across the various learning activity bands as indicated by the arrows.

Figure 5.3 follows a similar structure; however, each project management activity on the left triggers the corresponding colour banded process of learning depicted on the right hand side.

In the case of Figure 5.4, the set of project management activities depicted on the left, simultaneously, and in an integrated and concurrent fashion, triggers the various learning processes depicted on the right hand side in totality or to the extent which is applicable and practical.

The flow in Figure 5.5 and 5.6 follow similar patterns to the one reflected in Figure 5.2, whereas the flow in Figure 5.7 is similar to the flow reflected in Figure 5.3.

It needs to be emphasised that the proposed project life cycle serves only as an example of how one of the participant organisations could integrate learning activities and processes as part of their project management life cycle in order to facilitate improved organisational learning and based on the hypothetical implementation of the Learning Checklist, depicted in Figure 5.1, during each phase of the project management life cycle.

Figure 5.2: Project Management Life Cycle - Project Enquiry Phase

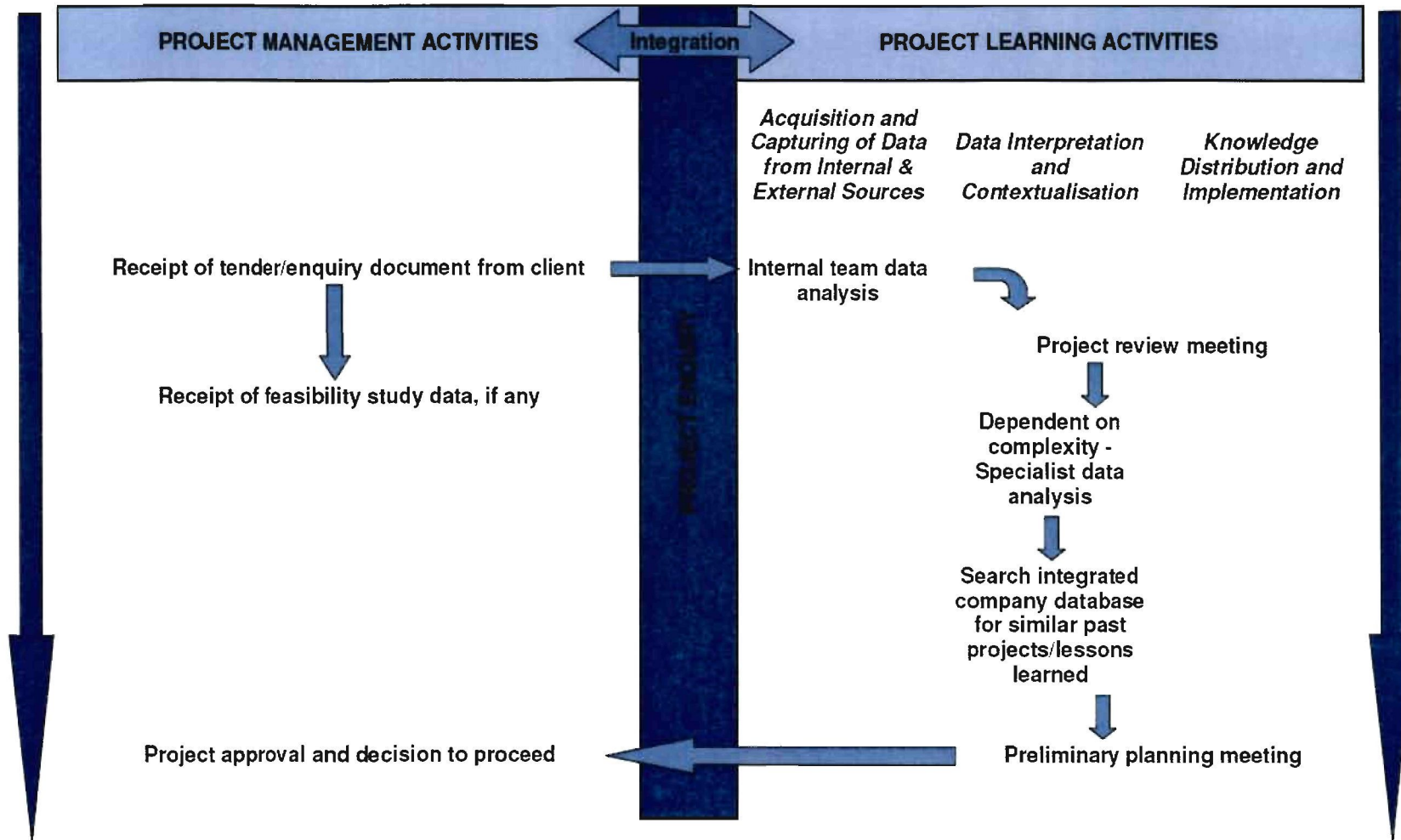


Figure 5.3: Project Management Life Cycle – Project Initiation and Analysis Phase

