

**LEARNING PROJECTS AMONG SMALL-SCALE MASTER  
AUTOMOBILE MECHANICS OF ODAWNA IN THE  
GREATER ACCRA REGION OF GHANA**

**BY**

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**THIS THESIS IS SUBMITTED TO THE UNIVERSITY OF GHANA,  
LEGON, IN PARTIAL FULFILMENT OF THE REQUIREMENT  
FOR THE AWARD OF DOCTOR OF PHILOSOPHY DEGREE IN  
ADULT EDUCATION AND HUMAN RESOURCE STUDIES**

**JULY, 2018**

**DECLARATION**

I certify that this thesis is my own original research work carried out strictly under the supervision of my supervisors, Prof. O. A T. F. Kwabong and Dr. Daniel Oduro-Mensah. All references of authorities cited have been fully acknowledged. This work has neither been presented in whole or in part to any award of degree.

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We the undersigned supervisors, accept this thesis as confirming the require standard.

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Date

**DEDICATION**

This study is dedicated to my beloved Mum, Mrs. Abigail Ashong; my sister, Bani Ashong and my lovely daughter, Melody.

## **ACKNOWLEDGMENTS**

I foremost thank the Almighty God, the great UNSEEN HAND IN MY LIFE, for guiding me throughout the progress of this work. I am also greatly indebted to Prof. O. A. T. F. Kwapong, Prof. K. Adeku and Dr. Daniel Oduro-Mensah, my supervisors, who served as a great source of inspiration in putting this work together. I, additionally say a big thank you to my parents, husband and daughter who through their love and support contributed immensely to the fulfillment of this work. My final thanks go to all my colleagues, Nii Sai Obodai-Sai and Joshua Essiam who supported me at the time I needed them most. Thank you all for supporting the good course of this work.

GAIL AMA ASHONG

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## LIST OF ABBREVIATIONS

LPs	Learning Projects
MAMs	Master Auto-Mechanics
PPC	Person – Process – Context
PRO	Personal Responsibility Orientations
SDL	Self-Directed Learning
SLT	Situated Learning Theory

## ABSTRACT

The study investigated the processes that characterised the learning projects undertaken by the master automobile mechanics (MAMs) of Odawna in the Greater Accra Region of Ghana using a sample of 200. The objectives of the study were to find out how the MAMs learning projects were triggered, how the MAMs determined their learning objectives, content, methods of their learning and how they carried out evaluation of their learning projects. The study also examined the relationships between the MAMs educational status and learning methods, and the years of working experience and learning methods.

The study adopted a mixed method approach. Descriptive and inferential statistics were employed quantitatively whereas thematic analysis was applied on the qualitative data. Literature was reviewed on key concepts and theories. The results indicated that learning processes were characterised by series of interactions at the workplace.

Among the major findings of the study were that:

1. The MAMs fear of being ridiculed by their social and business associates about their perceived and real incompetence and their desire to catch up with the everyday changing technological advances in their working environment served as an important trigger of their learning projects.
2. The MAMs learning objectives were derived through visits to automobile service companies, interaction with clients, social networking and personal deficiencies experienced when unable to satisfy clients.
3. The rich experiences of co-MAMs, media information and education, existing gadgets and self-experiences formed the sources by which MAMs obtained the content of their learning projects.
4. MAMs determined their methods for engaging in their learning projects through consultation with other MAMs, participation in workshops and their

own choices through experiences.

5. There was no statistical significant relationship between MAMs educational level and trigger processes/choice of learning methods.
6. There was significant relationship between MAMs level of education and their inability to fix a fault requested.

It was concluded that the processes that characterised the MAMs learning processes were multifaceted. Interaction at the work place characterized the learning processes among the MAMs who had the fears of being ridiculed by their colleagues, social and business associates about their perceived and real incompetence.

Among the recommendations made were that:

1. Relevant training programmes be designed and used as means of triggering (motivating) MAMs to enter into learning projects that will enhance their professional skills.
2. Computer and engine reading gadgets training programmes should be organised to enable MAMs become abreast with modern trends in the automobile industry.

## CHAPTER ONE

### INTRODUCTION

#### 1.1 Background of the Study

The forces of globalization, advancing technology and increase information account for unprecedented rapid changes that societies are undergoing. These changes in the society reinforce the need for every individual to become a lifelong learner. Lifelong learning which is crucial for the adult populace, helps adults to adapt to change as well as live a more enriching and fulfilling life (Laal & Salamati, 2012). Not only should learning be lifelong but learning should as well be life-wide; meaning that, learning should not be restricted to educational setting alone but take place in a variety of settings including the workplace, social and recreational context (Knapper, 2006).

Workplaces are widely acknowledged as legitimate environment for learning (Le Clus, 2011). This results from the forces of globalization coupled with technological advancements as well as the influx of information that impinges on the individual's life. As a result of these factors, employees continuously learn in order to update their knowledge and skills to catch-up with the changing culture of their workplaces. Joseph and Parks (2010) pointed out that "work content has come to have shorter cycles" (p.135). In other words, although jobs are undergoing change, the time between change events is growing shorter (p.135). In this case, learning at the workplace functions as a productive tool for ensuring the sustainability of the worker as well as the organization's competitiveness in the labour market.

Significant growth of the small-scale industries and their significance to national economies in the sub-region, has made it the hardest hit by the forces of globalization and technological advancements (Ocloo, Akaba & Worwui-Brown, 2014). As a result, small-

scale industries are experiencing rapid change as they strive to be competitive. In Ghana, the small-scale automobile service industry is one such business that is relatively common in the urban centres. Such automobile centres are headed by small-scale Master Automobile Mechanics (MAMs) who work generally with about ten committed apprentices. These MAMs work in a business environment that is highly competitive due to the following reasons:

- To get as many clients as possible amidst other competitors.
- To be able to continuously meet the changing demands of clients in order to maintain them as well as attract more clients.
- To have and sustain a competitive edge in the industry.

Learning is advocated as a tool and a strategy for enhancing one's professional knowledge and skills. Following this assertion, the MAMs are expected to undertake regular learning activities in order to address their professional learning needs; thus the learning projects (LPs) that they undertake.

Like other workplace environment, the MAMs dynamic working environment implies that the services provided by the MAMs to their clients are subject to frequent modification. For instance, between the periods of 1930 to 1970, automobiles in terms of technology were mechanical and the services provided then were relatively simple (Edunyah, 2015). However, the emergence of information technology in the early 1980s led to the rapid technological advancement in the industry. Since then automobile systems are continuously becoming highly automated and computerized. Apparently, these technological advancements have learning implications for the MAMs. Thus, repairs and maintenance services are becoming more sophisticated by the day. By nature, technological knowledge becomes obsolete in no time. In addition, "sameness will be

stagnation and people who do things the same way as centuries ago are said to be archaic (cited in Edunyah, 2015).

Currently, work and learning have necessarily become part of each other (Barnett, cited in Jacobs and Parks, 2010). Elsewhere, learning is perceived as a new form of labour (Zuboff, cited in Vaughan, 2008). This suggests that, presently, there is no way one can work without learning, thus, through work, learning activities emerge. Such learning opportunities are essential because they create an avenue for the worker to enhance or transform his/her knowledge and skills in order to efficiently carry out his/her business activities. Learning, however, does not only benefit the worker but it as well helps the business organization to become sustainable.

Workplace learning, according to Le Clus (2011), is becoming more diverse and complex. This observation was also made in the various kinds of learning activities that takes place at work. Learning can be planned or unplanned, it could be intentional and unintentional or both. Learning activities could be organized as formal, non-formal or informal (Le Clus, 2011). It could be self-directed or group activity, or in a form of learning episodes or learning projects. It could also be on the job or off the job. Also, it was noted that every workplace creates its own unique learning environment (Unwin, Felstead, & Fuller, n.d). This also suggests that how learning takes place varies from one workplace to another.

As part of the working activities of the MAMs, they undertake learning activities as a strategy to help them manage change, perform well and satisfy their work objectives (Le Cleus, 2011). Unlike in bigger organizations where training activities are organized for employees, the MAMs as individuals, take the responsibility to personally address their learning needs. This form of learning, generally self-directed, could be classified among learning episodes and projects.

A learning episode, in this study, refers to the learning activities that occur in the spur of the moments. A learning project is regarded as a situation of self-directed learning endeavour that is aimed at addressing a major learning need that requires the study of an in depth knowledge and skills that will last for a relatively longer period of time. Tough (1979) is a key proponent in the study of self-planned learning activities of adults. In his studies, Tough observed that (adults consciously engage in various forms of learning activities) adults carry out at least one or two learning projects within a year or as many as 15 to 20 learning projects in a year. The MAMs, similarly carry out learning projects in an attempt to address their work related learning needs. The conduct of the learning project among the MAMs is crucial to them because it serves as a platform for them to undergo major professional transformation to become updated as masters to promote the growth of the businesses.

## **1.2 Statement of the Problem**

In Ghana, the rapid socio-cultural and technological changes in the small-scale business industry predispose the small-scale business entrepreneurs to engaging in various forms of informallearning activities. One such business where significant and intensive informal learning activities take place is the small scale automobile mechanic service industry in Ghana.