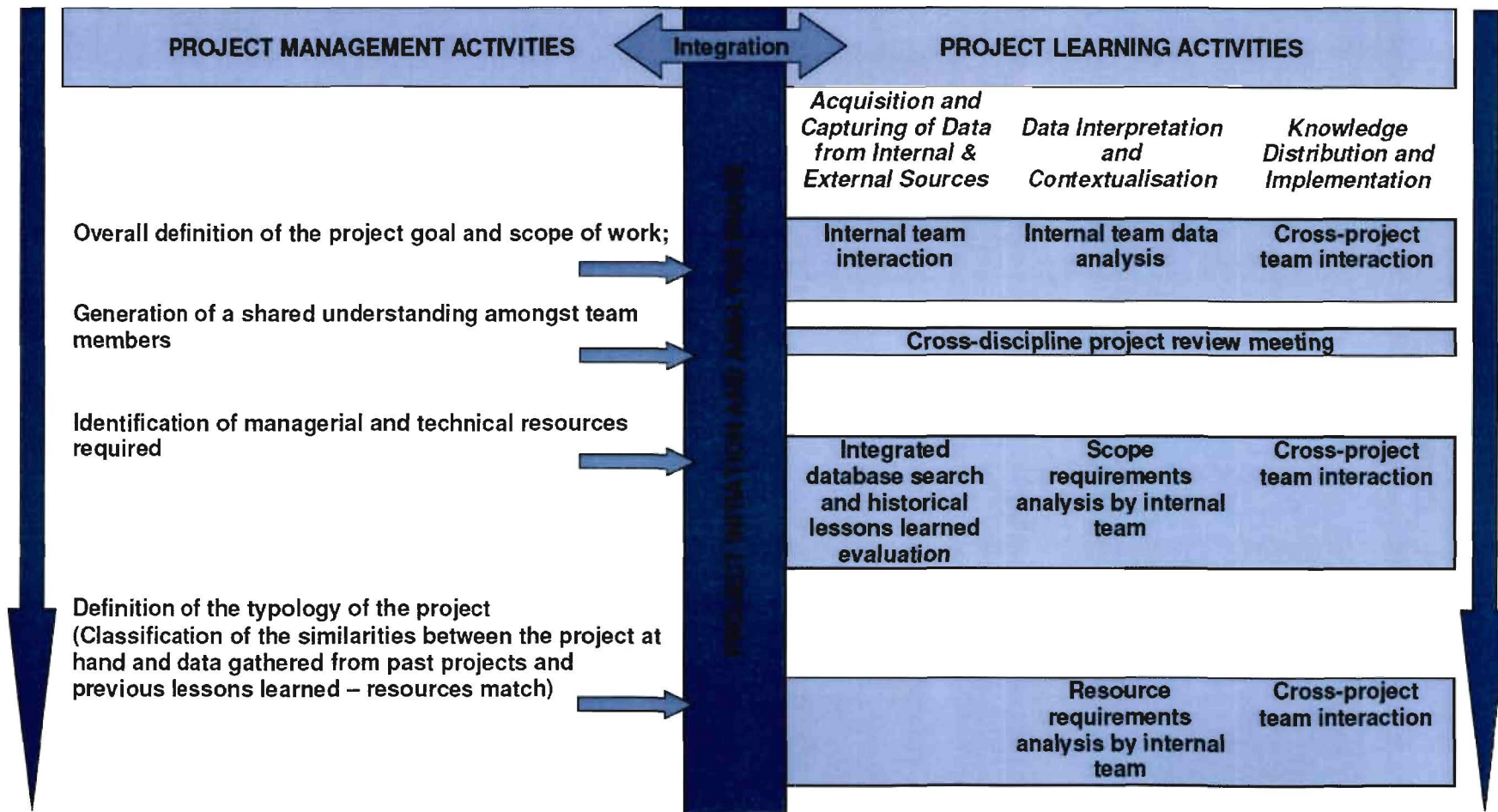


Figure 5.4: Project Management Life Cycle – Project Planning Phase

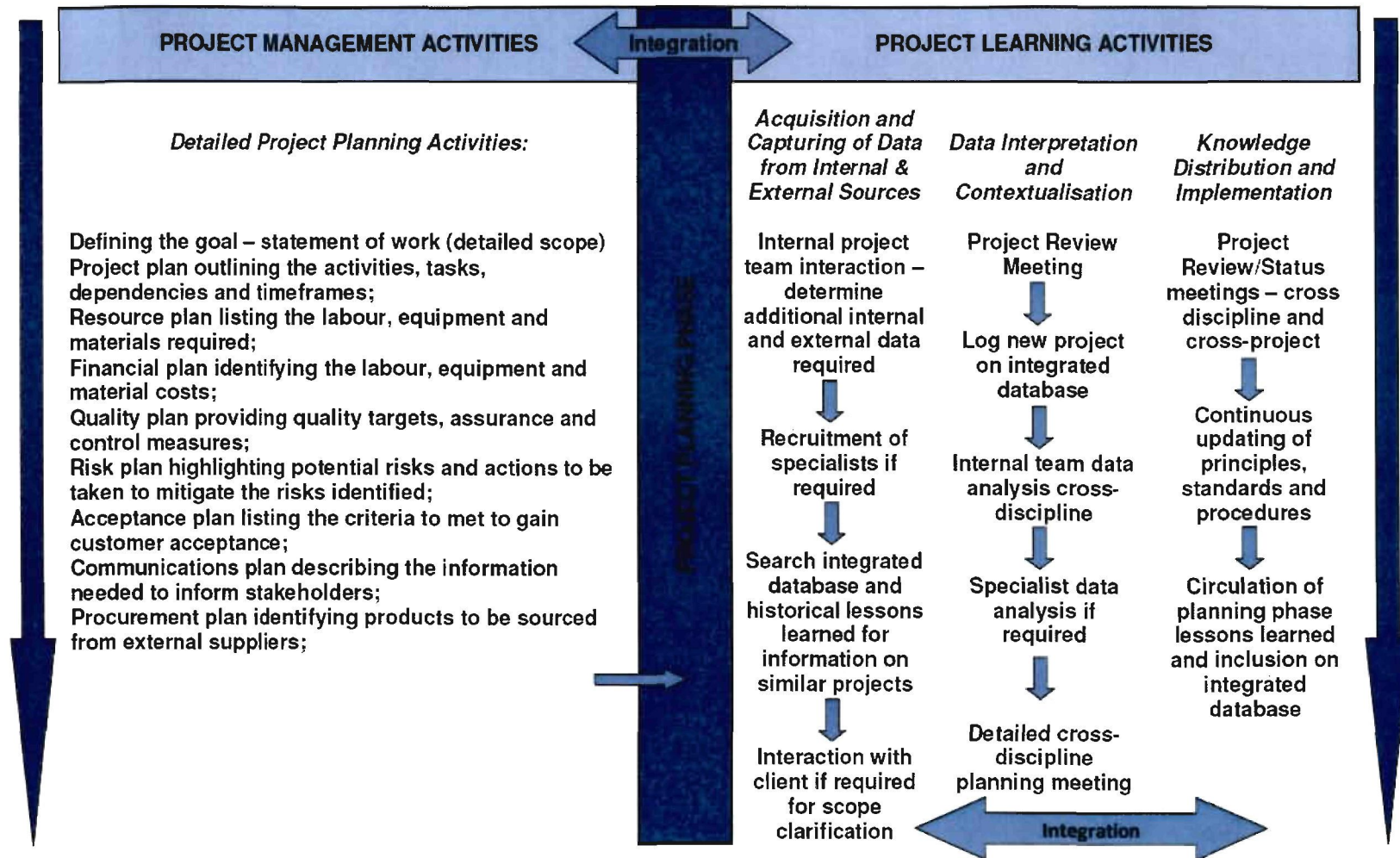


Figure 5.5: Project Management Life Cycle - Project Implementation and Execution Phase

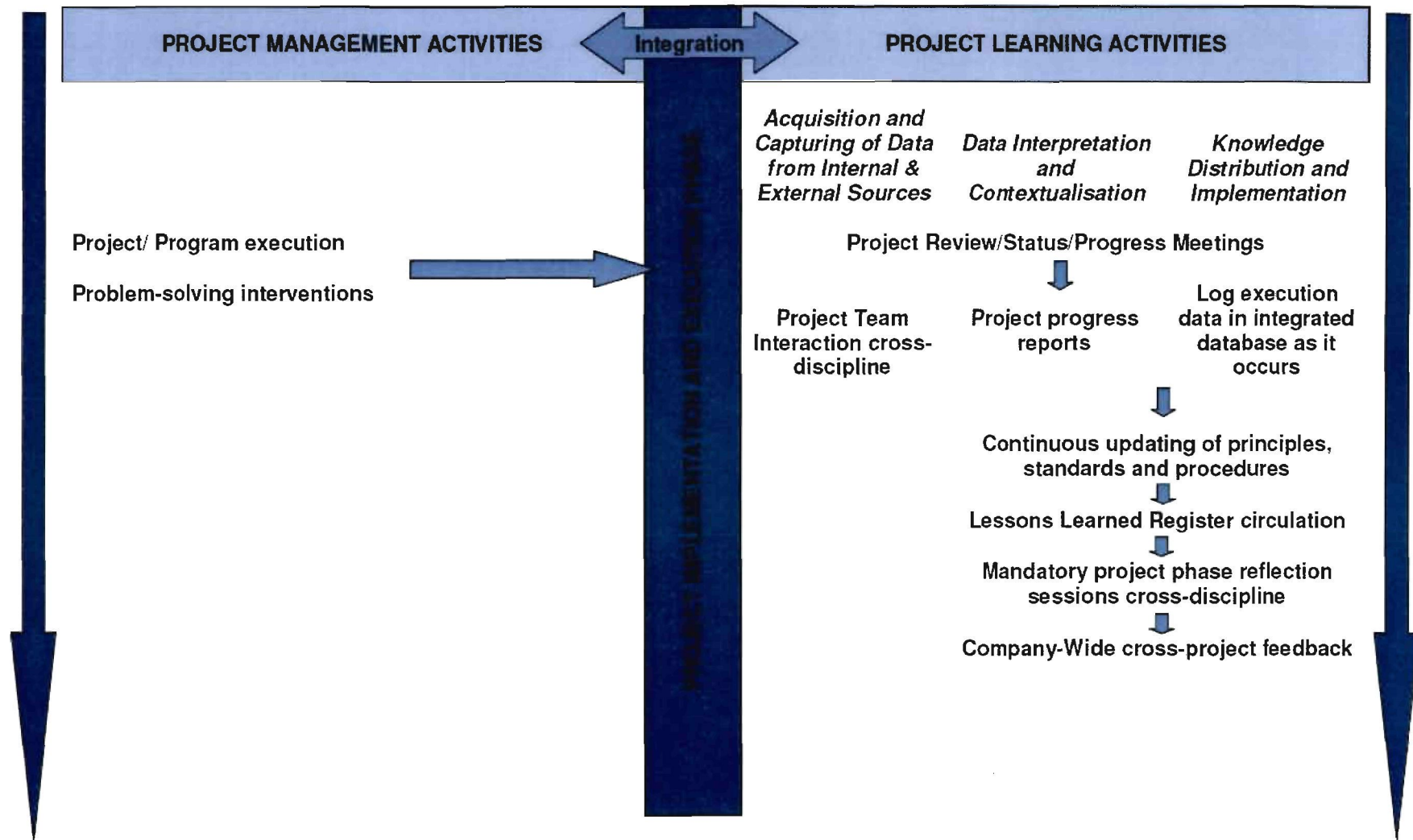


Figure 5.6: Project Management Life Cycle - Project Closure and Measurement Phase

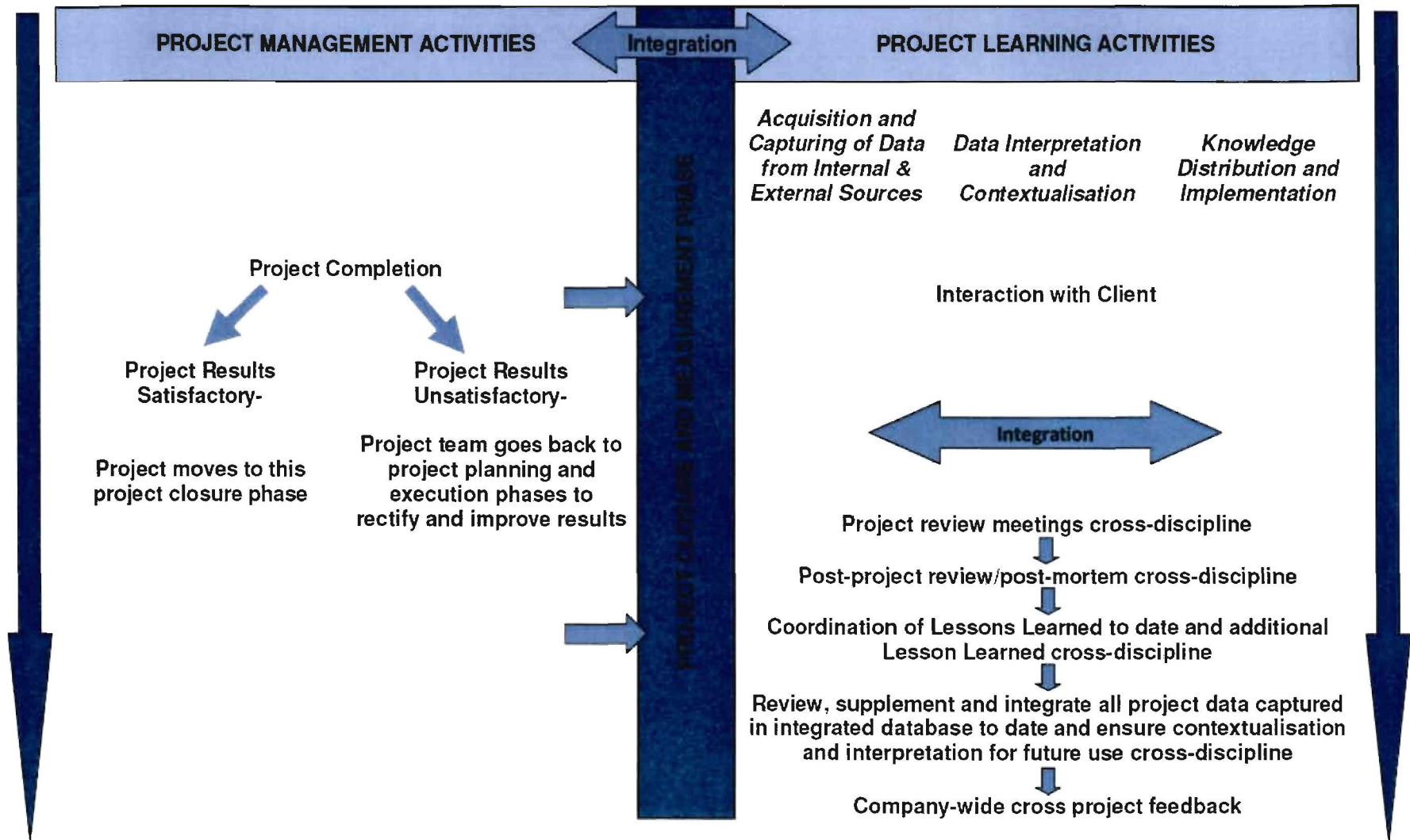
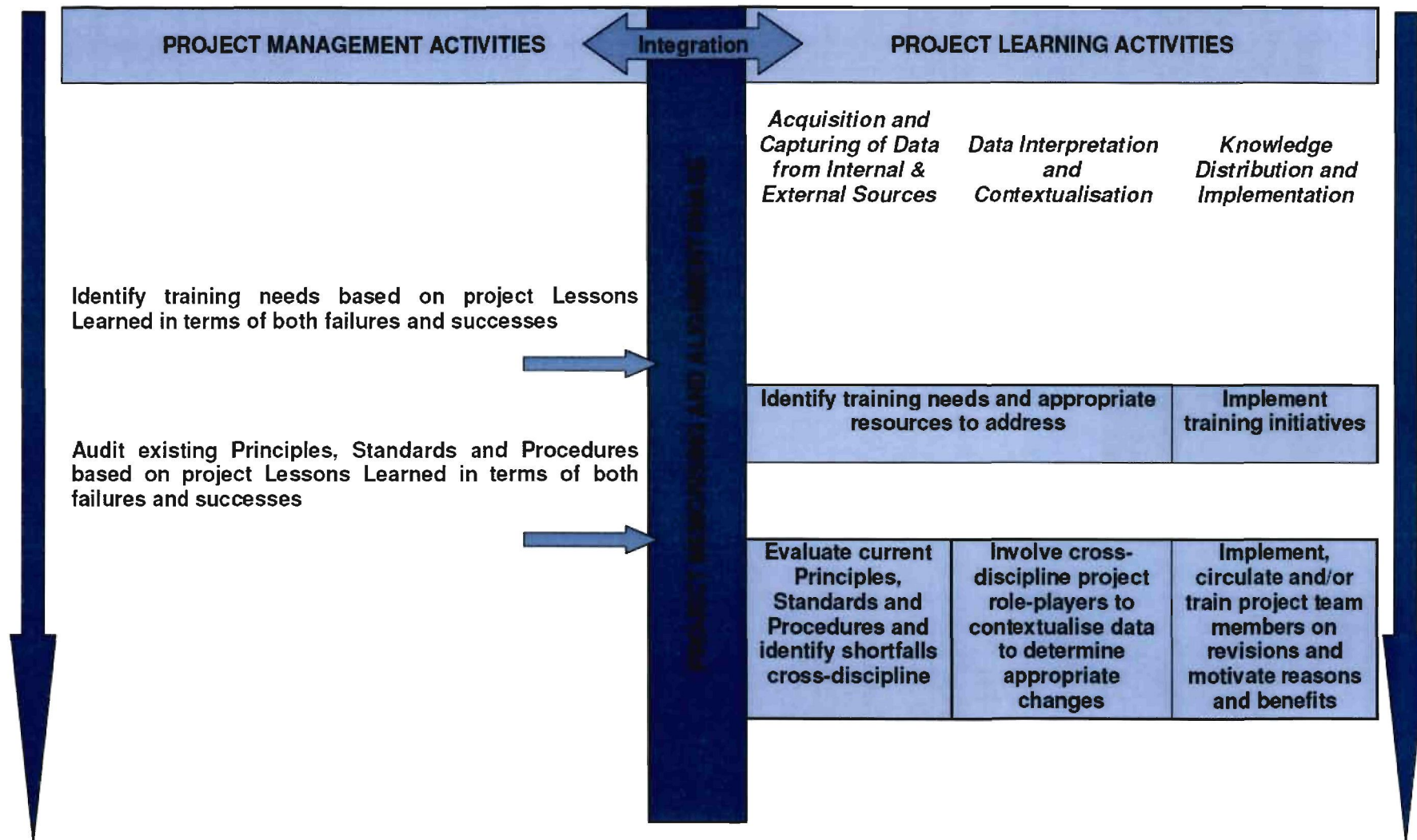