The complex technologically driven nature of the automobile industry could be associated with the innovation of new models of automobiles that are released into the market periodically. These new models of automobiles mostly come with entirely new and advanced technology that turns out to create substantial knowledge gap for the small scale automobile service providers especially in such developing countries including Ghana. This phenomenon undoubtedly creates a challenge for the automobile service providers

especially those in the small scale industry who undergo series of intensive informal learning activities (learning projects). Thus, the small scale automobile master mechanics responsibly recognise these challenges as pressing learning needs and deliberately mobilise the needed resources to undergo intensive search of new knowledge in order to safeguard their individual competitiveness in the industry. Thus, the small scale automobile master mechanics use self-directed learning projects as a tool in bridging the significant knowledge gap that are periodically created in the automobile industry. In the light of this, the study seeks to address the question: What processes characterise the learning projects undertaken by the Master Automobile Mechanics at Odawna in the Greater Accra Region of Ghana?

### **1.3 Purpose of the Study**

The study sought to find out the processes that takes place as learning projects are undertaken by adults, the Master Automobile-Mechanics of Odawna, when seeking new knowledge, skills and attitudes to catch up technological innovations in the automobile industry.

### **1.4 Objectives of the Study**

The objectives of the study were to:

1. Find out how the learning projects among the MAMs were triggered.
2. Study how the MAMs determined:
  - i. Their intended learning objective
  - ii. The content of their learning.
  - iii. Their learning methods.
  - iv. The evaluation processes of the learning outcomes.
3. Find out the relationship between the MAMs educational status and:

- i. The processes that trigger learning projects
  - ii. Their choice of learning methods
4. Determine the relationship between the MAMs years of working experiences and:
  - i. The processes that trigger learning projects
  - ii. Their choice of learning methods

### **1.5 Related Research Questions**

1. What situational processes trigger the MAMs to undertake learning projects?
2. How do the MAMs determine the learning objectives of their learning projects?
3. How do the MAMs determine the scope of the knowledge, skills and attitudes (content) needed to address the objectives of their learning activities?
4. How do the MAMs determine their choice of learning methods?
5. How do the MAMs evaluate the learning outcomes (new knowledge, skills and attitudes discovered) of their learning activities?
6. What is the relationship between the MAMs educational status and the processes that trigger their learning projects?
7. What is the relationship between MAMs educational status and their choice of learning methods?
8. What is the relationship between the MAMs years of working experience and the processes that trigger their learning projects?
9. What is the relationship between the MAMs years of working experience and their choice of learning methods?

## **1.6 Significance of the Study**

Undertaking adult learning projects are necessary steps in facilitating individual and national development. The purpose of MAMs engaging in job-related learning projects will serve as a means of enhancing their knowledge, skills and attitude. Learning in this case does not only benefit the adult learner but also contributes to overall development of the nation. The study is therefore significant in a number of ways. It will:

1. Create greater awareness among the master automobile mechanics about their conscious and unconscious attempts to effectively enhance and improve their learning efforts through organization of learning projects. This will enable the master automobile mechanics to become more responsive to learning situations.
2. Provide knowledge about factors that account for the initiation of individual learning projects among the small scale business entrepreneurs and contribute to the understanding of the nature of adult informal learning in Ghana.
3. Inform practitioners of adult education about how master automobile mechanics use their learner self-directedness to informally conduct learning projects so as to guide the design of more effective programmes for themselves and adults in general.

Inform policy-makers and stakeholders, including the government, the National Board for Small Scale Industry (NBSSI), Empretec Ghana Foundation and the National Association of Garages in Ghana and other agencies engaged in similar activities to implement policies on how to support and improve upon the learning activities of small scale entrepreneurs. Serve as a source of knowledge on self-initiated learning projects organized informally by adults for future studies. It will add to the existing body of knowledge of adult learning in Ghana as well as Africa.

### 1.7 Assumptions of the Study

The study assumes that:

- All adults undertake learning projects, consciously or unconsciously.
- Job-related learning projects organized by individuals serve as a means of enhancing their knowledge, skills and attitudes needed to improve upon work performance.

### 1.8 Operational Definition of Terms

1. **Master Automobile Mechanic:** Any person who has operated as the head technician of an automobile service centre for a minimum of two years with at least two apprentices serving under him/her.
2. **Learning project:** A series of learning activities carried out over a period of time in order to address a learning need.
3. **Learning Episode:** A single learning event that lasts for a relatively short period of time.
4. **Learning:** The process whereby an individual significantly enhancing his/her knowledge, skills and attitude through a self-directed experiential approach.
5. **Small-Scale:** A Master Automobile Mechanic workshop with operations limited to fewer number of apprentices that directly serve the master.
6. **Processes:** These are specific actions taken by the Master Automobile Mechanics directed at achieving a desired end.

### 1.9 Organisation of the Study

The study is organized into six chapters. The first chapter gives details of the background of the study, statement of the problem, objectives of the study, research questions, significance of the study, definition of terms and theoretical framework. Chapter two provides a review of related literature. Chapter three describes the methodology which

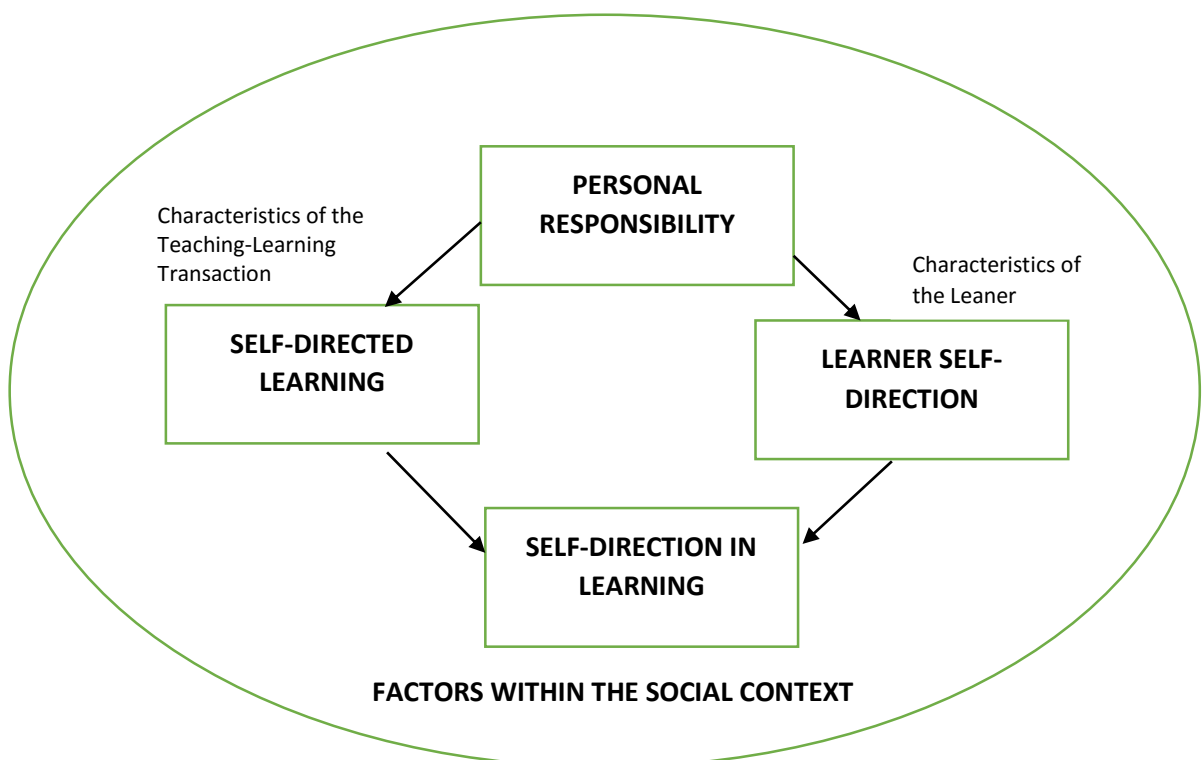
includes the population, sample, research design, sampling, the research instruments, reliability and validity, pretesting and data organization and analysis. Chapter four presents an analysis of the results. Chapter five discusses the findings of the study. Finally, Chapter six summarizes the entire study and the major findings, it also provides the conclusion and recommendations of the study as well as areas for further studies.

### **1.10 Study Area**

The study is focused on how learning projects are organized individually by the Master Mechanics of Odawna Garage in the Greater Accra Region. Odawna is a place located within the business centre of Accra, the capital city of Ghana. The business-oriented activities in the capital city draw many business entrepreneurs as well as potential clients/customers for business transactions. The polluting scenery of the automobile-mechanics services compelled Government to purposely designate places within the Sub-Metros across the Country for all the small scale auto-mechanics activities. For those who operate within the Okai-Koi Sub-Metro the Government allocated a place at Odawna for their business activities. This location is known as the Odawna Garage. This Garage (Odawna) comprises of thirty-six sub-garages owned by individual auto-mechanics who are referred to as 'Masters'. Each of these sub-garages has a co-master (s) as well as apprentices who support the 'Master(s)'. Also, each of the sub-garages has a range of specializations of automobile services that are offered to clients. Apart from the main Odawna Garage, there are other small scale auto-mobile mechanics that operate their businesses at various locations within the Odawna Community. This is due to the fact that the allocated place cannot accommodate all the small scale auto-mechanics at Odawna at the same time.

### 1.11 Conceptual Framework

The conceptual framework that underpins this study is the Person, Process, Context (PPC) Model (Fig 2) by Hiemstra and Brockett (2012). This model is an instructional learning model designed to facilitate self-directed learning among adult learners in learning institutions (Brockett). Also, the PPC model (Fig 1) is the updated version of the Personal Responsibility Orientation (PRO) Model (Fig 1) (Brockett and Hiemstra, 1991). In the previous model (PRO Model) (Fig 1) much emphasis was placed on the learner's responsibility in the learning process. However, although self-directed learning was acknowledged as an activity that occurs within a social context its influence in the learning process was poorly acknowledged.