Figure 5.7: Project Management Life Cycle - Project Memorising and Alignment Phase



5.4 STUDY EVALUATION

The primary objective of this study “to critically evaluate the phenomenon of organisational learning in the context of a project management environment to extract an understanding of its implemental flaws and to suggest a proposed project life cycle model that could address these shortcomings” was achieved by the summation of barriers to organisational learning as set forth in Section 5.2 and the recommended project life cycle model that could address these barriers as identified in both the literature and empirical research results suggested in Section 5.3 above.

In order to achieve the main objective, the secondary objectives of this study were threefold:

Firstly, to present a preliminary review and critical discussion of key concepts in organisational learning literature to elicit a clear understanding of this field, its application in practice and implemental flaws.

Secondly, to explore the relationship between organisational learning and the learning organisation in a project management organisation to provide some insight into the obstacles faced by organisations in transforming the rhetoric of organisational learning to the reality of a learning organisation.

Thirdly, to propose a pragmatist view on the way forward for project management organisations that may be utilised to facilitate the transformation from organisational learning pretence to a learning organisation reality and the associated performance benefits.

The first secondary objective was achieved through the detailed literature study and presentation thereof in Chapter 2. The second secondary objective was addressed through the detailed literature study depicted in Sections 2.2 and 2.3 of Chapter 2, as well as conclusions drawn from data gathered in the empirical study elucidated in Chapter 3 and as presented in Chapter 4 above.

In conclusion, the third secondary objective was achieved through a critical analysis of the results obtained from the empirical study’s findings as presented in Chapter 4, emphasizing the barriers experienced by research participants in implementing learning practices and strategies in a project management environment and elucidating the perceived personal, project and organisational performance benefits associated with organisational learning practices. A proposal for the inclusion and implementation of learning practices and

processes as part of the project management life cycle as proposed in Chapter 5, Section 5.3 served to address the facilitation of the transformation from organisational learning pretence to a learning organisation reality.

5.5 RECOMMENDATIONS FOR FUTURE RESEARCH

With a view to testing the recommended methodology as to how organisations could integrate learning activities and processes as part of their project management life cycle in order to facilitate improved organisational learning and based on the hypothetical implementation of the Learning Checklist, depicted in Figure 5.1, during each phase of the project management life cycle the following is suggested:

- a) Extend this research study to include the views of a more comprehensive research sample per organisation and a wider scope of participant organisations. Only then can one assume for certain the state of the organisation's culture with respect to organisational learning practices.
- b) This study could be extended to other organisations in order to elicit a more comprehensive evaluation of the state of learning in project management organisations. This will enable the identification of additional learning practices that could be considered for implementation to further strengthen the organisational learning culture in a project management environment.
- c) The study's recommendations, specifically the proposed Learning Checklist and project management life cycle, should be developed with a selection of organisations to determine the practical implications associated with such a transformation into a learning organisation mindset and to provide an opportunity for benchmarking.

5.6 CONCLUSION

The purpose of this chapter was to conclude this research study and to recommend a revised project management life cycle that takes due cognizance of, and may assist in, the implementation of organisational learning practices and strategies in a project management environment as an integrated element of the project management life cycle.

Implementing these recommendations must be carefully planned through involving as many cross-disciplinary role players as possible in order to ensure effective implementation and a model tailor made to “fit” the relevant organisational needs and realities.

The importance of learning was first put forward by a Chinese philosopher, Confucius (551 - 479 BC). He believed that everyone should benefit from learning:

“Without learning, the wise become foolish; by learning, the foolish become wise. Learn as if you could never have enough of learning, as if you might miss something.”

This mantra could evidently serve all organisations in their striving towards improved performance.

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6 BIBLIOGRAPHY

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APPENDICES

7 APPENDICES

APPENDIX A LETTER OF INTRODUCTION

7.1 APPENDIX A - LETTER OF INTRODUCTION

Dear participant

Thank you for taking part in this research study. The research will be conducted by means of one on one interviews led and guided by the interviewer. The interview is scheduled to take 45 minutes to an hour, but in all instances will not exceed one hour. You are not required to provide any names at any stage during the interview, nor will your own name, designation or company association be disclosed at any stage during the research study.

In order to facilitate a better understanding of the research, it would be appreciated if you could take the time to read this brief introductory summary to the research and the research objectives.

Title of research report:

A CRITICAL EVALUATION OF THE ORGANISATIONAL LEARNING THAT TAKES PLACE IN A PROJECT MANAGEMENT ENVIRONMENT

Introduction to the research:

Organisations in the modern day business environment are continuously faced with an increasingly competitive operational milieu that demands constant improvements in the

quality of products and services. This also holds true for project-based organisations; however, for the latter type organisation quality improvement translates into meeting the customer's requirements within the project's budgetary, time and technical constraints, a tall order in a landscape where projects are becoming increasingly complex and constrained.

It is no longer sufficient for project-based and team-based organisations to rely on traditional project management methodologies. Instead, they need to learn from past actions and performances to improve future management ability, and consequently the quality of projects delivered and their organisation's competitive edge.

In this context, it has been highlighted that organisations in the construction industry have responded to the ever-growing pressure from clients to deliver high-quality facilities on time and on budget by investing more heavily in the improvement of their business processes. These investments predominantly focus on the introduction of innovative project management systems and supplementary information and communication technology, all structured to facilitate organisational learning.

Organisational learning as a concept has been subjected to a wide and growing variety of literary discussion and review, not to mention the plethora of definitions proposed in an attempt to give content to this modern day organisational buzzword. However, in simple terms organisational learning is essentially a process during which an organisation strives to improve its performance, to detect and correct errors and to adapt to its evolving environment through developing knowledge and understanding. Learning is the key characteristic as it enables the organisation to sense changes emanating from both its internal and external environment and to adapt accordingly in the face of an increasingly discontinuous milieu.

To master such a process and to implement it in a manner that results in true and continuous learning, would undeniably present any organisation with a powerful weapon in its strive to achieve and maintain a competitive edge.

The primary objective of the study is to critically evaluate the phenomenon of organisation learning in the context of a project management environment so as to extract an understanding of its implemental flaws and to suggest a proposed implementation model that could address these shortcomings.

In order to achieve the main objective, the secondary objectives of this study are threefold:

Firstly, to present a preliminary review and critical discussion of key concepts in organisational learning literature in order to elicit a clear understanding of this field, its application in practice and implemental flaws.

Secondly, to explore the relationship between organisational learning and the learning organisation in a project management organisation so as to provide some insight into the obstacles faced by organisations in transforming the rhetoric of organisational learning to the reality of a learning organisation.

Thirdly, to propose a pragmatist view on the way forward for project management organisations that can be utilised to facilitate the transformation from organisational learning pretence into a learning organisation's reality and the associated performance benefits.

APPENDIX B

SEMI-STRUCTURED INTERVIEW SCHEDULE

7.2 APPENDIX B - SEMI-STRUCTURED INTERVIEW SCHEDULE

Introduction

Information provided by interviewer:

The interview is scheduled to take 45 minutes to an hour, but in all instances will not exceed one hour. You are not required to provide any names at any stage during the interview, nor will your own name, designation or company association be disclosed at any stage during the research study.

Section A - The organisational learning and knowledge management practices and strategies in the various participants' organisations.

Information provided by interviewer:

There are several known characteristics of an organisation that are known to be supportive of more effective organisational learning practices.

- a) Knowledge acquisition through external sources or internal development;
- b) Distribution processes by means of which knowledge is spread among the members of the organisation;
- c) Interpretation activities during which individuals share and incorporate aspects of their knowledge which are not common to all of them, achieving a shared understanding as well as co-ordination in decision-making;
- d) Organisational memory development which has the aim of storing knowledge for future use, either in organisational systems designed for this purpose or in the form of rules, procedures and other systems.

Are any of these practices observable or present in your organisation?

Can you provide me with an example of:

- The manner in which your organisation acquires knowledge/information?
- The manner in which your organisation distributes knowledge/information – distribution processes?
- What do you do in order to interpret and process new information/knowledge?
- What systems and procedures does your organisation have to capture new information/knowledge?

Section B - Whether these practices and strategies are considered to operate as performance enhancement business tools and the extent to which participants' considered these practices and strategies to be successful / unsuccessful.

Do these practices or strategies assist you in your job performance?

Can you provide me with an example in this regard?

Do you think it assists your co-workers in their job performance?

Can you provide me with an example in this regard?

To what extent do these practices or strategies contribute to the project performance improvement, if at all?

Can you provide me with an example in this regard?

Do you think the practices and strategies employed by you and in your organisation are successful?

Please explain why you say this?

What do you think are the causes of these successes/failures?

What are the most common implemental stumbling blocks in your organisation for organisational learning strategies and practices?

[Probe individual issues identified by participant.]

When you require information about a past project or any aspect of that project, how do you go about it?

Is this process successful?

Would you have preferred a different process and why?

[Probe individual issues identified by participant.]

Section C – Level of learning facilitation in the relevant organisation.

Information provided by interviewer:

Four types of learning have been identified:

- a) **Single-loop Learning** – this occurs when errors are detected and corrected and organisations continue with the present status quo without modifying present policies and goals. In essence, single-loop learning focuses on improving the status quo through small incremental changes in how the organisation functions;
- b) **Double-loop Learning** – is aimed at challenging and changing the status quo and the existing assumptions and conditions within which the existing single-loop learning operates. It occurs when, in addition to the detection and correction of errors, the organisation questions and modifies its existing norms, procedures, policies and objectives and can lead to transformational change that radically alters the status quo;
- c) **Deutero Learning** – this type of learning involves “*learning how to learn*” and occurs when organisations learn how to carry out both single-loop and double-loop learning. Deutero type learning focuses on the learning process itself and seeks to improve how organisations perform single- and double-loop learning.
- d) **Triple-loop learning** – refers to the application of organisation knowledge by constantly questioning existing products, processes and systems and by strategically asking where the organisation should be positioned in the future marketplace. Triple loop learning goes beyond single and double loop learning by considering organisation knowledge based on a long-term strategic view of the organisation’s future. For example, triple-loop learning will require the organisation to make incremental changes to facilitate its immediate competitiveness (single-loop learning), coupled with double-loop learning to determine how to adjust existing norms, policies, procedures and objectives to ensure transformational change and in addition, it will require consideration of how the present transformation positions the organisation for the future based on the anticipated changes to the environment in which it operates. The third consideration could result in further

pre-emptive transformational activities that are aimed, not only at correcting current errors, but also at anticipating and avoiding future errors.

What kind of learning is predominant in your organisation?

Please explain why you say this?

[Probe potential reasons or motivations for the choice identified by participant.]

Do you and your colleagues experiment with new ideas e.g. implementing a new system, product or work methodology?

Is it common for employees to try new ideas in your organisation?

[Probe reasoning based on response.]

Is it generally difficult to introduce new ideas, systems or methodologies in your organisation?

Do employees resist new ways of doing things?

[Probe reasoning based on response.]

What role does your organisation's management play in dealing with new information and knowledge in the organisation?

Does management encourage employees to question project methodologies, practices or projects?

Do you feel comfortable introducing new ideas?

How does management receive new suggestions and ideas?

[Probe reasoning based on response.]

Section D – The project life cycle of the organisation, the learning life cycle and the extent to which participants consider their respective organisations to be “learning organisations”

Please take me through the typical phases in your average project life cycle?

How do you deal with the knowledge gained during each phase of your project?

Can you associate phases or steps with new information gained either internally developed or emanating from the external environment?

Do you think this is effective?

Have you ever heard of the term “learning organisation”?

What do you think it means?

What would you consider as ideal attributes associated with a learning organisation?

Do you consider your organisation to be a learning organisation?

[Probe reasoning based on response.]

APPENDIX C
CONTACT SUMMARY FORM

7.3 APPENDIX C - CONTACT SUMMARY FORM

Visit Date:

Contact Name:

Contact Number:

Company:

Venue:

Pseudonym:

Summary of Information Acquired:

Research Question 1

What are the most prevalent organisational learning and knowledge management practices and strategies applied in the participant's organisation?

a) Acquisition of knowledge from internal and external sources:

b) Systems and procedures to capture new data/information:

c) Systems and procedures in place for data interpretation and converting data to value adding information that warrants action/implementation:

d) Distribution processes for knowledge/information:

Research Question 2

How successful are the practices and strategies identified by the participant under research question 1 in generating improved personal, project and organisational performance?

a) Personal performance improvement/example:

b) Project performance improvement/example:

c) Organisation performance improvement/example:

d) Perceive strategies as successful:

e) Implemental stumbling blocks experienced/frustrations when seeking historical project information:

Research Question 3

What level of learning occurs in your organisation when weighed against the content given to single-loop, double-loop, deuterio and triple-loop learning?

a) What type of learning predominant and why:

b) Facilitation of innovation in the organisation:

c) What role played by management in facilitating organisational learning and innovation:

Research Question 4

Where does organisational learning occur in the relevant organisation's life cycle and to what extent does the participant consider his/her organisation to be a "learning organisation"?

a) What is the organisation's project life cycle:

b) Where in the life cycle is learning most prevalent:

c) Where should it be most prevalent to facilitate learning for the participant and how does he/she propose it to be improved, if necessary:

d) Does the participant consider his/her organisation to be a learning organisation:

e) What can the organisation do to become or improve its status as a learning organisation:

Main Issues or themes striking in this contact:

APPENDIX D

CONTACT SUMMARY FORM

7.4 APPENDIX D - CONTACT SUMMARY FORM

1. What are the most prevalent organisational learning and knowledge management practices and strategies applied in the participant's organisation?

1.1. Practices to acquire information from internal and external sources:

1.1.1. External sources:

- 1.1.1.1. Recruitment or contracting of subject experts
- 1.1.1.2. Benchmarking against competitor performance
- 1.1.1.3. Research in academic and industry related databases and internet sites
- 1.1.1.4. Interaction with clients and potential clients in the industry

1.1.2. Internal sources:

- 1.1.2.1. Brainstorming session
- 1.1.2.2. Site visits
- 1.1.2.3. Project review/status/progress meetings
 - 1.1.2.3.1. Cross-discipline
 - 1.1.2.3.2. Discipline specific
- 1.1.2.4. Project progress reports
- 1.1.2.5. Planning meetings
 - 1.1.2.5.1. Cross-discipline
 - 1.1.2.5.2. Discipline specific
- 1.1.2.6. Post project reviews/post-mortems
 - 1.1.2.6.1. Cross-discipline
 - 1.1.2.6.2. Discipline specific
- 1.1.2.7. Integrated database
- 1.1.2.8. Execution principles, standards and procedures
- 1.1.2.9. Lesson learned register
- 1.1.2.10. Interaction between project team members