**Figure 1: The “Personal Responsibility Orientation” (PRO) model Source: Brockett &Hiemstra (1991).**

The PPC learning Model (fig. 2) currently considers self-directed learning as interaction between the person (the characteristics of the learner), the teaching and learning process as well as the social context in which the learning takes place. In this case, the PPC Model is of the view that SDL as a phenomenon is influenced not only by the learner taking control over the learning rather SDL is influenced partly by the characteristics of the learner, the teaching and learning process within the instructional setting as well as the wider society. Aside this, it was also highlighted that the three elements of the PPC model have a varying influence in learning (Hemstra and Brockett, 2012). In other words, these three elements differently (uniquely) influences self-directed learning endeavours. In spite of this, the proponents of the PPC Model share the view that self-directed learning is optimal when the three elements are in balance. This means that in an ideal SDL situation, the learner must be highly self-directed, the teaching and learning process must afford learners the maximum control in determining how they want their learning project activities.

Finally, the socio-political climate and the learning environment must facilitate self-directed learning. The MAMs learning project activities is a form of self-directed activity conducted at the volition of the MAMs. However, the PPC model suggests that the control and facilitation of SDL exceeds that of the control of the learner and the teaching and learning process within the instructional setting. But also includes the influence of the wider society. It is in the light of this view that the PPC model was adapted and used as one of the frameworks` to view how the control of the MAMs as learners, the control of their learning process at their workplace as well as how the control of the larger society contributed towards the MAMs conduct of their learning

### **1.12 Theoretical Framework: Situational Learning Theory**

The Situated Learning Theory (SLT) also known as contextual learning theory is acknowledged as one of the emerging new perspectives in the field of adult education (Merriam, 2001; Sandmann & Truluck, 2004; Merriam, 2008). The SLT was propounded by Lave and Wenger (1991) and has since been advanced to other concepts such as situated cognition, cognitive apprenticeship among others (Brown, Collins & Duguid, 1989). According to the theory (SLT), learning is a natural phenomenon that takes place within the context of a social practice or in the applied domain (Lave & Wenger, 1991). This suggests that learning is not restricted to instructional settings but could take place anywhere. Thus, as a person (people) interacts through participating in social activities of a particular social group the person become more experienced in terms of knowledge, skills and attitude. This is because as a person engages in the activities within a specific social context he/she either confirms what he/she already knows or is exposed to instances where the individual enhances his/her knowledge, skills and attitude as a result of the ongoing social interactions within the social group (Jarvis, 1995).

The SLT, was also emphasised by Stein (1998). In his view, he describes learning as making meaning from real life situations. This means that in real life situations or as people go about their day to day interactions, they are exposed to challenges where they try to make sense of the situation through learning. In the process they enhance their knowledge, skills and attitude. From this perspective learning is perceived as inseparable and integral to the social context (Lave and Wenger, 1991).

## CHAPTER TWO

### REVIEW OF LITERATURE

#### 2.1 Introduction

This chapter reviews related literature in relation to the objectives of the study. Though, literature on learning projects was scanty in the materials consulted, the following major themes were reviewed:

- The Person, Process, Context Model
- The Situated Learning Theory
- Participation in Communities of Practice
- Concept of Learning
- Adult Learning
- Self –Directed Learning
- Perspectives on Self-directed Learning
- Learning Project
- Experiential Learning Theories
- Workplace as Learning Environment

#### 2.2 The Person Process Context Model

The PPC Model (fig. 2) was used as the conceptual framework for the study. This learning Model was designed to facilitate and enhance Self-Directed Learning (SDL) skills among learners within the instructional setting (Hiemstra & Brockett, 2012). This Model was inspired by the principles of humanistic philosophy (Merriam & Caffarella, 1999).

The PPC Model considers SDL as an interactive process rather than a linear process. By this, the Model suggests that some factors come together to influence SDL situations. To this end, the PPC Model describes SDL as a phenomenon that constitutes a set of

interaction among person (learner), process (teaching and learning transaction) and context (social context). Thus, these three key elements highlighted in the PPC Model (fig. 2) influence the occurrence of self- directed learning. In this instance, the person, process and context play a key role and serving as the underlying factors for understanding self- directed learning activities.

Further details about the nature and role these elements play in SDL are explained in the following: The first element, Person, as indicated in the PPC Model, denotes learner(s) who take the initiative to learn voluntarily as a personal attribute. Self-directed learners have personal attributes that predispose them to assume personal responsibility towards learning (Hiemstra & Brockett, 2012; Brockett & Hiemstra, 1991). This personality trait (self- directed learner) is further accounted for as a result of some internal factors or some personality traits possessed by such learners. Hiemstra and Brockett (2012) highlighted the following learner characteristics of self-directed learners; creativity, critical reflection, enthusiasm, life experiences, life satisfaction, motivation, previous education and self- reflection (Hiemstra & Brockett, 2012).

A similar view is shared by Jarvis (2007, 1995) that the learner is made up of the biological body and mind and these parts of the learner influence the occurrence of learning. A similar view about the influence of learner characteristics is shared by other authorities in the field of self- directed learning (Candy, 1991, Knowles, 1990). This view is also corroborated in Knowles description of the adult learner as being self-directed and have rich experience which serves as a learning resource. In this case, the learner must personally have the desire to learn and must be motivated enough to sustain the entire learning process.

The second element in the PPC Model, process, signifies the teaching and learning

transaction process. Thus, process explains how the teaching and learning transaction will facilitate SDL skills on the part of the learner. As a learner who is self-directed, it is expected that he/she assumes control in managing his/her learning experience. This view contrasts the traditional role of the instructor, where they carry out the active role of the learning process: planning, organizing, and controlling the lessons to help students learn a subject matter in a more systematic way (Reinmann-Rothmeier and Mandl, 2001 cited in Mandl and Kopp, 2005). In this approach, learners play a passive role of listening and taking notes from the instructor.

To the proponents of the PPC Model, self-directed learners are expected to plan, implement and evaluate their learning activities. Apparently, the PPC Model advocates for learners to assume control and monitor their own learning experiences. Elsewhere, it is highlighted that self-directed learners must take key decisions on what to learn, where to learn and how to learn (Tough, 1979, Abdullah, 2008). Knowles (2005) recommendation for the use of facilitative approach in adult learning sums up the shift of greater learning responsibility for adult learners as compared to the passive role learners assume in a traditional classroom setting. Hiemstra & Brockett (2012) highlighted the following as some of the skills and learning activities involved in the learning process: facilitation, learning skills, learning styles, planning, organizing and evaluating abilities, teaching styles and technological skills. Finally, the third element, Context, refers to the environmental and socio-political-climate such as culture, power, learning environment, finances, gender, learning climate, organizational policies, political milieu, race and sexual orientation.

In relation to the PPC Model, Hiemstra and Brockett (2012) raised another vital perspective of their Model. They pointed out that the three elements (person, process, and

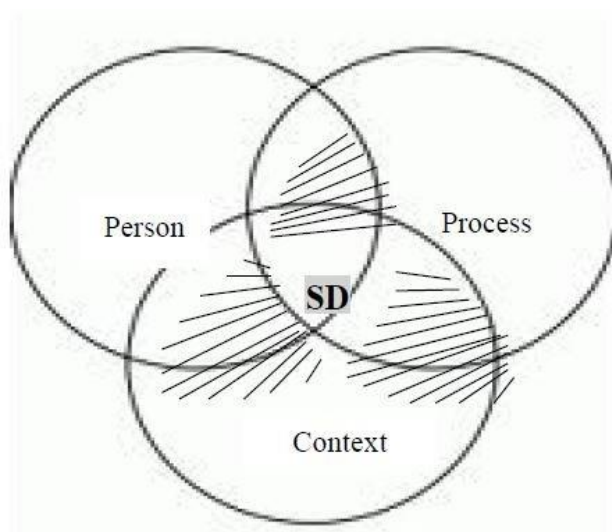
context) of the PPC Model dynamically influence SDL. Such that in a SDL situation one of these elements may dominate more over the others. Despite the dynamic nature of the SDL, the proponents of the PPC Model, expressed their view that the optimal situation for SDL is when all the three elements of the PPC Model are in balance. In other words, for SDL to be effective the person (learner) must be highly self-directed, the teaching and learning process must enable the learner to take control over the learning endeavour and finally the socio-political context and the learning environment must create the climate for SDL (Hiemstra & Brockett, 2012; Nasri & Mansor, 2016; Sawatsky, Bonnes, Egginton & Beckman, 2017).

Irrespective of the instructional perspectives of the PPC Model's concept of SDL, this concept applies to SDL outside instructional settings. In this case, the PPC Model's concept of SDL is being used as the conceptual framework for the study of the Master Automobile Mechanics (MAMs) learning project activities. SDL learning is conducted to address their pressing workplace learning needs. Learners take their personal initiative to learn, they take control of the management of their learning because their learning does not follow a pre-planned set of activities as done for formal adult learning programmes. However in this case, the purpose of SDL will be more related to putting one's SDL skills to practice alongside enhancing one's SDL skills. Candy (1991), emphasized this point.

An area that has received little attention from scholars is the operation of self-direction in a specific context (Brookfield, 1985), especially in higher education institutions (Merriam & Caffarella, 1999), (Song and Hill, 2007). They also integrated social context as a component in the model in that they discussed the role of institutions and policies in SDL. At the time the model was developed, this was a significant addition to the SDL models. Yet, in today's educational climate, the context factor in the model is rather limited.

The three elements of the PPC Model (fig. 2) depicted as influential factors that account for self-directed learning. The proponents of the PPC Model explained that to ensure optimal self-directed learning, the learner must be highly self-directed, the teaching and learning transaction must give the learner more control and the socio-political context (wider society) must provide conducive climate to promote SDL. Furthermore, the proponents of the PPC Model postulated that the three elements of the PPC Model interact with each other.

This PPC concept of self-directed learning is applicable in everyday learning situations where learning is not formalized. Thus, self-directed learning activities that are embedded with adults everyday interactions with in real life settings such as the workplace. Within the conceptual framework of the PPC, SDL in workplace learning ties in with part of Mocker and Spear (1982)'s Lifelong Learning Model (LLM). Unlike, the SDL in instructional settings, in the workplace SDL activities are carried out. Knowles (1990) also indicated that adults who take the initiative to learning learn more and better. In this study, it is expected that adults who are, normally, intrinsically triggered to learn will make every effort to achieve their learning objectives.



**Figure 2: The “Person, Process, Context” (PPC) Model Source: Brockett & Hiemestra (2012).**

In relation to the present study, the conduct of MAMs learning projects will relate to their personal responsibility towards their workplace learning needs. Thus, the MAMs willingly decide to embark on self-initiated learning activities based on their own assessment of the situations that confront them at the work place. Secondly, the workplace learning processes options available to them are likely to influence their self-directed learning. The work place context, that is, the working environment within which the MAMs find themselves exerts additional influence on their self –directed learning processes. All the three components according to the model (fig.2), exert equal influence on self-directed learning.

### **2.3 Situated Learning Theory (SLT)**

The SLT describes learning as an integral and an inseparable part of social practice. Learning is inextricably tied to its context and to the social relations and practices there (Lave and Wenger, 1991). This implies that within various social settings, individuals do not only execute activities that are peculiar to a setting in which they find themselves. As a result of their participation in activities within a social context, they learn and put into practice within the same setting their new knowledge and skills. It is in view of this that the SLT advances that learning is embedded or situated in authentic activity, context and culture. In relation to the above, Stein (1998) comments that situated learning involves creating meaning out of learning challenges that emerges as individual’s interaction with and within their communities of practice.

Community of practice is a terminology used by Lave and Wenger in connection with their situated learning theory (SLT). A community of practice is explained as “a set of relations among persons, activity and world over time and in relation with other tangential and overlapping community of practice” (Lave and Wenger, 1991). Communities of practice are characterized by the fact that all the actors involved are carrying out activities. “The

ways in which a community of practice is structured in terms of its social relationships define possibilities for learning” A key notion in community of practice is a person’s identity in relation to other members of a community, and the emotional investments individuals make in relation to their sense of who they are and where they fit in as a member of a group. Lave and Wenger (1991) claim that the activities of a community of practice provide learners the framework for making sense of its sphere of life. The social and cultural contexts in which a community of practice exists and to which its activities contribute have significant influence on what is learned and how learning takes place.

The SLT highlights that learning within authentic context is unintended. This means that in real life situations, people do not just set out to engage in a learning activity. Learning activities are not pre-planned as in the case of learning activities that are formally organized. In real life settings, learning opportunities emerge as individuals go about their routine responsibilities. Thus, learning in real life settings occur naturally. Hence, the SLT as a learning theory does not only emphasis how learning is inextricably linked to the social context but also portrays how learning takes place in real life setting.

It could be observed that the SLT ties in so much with how adults learn. This is because it borders on how learning takes place naturally as individuals or especially adults enter into learning situation and attempt to make some efforts to address their real life learning needs. Some aspects of the SLT relates to two of Knowles (1990) adult learning principles (cited in Merriam and Caffarella, 1999 and Merriam, 2001), adults have learning needs closely related to their changing social roles. Adults are problem-centred and interested in immediate application of knowledge.

As the MAMs go about their day to day activities, they become more experienced as the years go by. In other words, the MAMs knowledge, skills and attitude become more

enhanced over time. With regards to the SLT, it could be said that the update of MAMs professional competence is as a result of the fact that learning is embedded with their work schedules.

Therefore, as they go about their work schedules learning gradually takes place. It is in light of this that the study used the SLT as the theoretical framework in connection with the conceptual framework to study how the MAMs learning projects activities were conducted at their workplace.

#### **2.4 Participation in Communities of Practice**

Participation in communities of practice is grouped under two categories. These are legitimate peripheral participation and full participation. Legitimate peripheral participation is characterized by learning. Full participation is characterized by competence and mastering. From the situated perspective of learning the learner does not just learn by observation and imitation as expressed by the traditional view of apprenticeship instead the learner actively participates by learning from all community members (Mann, 2010).

In an ethnographic study of how adults used math in real-world contexts such as grocery stores, Lave (1988) concluded that learning is a reoccurring process in which adults act and interact within their social situations. In her study, adults who were taught a “school” version of how to calculate mathematical problems were observed and interviewed concerning how they used the same type of mathematical equations in the real world of grocery store shopping. She found that the grocery items, coupons, and “in-store specials” themselves became tools for solving mathematical problems, while the grocery store and the social interactions with other shoppers or store workers were the social context for learning.

Lave (1996) argues that it is not enough to “add situated contexts to learning experiences . . . a more promising alternative lies in treating relations among people, tools, activity as they are given in social practice” (p. 7). In other words, real-world contexts, where there are social relationships and tools, make the best learning environments (Hansman, 2002).

In a similar group learning experience shared by Hansman (2002), it was related that “Our authentic learning about teaching writing consisted of more than lectures about assignments and grading papers; it was in the unplanned intersection of people, culture, tools, and context” (Hansman, 2002:44). Learning is an individual activity in which the learner interacts dynamically with the environment, and learn from others in their environment. However, learning is seen as occurring ultimately at the individual process (Mann, 2010:63).

## **2.5 The Concept of Learning**

Like other concepts, learning has been viewed from various angles. Due to this reason, it is impossible for a single definition to offer a panoramic view of the concept of learning. Illeris (2007) also pointed out that the concept of learning has been taken to a considerable extent in recent times. Thus, the understanding of learning goes beyond psychological dimensions to include biological, neurological, and sociological conditions. Therefore, it would seem short sighted to review learning from one perspective because it is a multifaceted phenomenon (Jarvis, 2005; Illeris, 2007). “Learning is an element of our being- it is always a present process...but it always signifies becoming” (Jarvis, 2007: 10). Similarly, learning is perceived as a natural and inevitable aspect of life, and a fundamentally social process (Wenger, 2011).

Learning is defined as “a combination of processes throughout a lifetime whereby the

whole person – body (genetic, physical and biological) and mind (knowledge, skills, attitude, values, emotions, beliefs and senses) experiences social situations, the perceived content of which is then cognitively, emotively or practically (or through any combination) and integrated into the individual person’s biography resulting in a continually changing or (more experienced) person” (Jarvis, 2007:1). The concept of learning was therefore reviewed in the following areas; as an outcome, as a process of change, as experiential, as a socialisation process as well as a natural process.

## **2.6 Learning as an Outcome**

Learning is a process or a means of facilitating change. This change represents the outcome of a learning process. In other words, without a learning outcome (change), learning cannot be said to have taken place. This makes the role of learning outcome(s) an important aspect of learning. Atkinson & Atkinson (2000) argued that learning is “a relatively permanent change in behaviour as a result of prior experience” (p. 234). Relatively permanent change in behaviour as used by Atkinson and Atkinson refers to the result of a learning experience. This also suggests that learning without change is a mere experience. This proposition further implies that the learning outcome by nature is subject to change. Learning outcomes could be viewed as new or enhanced knowledge, skills and attitude. It can also be grouped as covert and overt behaviours.

In the case of the master mechanics, their mastership by itself is a learning outcome attained through prior learning experiences mainly from their apprenticeship training activities. To become a master mechanic implies that one has specialized and gained a wide range of knowledge, skills and attitude in an area of interest required to provide automobile services. Some of the knowledge and skills attained by the master mechanics are in, car body works, spraying, electrical works, carbureting, petrol or diesel car

specialists and air conditioning services amongst others. These are some of the learning outcomes or behaviours learned in the automobile industry.

To be a master mechanic however, does not mean that one has attained all the needed knowledge, attitudes and skills to run an automobile service for a lifetime. This is because knowledge, skills and attitudes are subject to change over time. Therefore, the master mechanics sustain their mastership and provision of quality service by constantly enhancing their already attained knowledge, skills and attitude.

## **2.7 Learning as a Change Process**

The concept of learning makes us understand that, change will always result as part of the learning process. This change can either be positive or negative, transformational or upgrading, depending on how drastic the change may be. According to Illeris (2007) learning is “any process that in living organisms leads to permanent capacity change and which is not solely due to biological maturation or ageing” (p. 7). His postulation suggests that the change that occurs in learning is permanent. Thus, when one learns to become a driver, the capacity to drive becomes permanent. This however should not be the case because learning is continuous. Thus, people will continue to learn, relearn and unlearn any set of behaviours. This makes change in learning a relative process (as described by Atkinson & Atkinson, 2002) more than a permanent capacity to change.

Like the case of the master mechanics, their engagement in learning leads them to continuously improve (change) upon their quality of service in their industry. These changes might range from transformation (a complete change of skill), upgrading (increasing the efficiency of an already existing skill) or modification (a slight change in the provision of a particular skill to suit the modern trends) of their knowledge, skills and

attitude. With regard to this learning is a process of change that catalyses relative change in human behaviour for survival and development.