1.1.2.11. Project specific databases/records

1.2. Systems and procedures utilised to capture data:

1.2.1. Lessons learned register

1.2.2. Planning meetings

1.2.2.1. Cross-discipline

1.2.2.2. Discipline specific

1.2.3. Project review/status/progress meetings

1.2.3.1. Cross-discipline

1.2.3.2. Discipline specific

1.2.4. Project progress reports

1.2.5. Execution principles, standards and procedures

1.2.6. Post project reviews/post-mortems

1.2.6.1. Cross-discipline

1.2.6.2. Discipline specific

1.2.7. Project close-out report

1.2.8. Team member field notes/project record books/photographic and video material

1.2.9. Integrated database

1.2.10. Project specific databases

1.2.11. Brainstorming

1.2.12. Interaction between project team members

1.3. Systems and procedures to facilitate data interpretation:

1.3.1. Updating execution principles, standards and procedures

1.3.2. Planning meetings

1.3.2.1. Cross-discipline

1.3.2.2. Discipline specific

1.3.3. Project review/status/progress meetings

1.3.3.1. Cross-discipline

1.3.3.2. Discipline specific

1.3.4. Specialist data analyst utilisation

1.3.5. Internal team data analysis

1.3.6. Post project reviews/post-mortems

1.3.6.1. Cross-discipline

1.3.6.2. Discipline specific

1.3.7. Benchmark against original tender/plan

- 1.3.8. Client interaction
- 1.3.9. Implemental follow-up

1.4. Distribution processes for knowledge gained:

- 1.4.1. Integrated database
- 1.4.2. Project specific databases
- 1.4.3. Report circulation of lessons learned via e-mail
- 1.4.4. Mandatory project reflection session
 - 1.4.4.1. Cross-discipline
 - 1.4.4.2. Discipline specific
- 1.4.5. Personal individual interaction and discussion
- 1.4.6. Project review/status/progress meetings
 - 1.4.6.1. Cross-discipline
 - 1.4.6.2. Discipline specific
- 1.4.7. E-mail circulation of minutes of meetings
- 1.4.8. Induction/briefing of new employees on post project reviews/post-mortems
- 1.4.9. Company-wide cross-project feedback
 - 1.4.9.1. Cross-discipline
 - 1.4.9.2. Discipline specific
- 1.4.10. Mentorships
- 1.4.11. Updating execution principles, standards and procedures

2. How successful are the practices and strategies identified by the participant under research question 1 in generating improved personal, project and organisational performance?

2.1. Personal performance:

- 2.1.1. Improves personal performance
- 2.1.2. Does not improve personal performance

2.2. Project performance:

- 2.2.1. Improves project performance
- 2.2.2. Does not improve project performance

2.3. Organisational performance:

- 2.3.1. Improves organisational performance

2.4. Does not improve organisational performance

2.5. Barriers to cross-project and project cross-phase learning:

- 2.5.1. Not capturing and distributing lessons learned as and when they happen
- 2.5.2. Organisation cultural misalignment with principle that learning adds value
- 2.5.3. Insufficient or no specialist/skilled resources to utilise for training
- 2.5.4. Insufficient time and resources to maintain learning practices
- 2.5.5. Standards and procedure implementation not being enforced
- 2.5.6. Project review and project close-out processes not being compulsory
- 2.5.7. Insufficient inter-discipline interaction
- 2.5.8. Lack of mentoring
- 2.5.9. Lack of information interpretation and contextualisation
- 2.5.10. Capturing of major costly issues only to the detriment of smaller issues and their solutions
- 2.5.11. Not ensuring that new knowledge is mobilised in terms of actions
- 2.5.12. Learning practices are developed on an ad hoc basis rather than as an integrated organisation-wide system
- 2.5.13. Reluctance by team members to highlight mistakes for fear of retribution
- 2.5.14. Politics and hierarchy related issues

3. **What level of learning occurs in your organisation when weighed against the content given to single-loop, double-loop, and triple-loop learning?**

3.1. Predominant type of learning:

- 3.1.1. Single-loop learning.
- 3.1.2. Double-loop learning.
- 3.1.3. Triple-loop learning throughout organisation.
- 3.1.4. Triple-loop learning happens only at the highest levels of the organisation, if at all.
- 3.1.5. Reasoning:
 - 3.1.5.1. Projects are systems driven and standards and procedures are continuously updated to incorporate new and better procedures.
 - 3.1.5.2. A longer-term perspective as required for triple-loop learning is difficult as we never know what our next project will be.
 - 3.1.5.3. Double-loop learning is supported by our continuous drive to update systems and procedures.

- 3.1.5.4. Lack of resources is often the root cause for crisis management instead of more transformational action.
- 3.1.5.5. Participant 7 declined to provide a response, stating that all learning adds value.
- 3.1.5.6. Level of learning is closely linked to the level of the individual in the organisation, lower level employees tend to facilitate single-loop learning most of the time due to a lack of strategic insight into the overall impact on the business.
- 3.1.5.7. Triple-loop learning is sometimes facilitated by customer feedback.
- 3.1.5.8. In general we learn due to necessity and when time and resources becomes available we update systems and procedures to reflect the learning.
- 3.1.5.9. The learning practices in our organisation are sufficiently integrated and advanced to incorporate all three types of learning.
- 3.1.5.10. The lack of resources is the biggest cause of insufficient pre-emptive and strategic activity; time and project pressures being the biggest culprits.
- 3.1.5.11. Facilitation of double-loop learning requires executive management to operate at operational levels more often than they should and results in triple-loop learning falling on the wayside.
- 3.1.5.12. With effective resource planning you should be able to facilitate all three types of learning.
- 3.1.5.13. As an organisation we invest substantially in triple-loop learning facilitation as our competitiveness is dependent on our strategic foresight.

3.2. Role of innovation:

- 3.2.1. Innovation is encouraged in my organisation.
- 3.2.2. Innovation is not encouraged in my organisation.
- 3.2.3. Reasoning:
 - 3.2.3.1. I believe because we are not learning efficiently we are forced to be innovative.
 - 3.2.3.2. A structure empowering project team members is vital to encourage innovation.
 - 3.2.3.3. We experience employee resistance to new technologies and new methodologies.
 - 3.2.3.4. Our organisation has a specific forum to facilitate tabling of new ideas.

3.2.3.5. Innovation is explored as part of strategic partnering opportunities.

3.3. Role of management in facilitating learning:

3.3.1. Management must appreciate the need to create opportunities for project reflection and evaluation.

3.3.2. Management should manage resources to facilitate learning initiatives.

3.3.3. Complicated hierarchies discourage learning between colleagues.

4. Where does organisational learning occur in the relevant organisation's project life cycle and to what extent does the participant consider his/her organisation to be a "learning organisation"?

4.1. Where in life cycle is learning more prevalent (tested against Figure 2.6):

4.1.1. Planning phase.

4.1.2. Execution phase.

4.1.3. Combination of planning and execution phases.

4.1.4. Project close-out/post-mortem/post-project review.

4.1.5. Throughout all the phases of the project.

4.2. Where in the lifecycle should learning be more prevalent:

4.2.1. Planning phase.

4.2.2. Execution phase.

4.2.3. Combination of planning and execution phases.

4.2.4. Project close-out/post-mortem/post-project review.

4.2.5. Throughout all the phases of the project.

4.3. Do you consider your organisation to be a "learning organisation"?

4.3.1. Yes, I consider my organisation to be a learning organisation.

4.3.2. No, I don't consider my organisation to be a learning organisation.

4.4. What can the organisation do to improve its status as a "learning organisation"?

4.4.1. Provide team members with more time and resources to facilitate learning initiatives.

4.4.2. Required to focus more on the successful initiatives and learn from our successes rather than only focussing on our mistakes.