Thomas (cited in Larizable, 2005) assumed learning as any change that may take place in an individual through the influence of the outside world, whether the influence be persons or things, good or bad. To Thomas, the change that occurs in learning is as a result of the external environment. Indeed, studies have proved that social change influences our leaning behaviours. However, studies on factors that influence learning indicate that the factors that influence learning go beyond external factors because there are internal factors that account for the reasons why people learn. Some of the external factors include globalization, technological advancement and demographic change (Merriam & Cafarella, 1999). Some of these internal factors include desire, interest, need and curiosity (Placco & Souza, 2011) and intrinsic motivation. Thus, the effect of change in learning comes about as a result of external and internal factors.

The changes that the master mechanics go through as a result of learning could equally be associated to both internal and external factors. It is obvious that technological advancement in the automobile industry is one of the significant external factors that influence change in the behaviour and attitude of the master mechanics towards their profession. Similarly, some internal factors likely to influence change as a result of learning by the master mechanics could be attributed to their adventurousness, curiosity and the desire to experiment. Thus, both internal and external factors contribute in facilitating the constant change in the behaviour of the master mechanics through their learning endeavours.

Colvin (cited in Larizable, 2005) also delineates “learning as the modification of the reaction of the organism through experience” (p. 2) Freeman (cited in Larizable, 2005) described learning as “modification of inherited responses and the acquisition of new experiences” (p.2). These two proponents share a common view that learning is the modification of behaviour (responses), be it inherited behaviours or acquired behaviours through socialisation. In fact, their proposition is a significant feature of the master mechanics. Thus, the master mechanics do not only modify their professional behaviours but, in addition, they enhance their inquiring behaviours which ensure a holistic development of their entire being as humans. Thus, the more human beings develop themselves the more they tend to develop their society.

According to Delors (2013), the United Nations (UN), identified four pillars of education (learning). These are learning to know, learning to do, learning to live and learning to be. These four are seen as the pillars upon which every individual’s success in life is based. The four pillars help individuals to take control of their lives. The learning projects activities carried out by the MAMs is a form of evidence of how the four pillars of education help individuals cope within their dynamic work environment and the wider society.

## **2.8 Learning as an Experiential Process**

Learning is experiential because it is a meaning making endeavour that involves an interaction between oneself and the environment in search of meaning. Environment in this case refers to either coming into physical contact with one’s environment or an interaction with one’s perception of his/her social world or a combination of both. In the light of this, Miller and Boud (cited in Jarvis, 2004) shared their view of what experience is. According to them, experience is his totality of ways through which a person

consciously makes sense or perceives the world. Thus, to them, to learn is to experience. This postulation is factual because for one to have learned implies that one has encountered a learning experience. Thus, a learning experience is a precondition for a learning need to be met. Thus, the means through which one learns constitute a learning experience and this is equivalent to a learning process. In this instance, the processes of learning make learning experiential. Consequently, learning experiences implies the processes or actions carried out by the learner in the course of learning.

Beard and Wilson (2002) also agreed that learning is experiential. They argued that experience and learning are more or less inseparable. For this reason, the term experiential learning is a tautology or repetition of the same idea. Although they made a valuable case it can also be argued that not all experiences are learning inclined therefore it is more advisable to use the term experiential learning to distinguish learning experience from other experiences. Learning experiences could be categorised as passive and active learning or incidental or accidental learning.

Miller and Boud's definition of experience also implies that learning is a conscious experience. But one may ask, are all learning experiences consciously experienced? Beard and Wilson (2002) think otherwise. According to Beard and Wilson (2002), "experiential learning is the insight gained through the conscious and unconscious internalisation ... of one's interactions" (p.16). From their view, it is assumed that although one may learn consciously, it is possible for one to gain insight unconsciously. Caine (2008) shares a similar view with Beard and Wilson (2000). Thus, to Caine (2008), learning constitutes layers of consciousness including conscious and unconscious consciousness. She further pointed out that some deeper levels of learning require unconscious incubation for example

after the mind has gone through some form of conscious processing. This means that the conscious processing of thought in the course of learning could lead to gaining insight from the unconscious. Similarly, Harking, Turner and Dawn (2001), highlighted that learning occurs subconsciously, unconsciously, accidentally and incidentally. This means that although one may consciously go through a learning experience some of the insights gained through the learning experience might be gained unconsciously.

Another perspective of experiencing learning unconsciously could be attributed to a situation where an individual goes through a learning experience without acknowledging the experience as a learning experience. This phenomenon is common within the natural settings like workplaces, home, church, hospital, supermarkets conversations among others. Usually the kind of learning that goes on in these settings is informal learning. Probably, the routine nature of the informal learning experiences and its interrelatedness to daily activities contributes to the poor recognition of the ongoing learning experiences as and when it is being experienced. The learning natural settings have noted as places where most of an individual's lifelong learning activities occur (Brookfield, 1985) and (Tough, 1971). It has been observed that some people do not value such learning experiences because they are not formally organised and guided by adult educators. But the point is that whether the informal learning activities are recognised or not, the mundane nature of such learning activities tends to make people experience learning unconsciously as they consciously learn.

Jarvis (2004) contributed to the discussion of what experiential learning is. According to him, experiential learning is “the process by which individuals, as whole persons, are consciously aware of a situation and make sense, or try to make sense of what they

perceive, and seek to reproduce or transform it and integrate the outcomes into their own biographies” (p.104). Jarvis (2004) seemed to share a common view of experience with Moud and Miller (cited in Jarvis, 2004). Thus, the authors believed that learning is experienced consciously. But Jarvis went further to establish the fact that a learning experience involves the whole person, perception, and integration of learning outcomes into one’s biography. From his definition, one could deduce that the whole person implies an individual’s five senses (sight, hearing, taste, smell and touch). It is with these senses that a learner is enabled to perceive and make meaning of what is being perceived. Jarvis (2004), finally, submitted that learning experience could either lead to the transformation of a learner or mere reproduction of an already existing behaviour or attitude.

In other cases, learning experiences bring about a total transformation of the learner. Whether a learning experience was transformational or a reproduction of a known behaviour, it is integrated into the learner’s biography. In view of the variables with Jarvis (2004)’s definition, experiential learning is a personal experience. In Kolb’s (1984) (cited in Jarvis 2002), learning was defined as a process where knowledge is created through the transformation of experience.

## **2.9 Learning as a Socialisation process**

Learning serves as a social link in preserving the identity of a social group. Through human interactions, norms and values are internalized and externalized. In some cases, this occurs simultaneously, by members of a society. In so doing, individuals consciously and/or unconsciously engage in learning activities. For instance, the norms and values learnt during the primary socialisation stage are mostly learnt unconsciously compared to the secondary socialisation process where most of the learning happens consciously.

Nevertheless, irrespective of both primary and secondary socialisation, the process of socialisation in its entirety is perceived by Eitzen and Sage (1987) as an adaptation process (Cited in Stroot, 2002).

Coakley (1998) also referred to “socialisation as an active learning process and social development, which occurs as we interact with one another and become acquainted with the social world in which we live.” (cited in Coakley & Dunning, 2000, p.84). It is obvious from the views presented so far that learning is central to the socialisation process just as Jarvis (1995) also contends that learning is the essence of human existence. Coakley further indicated that through socialisation, social development is enhanced. But some other sociologists like Jarvis made an important observation that through socialisation an individual’s ‘social self’ is developed. Self in this context according to Rogers (cited in Weiten, Dun, and Hammer, 2012) is “a collection of nature, unique qualities and typical behaviour” (p.51). In this case, socialisation could be described as an active learning process that promotes both individual and social development.

As already noted, socialisation implies that learning is means to an end. In Coakley’s contention, learning is an active process depending on human interaction as a means of learning during socialisation. It is obvious and crucial to note then that the ongoing active interaction in our environment involves some form of learning. Aside human interaction, the media plays a crucial role in the socialisation process. Another form in which interaction could occur in the course of learning/socialising is through receiving and assessing elements of culture by whatever means they transmitted (Jarvis, 1995). In this proposition, Jarvis seem to contend that learning is a selective exercise. Indeed, this is true because in the course of learning, one needs to assess/examine the cultural elements at

his/her disposal in order to select/receive any cultural elements. These cultural elements include ... Another perspective of learning through interaction could be through the involvement of the self, cognition, the physical body and the external cultural elements. In this regard, the process of socialisation is perceived as a learning avenue where members of a society interact with their social environment in order to enhance the organization of their social group.

### **2.10 Learning as a Natural Process**

It is assumed that whether educational provisions are put in place or not, people will learn as long as they continue to live. This makes learning a lifelong process. It is not surprising that learning activities in the natural setting is more common than the relatively highly organised forms of learning. Jarvis (2012) explained why learning is considered as a natural process. According to him, a child/baby spends a considerable amount of time to learn a set of complex behaviours. But in the case of other animals, their offsprings spend comparatively shorter period to gain independence for survival. This occurrence is due to the fact that animals are highly instinctive by nature and do not require any significant learning. This also means that animals have adequate unlearned behaviours needed to ensure their survival. Unlike other animals, human beings' instincts are minimal. In this case, human beings have no other means to survive than to learn. Hence, learning tends to be more natural to mankind than to lower animals. Learning is thus contended as fundamental to human survival. However, in spite of the limited instinct, Jarvis (2012) believes that human beings possess drives and tendencies (and a brain) that compels them to engage in complex human activities.

Mackeracher (2004) indicated that most writers of learning perceive learning as an intrinsic activity where learners interact with their environment. Mackeracher (2004)

likened the natural process of learning to breathing. She puts it this way “like breathing learning is a normal function of the living” (p.6). Furthermore, the author added that the essence of breathing is to “reduce carbon dioxide and increase the oxygen level in the blood” (p.6). “The activity of learning stems from a need to make sense of experience, to reduce the unknown and uncertain aspects of life to a manageable level, and to act skillfully in ensuring our survival and security” (p.6). In view of Mackeracher’s proposition learning is a natural tool for survival. As a tool, it is expected to be used to replace ignorance with enlightenment, creativity and development.

In exploring learning as a natural process, Perry and Keegan (cited in Mackeracher, 2004) made an interesting contribution. They both noted that human beings primarily function as meaning making creatures. Thus, to Perry (cited in Mackeracher, 2004), the essence of man is to organize meaning. Keegan (cited in Mackeracher, 2004) went further to argue that human beings make meaning through the organisation of their entire being together with their external environment. In relation to learning as a natural process, if learning is indeed a natural process then it implies that human beings are making meaning creatures (not clear). Thus, true meaning will also emanate from organizing (not clear). Therefore, learning as a natural process implies that human beings have a natural drive for organizing their learning experiences to make meaning.

Although learning has been justified as a natural process, it must also be noted that learning is a skill that needs to be acquired. This is because the need to learn has propelled a shift from our natural environment to an advancement of a dynamic social world. As a result, learning becomes more sophisticated. The need to learn how to learn has become crucial for survival. Learning has gone beyond being a natural tool to a social tool that constantly requires modification.

## **2.11 Adult Learning**

The field of adult education or adult learning was traditionally built on the concept of andragogy, self-directed learning and transformational learning theories and perspectives. These perspectives generally restricted their explanations of adult learning on the characteristics of the adult learner as well as learning processes. Thus, the concept of adult learning was primarily derived from the field of psychology. However, ongoing studies in the field of adult learning suggest that adult learning is extremely diverse and complex. Currently, the concept of adult learning from critical, multicultural and feminist traditions to understand better how context affects adult learning.

In view of this, adult learning has been described as “an ever changing mosaic, where old pieces are rearranged and new pieces added” (Merriam, 2001). To understand this diverse and vast territory of adult learning theory, Merriam and Caffarella (1999), recommended conceptual map to serve as a guide. This conceptual map is made up of the nature of the adult learner, the context of the learning activity and the learning process that adults engage in. This conceptual map is described as the three-part typology which serves as a guide to distinguish learning in adulthood from learning in childhood.

The andragogical approach is characterized by a set of assumptions that the adult teacher has about the adult learner:

1. Adults need to know why they need to learn something before commencing their learning
2. Adults have a psychological need to be treated by others as capable of self- direction.
3. Adults have accumulated experiences and these can be a rich resource

for learning.

4. In children, readiness to learn is a function of biological development and academic pressure. In adults, readiness to learn is a function of the need to perform social roles.
5. Children have a (conditioned) subject-centred orientation to learning, whereas adults have a problem-centred orientation to learning.
6. For adults the more potent motivators are internal. (Knowles, 1989: 83–4)

### **2.12 Self-Directed Learning**

SDL is a key concept in the field of adult education that focuses on how adults learn by themselves either within or outside an instructional setting (Banz, 2008, Ellinger, 2004). This concept was developed through the works of Houle, Knowles and Tough (Merriam & Caffarella, 1999). SDL is a significant research area that has been studied for more than three decades (Merriam and Caffarella, 1999) in effort to understand how adults learn. Brookfield (1985) points to the fact that not all adult learners prefer to learn using a self-directed approach. Similarly, Brown (2001), also raised the argument that “If learners are given genuine choices, they may opt to be passive learners rather than self-directed learners. It is therefore not easy to decide exactly where the costs and benefits of self-directed learning at work lay (p.1).

### **2.13 Key Elements of Self-directed Learning**

According to Tennant (2006), there are eight components of self-directed learning. These are as follows:

1. Knowledge and ability to apply the basic process of planning, conducting and evaluating learning activities
2. Ability to identify one’s own learning objectives;

3. Ability to select the appropriate planning strategy and planning expertise;
4. Ability to direct one's own planning when that course of action is appropriate
5. Ability to make sound decisions about setting and time management of learning activities;
6. Ability to gain knowledge and skills from the resources utilized
7. Ability to detect and cope with personal and situational blocks to learning

Ability to renew motivation. (Tennant, 2006:10)

## **2.14 Learning Project**

A Learning Project (LP) is defined as “a major learning effort which is deliberate and sustained (a minimum of seven hours) attempt to gain some clear knowledge and skills” (Tennant, 2006:10).

### **2.13.1 Learning Project Processes**

Formal adult learning programmes usually have a pre-planned set of activities that mostly guides the implementation of the learning activities. This pre-planned set of activities are characterized by phases-learning objectives, learning content learning methods and evaluation of learning outcomes (Gboku and Lekoko, 2007). These phase is viewed as phases of the educational process. The curriculum is designed on national and the instructional setting's policies.

Earlier studies conducted on processes involved in adult learning projects suggested that adult learning projects were linear. Thus, as explained by Tough and Knowles, the learning projects were well planned and linear in pattern (Merriam and Caffarella, 1999) Studies conducted on the learning processes of adults portrays that their learning activities are not

so well planned and linear. Rather, the processes are more haphazard and based on trial and error as compared to Tough studies (Tennant, 2006).

This study considers the fact that whether the adult learning project is linear or interactive, it is guided by some processes especially with regard to demanding and significant nature of the learning need. Thus, learning projects are characterized by triggering events, learning objectives, learning content, learning methods as well as the evaluation of learning outcomes. In view of this, these identified learning processes were examined in the light of how they are carried out in the conduct of self-directed learning projects.

A learning curriculum consists of situated opportunities for development, whereby the community becomes a learning resource and learning occurs in many ways. A teaching curriculum, by contrast, is constructed for the instruction of newcomers and thereby structures, and may limit, opportunities for learning and what is recognized as learning (Wenger cited in Mann, 2010: 64).

Some conditions account for learning (especially basic living) to occur (Jarvis, 2012). These conditions were identified as social interaction and disjuncture. Social interaction is explained as the associations an individual have with his/her family and other organizations such as workplace, religious bodies, among others. As individuals interact with these various social groups, he/she experiences differences in behaviour and in order to ensure smooth interaction, the individual learns to adjust his/her behaviour. Also, usually we take for granted people whom we know intimately; for people whom we are not too intimate with, we hardly take for granted the whole process of interaction (Jarvis, 2012). The second condition for learning was identified by Jarvis as 'disjuncture'.

It is a person(s) experience as result of social interaction. In real life situations, disjuncture is experienced naturally through social interaction. Unlike natural settings, in formal learning organisations, disjuncture is created through teaching – mostly didactic (Jarvis, 2012).

Disjuncture experiences occur in a continuum. It ranges from slight experiences to significant disjuncture experiences. The slight disjuncture experiences do not demand significant learning efforts. Such learning needs could be addressed in a learning episode. Similarly, significant disjuncture experiences require significant learning experiences such as learning projects to be able to address the desired learning needs.

After experiencing disjuncture, the learner could respond to the situation by rejecting it, think about it, or respond to it emotionally (Jarvis, 2007). Living in ignorance in some cases is an acceptable response (Jarvis 2012). Aslanian and Brickell cited in Kungu, K. & Machtmes (2009) states that:

“Even when the impetus or stimulus comes from outside, the sense of discovery, of reaching out, of grasping and comprehending comes from within” (Rogers, 1969:5).

As life progresses, the developing individuals become more stable and less likely to change radically in certain circumstances. Thus, the individual gain a sense of self and self-identity and they become actors in the situation as well as recipients. The MAMs professional identity as a form of self-identity helps them to decide whether or not to conform to the changes that occur in their place of work.

## **2.15 Experiential Learning Theories**

Learning experiences depict and explain how knowledge, skills and attitude are discovered or grasped to enhance one's personal growth and development. These experiences are unique to every individual and the nature of a learning situation also lends itself to how learning is experienced by the individual. It is therefore assumed that learning experiences are unique experiences to self-directed learners. Therefore, the study of learning projects conducted by the master mechanics of Odawna intended to make known how meaning is constructed through their learning project experiences. The adult learning theories have put into various perspectives the experiential nature of learning. In light of this, the following adult learning theories were examined in relation to the processes involved in the learning projects of the master mechanics. The theories selected included Kolb's (1984) learning theory, Jarvis (1995) learning process theory and Mezirow's transformational learning theory. Generally, these learning theories are explained in the context of personal development. Thus, the theories were implicitly influenced to a large extent by the humanist orientation to learning.

### **2.15.1 Kolb's Experiential Learning Theory**

Kolb's Experiential Learning Theory (ELT) (cited in Merriam and Caffarella, 2012) was partly informed by the learning theories by Lewin, Dewey and Piaget among others. Kolb's theory basically explains how knowledge is created through transformation of experience. The ELT learning model also views a learner as a constructivist who discovers knowledge for oneself. Although the ELT learning model appears to be simple, it has quite a number of interpretations.

Thus, the ELT depicts learning as a cyclical process and also it illustrates the dialectical nature of learning. Finally, the model presents four categories of learners and their learning styles.

With regard to the cyclical nature of learning, the ELT model indicates that learning begins with the learner who perceives the learning experience physically. This is described as concrete experience in Kolb's experiential learning model. The next stage is followed by reflection and observation of the experience. Thereafter, the learner conceptualizes the experience abstractly and finally puts the new concept(s) discovered to practice in order to evaluate its efficiency and effectiveness. Consequently, the learner undergoes subsequent learning experience.