4.4.3. Require more inter-disciplinary interaction throughout the project life cycle.

- 4.4.4. Learning initiatives and practices should be established formally and upfront.
- 4.4.5. Learning should be part and parcel of the project deliverables.
- 4.4.6. Launch a change initiative that focuses on establishing a learning culture.
- 4.4.7. Learning should be complemented by conforming actions and implementation.
- 4.4.8. The skills shortage and lack of on-the-job training opportunities should be supplemented by enforced systems and procedures that tacitly introduce the new/improved way of doing things.

APPENDIX E RESULT TABLES

7.5 APPENDIX E – RESULT TABLES

APPENDIX E1

Primary practices for the acquisition and capturing of data from internal sources															
		Project review/status/progress meetings	Project progress reports	Planning meetings	Post project reviews/post-mortems	Project close-out reports	Integrated databases	Project specific databases	Execution principles, standards and procedures	Lessons learnt register	Site visits	Brainstorming	Project team interaction	Team member field notes and photographic and video materials	
Participant	1	x			x				x	x					
Participant	2	x			x				x	x	x	x		x	
Participant	3	x		x	x		x								
Participant	4	x	x		x	x	x		x	x					
Participant	5	x					x			x		x			
Participant	6	x	x		x					x				x	
Participant	7	x		x					x	x					
Participant	8	x	x					x					x		
Participant	9						x		x	x			x		
Participant	10			x				x						x	
Participant	11	x		x	x		x		x			x	x		
Participant	12	x	x										x		
Participant	13	x		x				x		x			x		
Participant	14						x		x				x		
Participant	15	x					x								
Participant	16	x					x					x	x		
Participant	17			x	x		x		x				x		
Participant	18				x					x			x		
Participant	19	x		x			x						x		
Participant	20	x	x	x		x							x		
Participant	21								x	x		x	x	x	
	Total	15	5	8	8	2	10	3	9	10	1	5	12	4	
	Percentage	71%	24%	38%	38%	10%	48%	14%	43%	48%	5%	24%	57%	19%	
		Project review/status/progress meetings		Planning meetings	Post project reviews/post-mortems										
	Percentage of participants utilising this data capturing/acquisition tool cross-discipline	20%		25%	50%										

APPENDIX E2

Primary practices for the acquisition and capturing of data from external sources					
		Recruitment/contracting of subject experts	Benchmarking against competitors	Research in academic/industry databases and Internet sites	Interaction with clients and potential clients
Participant	1	x			
Participant	2	x			
Participant	3	x			
Participant	4		x		
Participant	5				
Participant	6				
Participant	7				
Participant	8	x			
Participant	9			x	
Participant	10	x			x
Participant	11				
Participant	12				
Participant	13				
Participant	14				
Participant	15				
Participant	16				
Participant	17				x
Participant	18	x			
Participant	19			x	
Participant	20				x
Participant	21				
	Total	6	1	2	3
	Percentage	29%	5%	10%	14%

APPENDIX E3

Primary practices for the interpretation of data											
		Project review/status/progress meetings	Client interaction	Planning meetings	Post project reviews/post-mortems	Implemental follow-up	Continuous updating of execution principles, standards and procedures	Benchmark against original tender/planning	Internal team data analysis	Specialist data analyst utilisation	
Participant	1									x	
Participant	2								x		
Participant	3	x		x							
Participant	4	x			x		x	x			
Participant	5								x		
Participant	6	x					x		x	x	
Participant	7	x		x			x				
Participant	8	x									
Participant	9	x					x				
Participant	10	x	x	x					x		
Participant	11	x		x			x		x		
Participant	12	x							x		
Participant	13	x		x			x				
Participant	14						x			x	
Participant	15	x	x								
Participant	16	x									
Participant	17					x					
Participant	18				x		x				
Participant	19	x		x							
Participant	20	x		x			x				
Participant	21						x		x		
	Total	14	2	7	2	1	10	1	7	3	
	Percentage	67%	10%	33%	10%	5%	48%	5%	33%	14%	
		Project review/status/progress meetings		Planning meetings	Post project reviews/post-mortems						
	Percentage of participants utilising this data capturing/acquisition tool cross-discipline	7%		14%	100%						

APPENDIX E4

Primary distribution processes for knowledge gained												
		Project review/status/progress meetings	Circulation of meeting minutes	Briefing of new employees on past projects/lessons learned	Company-wide cross-project feedback	Mentorships	Integrated database	Project specific databases	Updating execution principles, standards and procedures	Report circulation of lessons learned	Team interaction and discussion	Mandatory project reflection session
Participant	1						x			x		x
Participant	2	x					x				x	x
Participant	3	x										
Participant	4	x		x			x			x		
Participant	5		x									
Participant	6				x					x	x	
Participant	7					x					x	
Participant	8									x		
Participant	9						x		x			
Participant	10							x		x	x	
Participant	11	x					x		x		x	
Participant	12	x			x					x	x	
Participant	13		x					x		x		x
Participant	14						x		x			
Participant	15	x			x						x	
Participant	16	x			x		x				x	
Participant	17				x		x		x			x
Participant	18	x	x		x	x			x	x	x	
Participant	19	x	x				x			x		x
Participant	20	x			x				x			
Participant	21						x		x		x	
Total		10	4	1	7	2	10	2	7	9	10	5
Percentage		48%	19%	5%	33%	10%	48%	10%	33%	43%	48%	24%
Project review/status/progress meetings		Company-wide cross-project feedback		Mandatory project reflection session								
Percentage of participants utilizing this data capturing/acquisition tool cross-discipline		50%		71%		80%						

APPENDIX E5

Influence of learning practices on personal, project and organisational performance				
		Learning practices Improves personal performance	Learning practices improve project performance	Learning practices improve organisational performance
Participant	1	x	x	x
Participant	2	x	x	x
Participant	3	x	x	x
Participant	4	x	x	x
Participant	5	x	x	x
Participant	6	x	x	x
Participant	7			
Participant	8			
Participant	9	x	x	x
Participant	10		x	x
Participant	11	x	x	x
Participant	12			
Participant	13			
Participant	14	x	x	x
Participant	15	x	x	x
Participant	16	x	x	x
Participant	17	x	x	x
Participant	18		x	x
Participant	19	x	x	x
Participant	20	x	x	x
Participant	21	x	x	x
	Total	15	17	17
	Percentage	71%	81%	81%

APPENDIX E6

Barriers to cross-project and project cross-phase learning															
		Not capturing and distributing lessons learned as and when it happens	Organisation cultural misalignment with the company's learning principles	Insufficient or no specialist/skilled resources to utilise for training	Insufficient time and resources to maintain learning practices	Standards and procedure implementation not being enforced	Project review and project close-out processes not being compulsory	Insufficient inter-discipline interaction	Lack of mentoring	Lack of information interpretation and contextualisation	Capturing of major costly issues to the detriment of smaller issues and their solutions	Not ensuring that new knowledge is mobilised and actioned	Learning practices are developed on an ad hoc basis rather than as an integrated organisation-wide system	Reluctance by project team members to highlight mistakes for fear of retribution	Internal politics and hierarchy related issues
Participant	1	x	x	x						x					
Participant	2			x	x	x	x	x	x	x					
Participant	3			x	x			x							
Participant	4			x	x				x	x	x				
Participant	5					x				x		x	x		
Participant	6									x				x	
Participant	7		x	x		x						x			
Participant	8		x		x					x			x		
Participant	9		x	x	x										
Participant	10				x							x	x		
Participant	11			x						x					
Participant	12									x					
Participant	13			x		x								x	
Participant	14			x								x			
Participant	15					x		x		x					
Participant	16		x					x							x
Participant	17			x											x
Participant	18					x		x		x					
Participant	19				x					x					
Participant	20					x		x							
Participant	21			x	x			x				x	x		
Total		1	5	11	8	7	1	7	2	11	1	5	4	2	2
Percentage		5%	24%	52%	38%	33%	5%	33%	10%	52%	5%	24%	19%	10%	10%