Kolb's (1984) conception of the cyclical nature of learning could be accepted as true. The reason for this assertion is that there can be no meaningful living or social development without learning. The dynamic nature of our natural and social environment and its unending demands makes learning a lifelong activity. As mentioned earlier, Jarvis also posits that the essence of man is to keep learning in order to discover their potentials as humans. From this perspective, learning is undoubtedly a cyclical activity in the endeavour of human beings. But Kolb's perception of the steps involved in the cyclical nature of learning is rather perceived as relative. This is because learning is a unique activity and it is also influenced by some key factors such as the culture of a society and the changing trends of globalisation and the nature of one's profession.

In view of the dialectical nature of learning, Kolb (1984) postulates learning as a process of grasping and transforming one's experience into knowledge. From Kolb's perspective, learning can be said to involve two major steps grasping of the learning experience and transforming the learning experience. Furthermore, he is of the view that each step of the learning process is dialectical in nature. Each of the steps comprises of two opposing elements that interact with each other in order to facilitate the meaning. From the

dialectical perspective of learning the grasping stage comprises of concrete experience and abstract conceptualisation. Thus, in the process of grasping a learning experience, the learner fuses physical concepts with abstract (theoretical or conceptual) concepts in order to comprehensively conceptualise the learning experience.

At the transforming stage, learning experience is relatively transformed through reflective observation and active experimentation. In other words, the learner comparatively undergoes reflective observation as well as putting to practice the emerging ideas. Clearly, it could be observed that both the cognitive and behavioural perspectives of learning are implied in the ELT model. This observation is evident in other contemporary learning theories. This also means that the both cognitive and behavioural principles are inseparable in any learning endeavour.

The ELT learning model also identified four categories of learners and their learning styles. These learners were identified as divergers, convergers, assimilators and accommodators. The characteristics of these learners have been illustrated below:

***Divergers:*** The diverging learning style describes individuals who perceive a situation or an idea from many angles. People who use this approach in learning mainly adopt concrete experience and reflective observation than the other forms of learning described in the ELT model. This suggests that during the process of learning, these learners observe and reflect on the learning experience before they take action. They also have the ability of putting together pieces of information into one major concept.

***Convergers:*** Their learning style is characterised by the ability to find a good solution to a problem. According to Kolb their learning style is predominantly abstract

conceptualisation and active experimentation. This means that they tend to be analytical and put to practice new theories that are discovered. The nature of their learning makes them more interested with technical related challenges than social issues.

*Assimilators:* This group of learners adopts abstract conceptualisation and reflective observation. Thus, they prefer abstract learning situations that allows for reflection and observation of situations that leads to theorizing of theories and models. They like to view issues objectively so they tend to adopt a systematic approach solving problems.

*Accommodators:* The learning styles employed by these learners are concrete experience and active experimentation. This suggests that accommodators prefer hands on learning experience and learning in the natural setting like the case of the small scale master automobile mechanics who learn on the job. The accommodators also like to experiment using trial and error technique, intuition, seeking for information from colleagues among others.

Kolb's classification of the four types of learners and their preferred learning styles depicts his view on various learning styles or patterns learners adopt in the course of learning. These learning styles should have probably been presented with factors that make the various learners adopt such learning styles. In so doing, it will (be specific) enhance better understanding of Kolb's classification of learners with their learning patterns. Aside that, it was also observed that Kolb's learners adopted two major learning styles. But in other learning instances, learners may adopt one or more major learning styles. In spite of this, Kolb's categories of learners informs the study about patterns of learning behaviours. It is also important to note that patterns of learning behaviours can take various form depending on the perspective by which learning behaviours are being examined.

### **2.15.2 Jarvis Learning Process**

Jarvis drew inspiration from Kolb's ELT learning model and through extensive studies on learning he further updated his human learning process model to existential model of human learning (Jarvis, 2003). His Model shares similar ideas as that of Kolb and he also introduced some new concepts in his model such as existentialism, social situation, among others. Like Kolb's ELT model, Jarvis also perceives a learner as one who constructs a learning experience. One of Jarvis key philosophy of learning is that learning is an existential phenomenon. What he means in the above assertion is that so long as human beings continue to exist learning experiences are bound to take place. Thus, through learning, our personal and social developments are enabled. Jarvis explains his understanding of human being (as a concept) as individuals who are in a state of becoming so long as they continue to exist. In other words, the human being is in a constant state of becoming refined through learning until one ceases to be. This is exactly the reality because from childhood to adulthood, learning relatively continues to occur as individuals go through life. Jarvis's concept of human being appears to share similar meaning as Maslow's (2003) self-actualisation concept. In short, learning as an existential phenomenon implies that so long as a person lives he or she is predisposing to learning experiences.

Jarvis's Model of the Processes of Learning (MPL) describes how social situations compel individuals to undertake learning endeavours. In addition, the model (figure 3) also illustrates various forms of learning processes that facilitate change in an individual's behaviour. Interestingly, Jarvis illustrates that learning does not always lead to change. As it can be noted, Box 1 of the MPL (fig. 3) indicates that an individual enters a learning experience with one's physical body and mind. The mind as used in the MPL refers to the

individual's knowledge, attitude, beliefs and values. In other words, a learner's past experience and knowledge relevant to a particular learning situation forms a basic part of the constituents of a learning process. This view has also been emphasised by Knowles and Dewey. The physical body refers to the biological make-up of the individual. It also important to highlight that both the physical body and the mind are the twin aspects that are subject to change as one embarks on a learning experience.

In the MPL (fig. 3), Box 2 represents the inevitable occurrence of social situation. Social situation as used in the model refers to the dynamic changes that characterise our society. In the automobile mechanic service industry some instances of social change could be attributed to the highly technological nature of automobiles as well as the use of sophisticated gadgets in detecting faults of vehicles. Subsequently, although social changes in general are facilitated by man, other members of the society become recipients of these social changes. It then becomes clear that the dynamic nature of society or the dynamic nature of our social situations tends to constantly create learning gaps or disjuncture in the biographies of individuals.

More or less social situations serve as a provider of learning opportunities for members of a society. However, it is the choice of the individual to decide to learn in order to conform to some aspects of the changes in society. Jarvis points out that these changes could be experienced either consciously or unconsciously. But the underlying fact is that these social happenings are mainly responsible in influencing learning behaviours among members of a society. In view of this our human society could be described as a learning society because human activities basically revolve around learning activities.

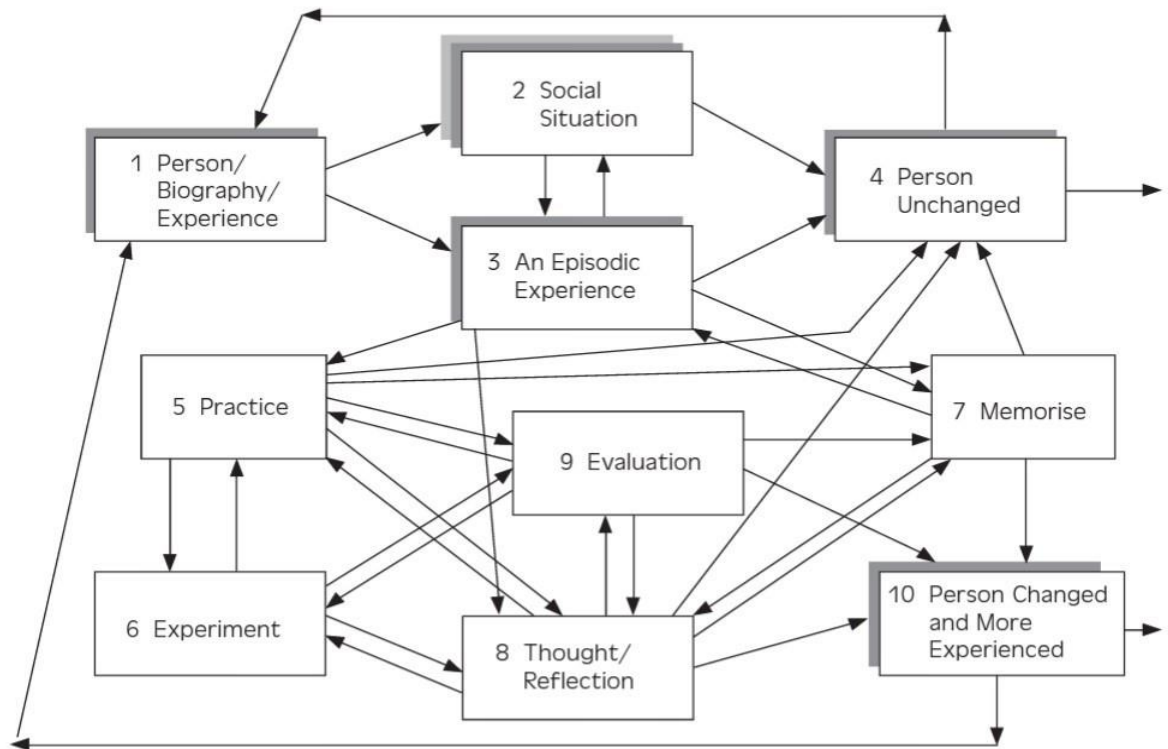
Box 3 of the model presents learning as an episodic experience. This implies that each learning experience is episodically constructed by the learner. In other words, the episodic experience presents the various learning activities or learning routes carried out by the learner in a learning event. Hence, the model views learning events as episodic in nature. The remaining part of the MPL gives a general view of what constitutes learning episodes.

Jarvis admits that learning is a complex behaviour and for that matter, people have unique ways of learning. In spite of this the model indicated three basic ways people learn. These include learning by doing, learning by thinking and learning by memorising. With regard to learning by doing, in constructing this learning episode, (Box 3) the individual learns by taking actions, thus box 5 (Practice), and then evaluates the learning outcome (box 9). The learner then commits to memory the valuable learning outcome (box 7). Through memorisation the learner integrates whatever that had learnt into his/her biography and finally gains more experience and becomes more enhanced as an individual (box 10).