APPENDIX E7

Type of learning predominant in the organisation						
		Single-loop learning	Double-loop learning	Triple-loop learning throughout the organisation on all levels	Triple-loop learning reserved for the highest/executive level of the organisation	Reasoning when provided
Participant	1	x	x		x	
Participant	2		x			Projects are systems driven and standards and procedures are continuously updated to incorporate new and better procedures
Participant	3	x	x			A longer-term perspective as required for triple-loop learning is difficult as we never know what our next project will be
Participant	4	x	x			Double-loop learning is supported by our continuous drive to update systems and procedures
Participant	5	x				Lack of resources is often the root cause for crisis management instead of more transformational action
Participant	6	x	x		x	Lack of resources is often the root cause for crisis management instead of more transformational action
Participant	7					Participant 7 declined to provide a response stating that all learning adds value
Participant	8				x	
Participant	9	x	x			
Participant	10	x	x		x	
Participant	11	x	x			Triple-loop learning is sometimes facilitated by customer feedback
Participant	12	x	x		x	Level of learning is closely linked to the level of the individual in the organisation, lower level employees tend to facilitate single-loop learning most of the time due to a lack of strategic insight to the overall impact on the business
Participant	13	x	x		x	In general we learn due to necessity and when time and resources becomes available we update systems and procedures to reflect the learning
Participant	14	x	x	x		The learning practices in our organisation is sufficiently integrated and advanced to incorporate all three types of learning
Participant	15	x	x			The lack of resources is the biggest cause of insufficient pre-emptive and strategic activity, time and project pressures being the biggest culprits
Participant	16	x	x			Facilitation of double-loop learning requires executive management to operate at operational levels more often than they should and results in triple-loop learning falling on the wayside
Participant	17	x	x			With effective resource planning you should be able to facilitate all three types of learning
Participant	18	x	x			

Participant	19	x	x	x		As an organisation we invest substantially in triple-loop learning facilitation as our competitiveness is dependent on our strategic foresight
Participant	20	x				Lack of resources is often the root cause for crisis management instead of more transformational action
Participant	21	x	x			
	Total	18	17	2	6	
	Percentage	86%	81%	10%	29%	

APPENDIX E8

Facilitation of Innovation in the organisation			
		Innovation is encouraged in my organisation	Innovation is not encouraged in my organisation
Participant	1	x	
Participant	2		x
Participant	3	x	
Participant	4	x	
Participant	5	x	
Participant	6	x	
Participant	7	x	
Participant	8		x
Participant	9	x	
Participant	10		x
Participant	11	x	
Participant	12	x	
Participant	13	x	
Participant	14	x	
Participant	15		x
Participant	16	x	
Participant	17	x	
Participant	18	x	
Participant	19	x	
Participant	20		x
Participant	21		x
	Total	15	6
	Percentage	71%	29%

APPENDIX E9

Reasoning for participants' belief that their organisation either encourages or discourages innovation														
										Innovation is encouraged in my organisation as a result of:	Percentage	Innovation is not encouraged in my organisation as a result of:	Percentage	
										I believe because we are not learning efficiently we are forced to be innovative	5	33%	2	33%
										A structure empowering project team members is vital to encourage innovation	4	27%	2	33%
										We experience employee resistance to new technologies and new methodologies	1	7%	3	50%
										Our organisation has a specific forum to facilitate tabling of new ideas	4	27%		
										Innovation is explored as part of strategic partnering opportunities	1	7%		

APPENDIX E10

Management's role in facilitating learning					
		Management must appreciate the need to create opportunities for project reflection and evaluation	Management should manage resources to facilitate learning Initiatives	Complicated hierarchies discourage learning between colleagues	
Participant	1	x	x		
Participant	2		x		
Participant	3	x			
Participant	4		x		
Participant	5		x		
Participant	6			x	
Participant	7				
Participant	8		x		
Participant	9			x	
Participant	10	x			
Participant	11	x	x		
Participant	12		x		
Participant	13			x	
Participant	14		x		
Participant	15			x	
Participant	16		x		
Participant	17				
Participant	18		x	x	
Participant	19		x		
Participant	20				
Participant	21			x	
	Total	4	11	6	
	Percentage	19%	52%	29%	

APPENDIX E11

Where in the project life cycle is learning more prevalent?								
	Planning phase	Execution Phase	Combination of Planning and Execution Phase	Project close-out/post-mortem/post-project review	Throughout all the phases of the project			
Participant 1						X		
Participant 2				X				
Participant 3	X							
Participant 4					X			
Participant 5						X		
Participant 6						X		
Participant 7						X		
Participant 8				X				
Participant 9		X						
Participant 10	X							
Participant 11				X				
Participant 12			X					
Participant 13					X			
Participant 14						X		
Participant 15		X						
Participant 16						X		
Participant 17				X				
Participant 18					X			
Participant 19		X						
Participant 20	X							
Participant 21			X					
Total	3	3	2	6	7			
Percentage	14%	14%	10%	29%	33%			

APPENDIX E12

Where in the project life cycle should learning be more prevalent?						
		Planning phase	Execution Phase	Combination of Planning and Execution Phase	Project close-out/post-mortem/post-project review	Throughout all the phases of the project
Participant	1					x
Participant	2					x
Participant	3	x				
Participant	4					x
Participant	5	x				
Participant	6					x
Participant	7					x
Participant	8	x				
Participant	9	x				
Participant	10					x
Participant	11	x				
Participant	12					x
Participant	13			x		
Participant	14					x
Participant	15					x
Participant	16					x
Participant	17					x
Participant	18			x		
Participant	19			x		
Participant	20					x
Participant	21			x		
	Total	5	0	4	0	12
	Percentage	24%	0%	19%	0%	57%

APPENDIX E13

Is my organisation a "learning organisation" and what would facilitate an improvement in the organisation's status as a learning organisation?					
		Yes, I consider my organisation to be a learning organisation	No, I don't consider my organisation to be a learning organisation	What will improve organisation's status as a learning organisation	
Participant	1	x		Provide team members with more time and resources to facilitate learning initiatives	
Participant	2	x		Required to focus more on the successful initiatives and learn from our successes rather than only focussing on our mistakes; Provide team members with more time and resources to facilitate learning initiatives	
Participant	3	x		Require more inter-disciplinary interaction throughout the project life cycle; Provide team members with more time and resources to facilitate learning initiatives	
Participant	4	x		Provide team members with more time and resources to facilitate learning initiatives	
Participant	5		x	Learning initiatives and practices should be established formally and upfront	
Participant	6	x		Learning initiatives and practices should be established formally and upfront	
Participant	7	x		Learning should be part and parcel of the project deliverables	
Participant	8		x	Require more inter-disciplinary interaction throughout the project life cycle	
Participant	9	x		Launch a change initiative that focuses on establishing a learning culture	
Participant	10	x		Provide team members with more time and resources to facilitate learning initiatives	
Participant	11	x		Launch a change initiative that focuses on establishing a learning culture	
Participant	12		x	Learning initiatives and practices should be established formally and upfront	
Participant	13	x		Learning should be complemented by conforming actions and implementation	
Participant	14	x		The skills shortage and lacking on-the-job training opportunities should be supplemented by enforced systems and procedures that tacitly introduce the new/improved way of doing things	
Participant	15	x		Launch a change initiative that focuses on establishing a learning culture	
Participant	16	x		Provide team members with more time and resources to facilitate learning initiatives	
Participant	17		x	Launch a change initiative that focuses on establishing a learning culture	
Participant	18	x		Provide team members with more time and resources to facilitate learning initiatives	
Participant	19		x	Require more inter-disciplinary interaction throughout the project life cycle	
Participant	20		x	Require more inter-disciplinary interaction throughout the project life cycle; Launch a change initiative that focus on establishing a learning culture	
Participant	21	x		Provide team members with more time and resources to facilitate learning initiatives	
	Total	15	6		
	Percentage	71%	29%		