In the case of learning by thinking (which as well describes a kind of learning episode-box 3, episodic experience), the individual learns by thinking and reflecting on the learning experience. After which the learner evaluates the outcome of both the thought and reflection to find out it's worth (box 9, evaluation). The learner then proceeds to memorisation of the learning outcome (box 7, memorisation). Finally, through memorisation the learner becomes changed and gains an enhanced behaviour (box 10, person changed and more experience). The last learning episode, learning by memorisation (box 3, episodic experience), the learner learns by memorising (box 7) and evaluating what has been memorised. Finally, as a result of memorisation the learner's behaviour becomes enhanced (box 10, person changed and more experience). Jarvis further added that these three basic learning episodes could be applied sequentially or simultaneously. This

suggests that learning episodes could be constructed as simple as possible, thus not requiring a series of steps. Alternatively, learning episodes could be comprised of a series of complex steps. Some of these steps may be applied concurrently.

The model of processes of learning (Fig. 3), presented by Jarvis (2012), shows that learning does not always lead to change (step 4 of the model). The model (fig.3) shows this in two major forms. First and foremost, an individual (box 1) could decide not to respond to a learning opportunity created by a social situation (box 2). This makes the individual unchanged (box 4). Secondly, an individual (box 1) could pursue a learning episode (box 3) without encountering any change (box 4). In view of the model this second factor could be attributed to two factors. Thus, a learner might have been involved passively in the learning episode. It could also be that the learner might have been actively involved in the learning episode but the learning outcome does not produce any significant result expected to bring about a significant change in behaviour.



**Figure 3: Model of Processes of Learning**

### 2.15.3 Merzirow’s Transformation Learning

Mezirow’s perspective transformation learning theory (cited in Merriam and Caffarella, 1999) describes how learning relatively transforms a person’s perceptions. By relative transformation, Mezirow points out that learning could either lead to a change in an aspect of the entire beliefs and attitudes of a person. The theory was propounded within the context of how a person constructs meaning through life’s experiences that are characterized by personal predicament. In light of this, Mezirow expounded transformative learning as a “the process of becoming critically aware of how and why our suppositions have come to constrain the way we perceive, understand, feel about the world; of reformulating these assumptions to permit a more inclusive, discriminating, permeable and

integrative perspective; and of making decisions or otherwise acting on these new understandings” (p. 320).

Mezirow’s view of transformative learning suggests that transformative learning is a subjective process where an individual consciously encounters mental constraints or limitations due to a social situation that lends itself to a meaning making endeavour (learning). This meaning making endeavour is described by Mezirow as a disorienting dilemma or personal crisis where known learning strategies are not applicable. Subsequently, this challenge predisposes the individual to undergo a learning process that is relatively transformative. Mezirow describes the transformative learning process using three phases; namely, “critical reflection on one’s assumptions, discourse to validate the critically reflective insight, and action” (p. 321). Phase one describes the critical reflection of the individual’s assumption. Mezirow explained this as self- examination in a form of critical analysis of one’s assumption and situation. In addition to self- examination the individual examines similar experiences of others thereafter; the learner explores new ways of perceiving and managing the challenge. The fourth phase, developing alternative perspective, at this stage new behaviour, new way of understanding and self- confidence are put in action/practice. The final phase is the reintegration process where the new behaviour and new ways of reflection are integrated into the individual life.

### **2.16 Learning Objectives**

Informal learning activities are generally viewed as not structured in terms of learning objectives (Rogers, 2014). Adult learners therefore dictate what their objectives should be when they join a learning programme. Adult learning is about changes in information, knowledge, skills and attitudes that the individual adult learner needs in order to address personal and communal challenges (Gboku and Lekoko, 2005). This also implies that at

the onset of the learning process, the adult learner comes to the learning situation with the intention of equipped him/herself with new knowledge and skills based on his/her perceived learning needs. Learning objective(s) refers to the specific knowledge, skills and attitudes that must be achieved within a time frame of a programme plan (Gboku and Lekoko, 2005). Unlike a learning goal that is general, learning objectives are explicit statements that serves as a guide for periodic assessment for the progress of a learning programme. Whether learning activity is formal or not all learning activities are guided by learning objectives. Whereas learning objectives are clearly written in the preplanning stage of formal educational programmes in informal learning situations learning objectives are mentally captured. Learning objectives serves as a guide and helps in designing the learning activities. Thus, it helps with the determination of learning content, learning methods, assessment and evaluation of quality assurance.

### **2.16.1 Process of Setting Learning Objectives**

Learning objectives are developed based on learner's needs, interests and skills level (TEAL, Fact Sheet No 11, 2011). Learning objectives are determined through needs assessment (Knowles, 2005). A second problem with the deficit model of education relates to the diagnosis of 'deficit', Knowles (2005) makes it clear that deficits (needs) are diagnosed not only by the learner, but also by interests external to the learner. Knowles (1990), explains that the teacher should involve the student in a mutual process of formulating learning objectives in which the needs of the students, of the institution, of the teacher, of the subject matter and of the society must be considered. Knowles (1990) however raises an interesting question. "What should the teacher do when there is a conflict of interests? (p. 86). Subsequently, he noted that "the conflict will be resolved according to the distribution of power and status among the various interests and the

students can be expected to fare poorly indeed. In this way the idea of ‘diagnosing needs’ will become yet another mechanism for legitimating existing conceptions of worthwhile education” (Tennant, 2006, 16-17).

Learning objectives are determined through needs assessments (Knowles, 2005). Knowles (1990) noted that the formulation of learning objectives does not only require the learner’s learning needs but requires that of the interest of others external to the learner. In other words, the formulation of learning objectives involves a mutual process between the learner and relevant others. In instructional setting for instance, this mutual process must involve the needs of the learner, the institution, the teacher, the subject matter and that of the society (Knowles, 1990). However, elsewhere, instructors are criticized for determining learning objectives in the absence of students.

Knowles view of how learning objectives are determined shows that it is not solely the learner’s responsibility. Similarly, Gboku and Lekoko, (2007) are of the view that as a programme developer, he/she should not leave out the learner(s) when diagnosing learning needs for an adult learning programme. The team is a representation of the learner’s view, that of the instructional setting which represent the learner’s immediate environment as well as that of the wider society. Clearly, the formulation of learning objectives does not occur in a vacuum.

### **2.17 Learning Content**

Learning content refers to the knowledge, skills and attitudes needed to address the identified learning objectives. In the instructional settings, learning contents are designed in the form of subjects or courses to be covered by the learner. Unlike, the instructional settings where learners learn their learning content in discrete packages, in real life

learning situations learning content is embedded within the ongoing activities and interactions of the learning context. Stein (1988) puts it this way, “Content is inherent in the doing of the task and not separated from the noise, confusion and group interaction that is prevalent in the real work environment” (p.2). In this case, learning content in real life settings is interwoven within the social practices of the social context of the learning activity.

In the conduct of determining the learning content, the instructor assumes the responsibility and controls (decides) what learners need to learn. However, with regard to SDL in instructional settings, the instructor is expected to act as a resource person. In so doing he/she facilitates the learning process as the learner also consults the facilitator for guidance (Livingstone, 2001, Knowles, 1990, Brockett and Hiemstra, 1991, Hiemstra and Brockett, 2012). But Mocker and Spears Lifelong Learning model seems to present a different view. Thus, in their Lifelong learning model, they illustrated that in formal settings, the institution controls the learning objectives as well as means of the learning experience (Spear and Mocker, 1982).

With regards to the new educational goals where learners are expected to assume more learning responsibilities, Knapper (2006) noted the following. “Control of educational goals and decision needs to be shared between teacher and students including decisions about learning content, methods and approaches to assessment. This is because if students take responsibility for their own learning, they have to be given the power to do so as well as to live with the consequence (Knapper, 2006). Similar view is shared by Brockett & Hiemstra, (2012).

However, in real life learning situations, the SLT suggests that the social context does not only create learning opportunities but also determines learners needed knowledge, skills and attitude that is required (Lave and Wenger, 1991). Thus, the community of practice determines what the learning content would be (Christensen, 2016). In support of this view, Fenwick (2000) opines that “a particular context of learning presents possibilities from which learners select objects of knowing; thus, context influences both the content of experience and the ways people respond to and process it” (Fenwick, 2000 cited in Kiely, Sandman & Truluck, 2004).

As part of the SDL, as part of the responsibilities of SDL, learners are expected to draw on and utilize available resources and seek for the needed help in the course of pursuing their learning activities (Alkadhi, 2002). In most of Knowles (1980: 1984) extensive writings especially on andragogy and self-directed learning he highlighted on the fact that quality educational experience involves cooperative learning among learners, guided interactions between the teacher and the learner as well as the use of many available resources. In view of this it could be said the determination of learning projects could be achieved through an interaction between the self-directed learner together with the relevant others and tools available within the learning context. Although the society in which we live determines what we learn, learners also have an influence in determining their choice of what learning resources to select and their resources for learning.

### **2.17.1 Learning Methods**

A learning style is an approach that a learner habitually applies to learning, based on how they perceive, respond or interact with the learning environment (Fasokun, Katahoire & Oduaran, 2005). Learning style has to do with how the brain functions most efficiently and

effectively to process information (Fasokun, Katahoire & Oduaran, 2005). Success can be achieved by using the most preferred learning style. It has been argued that “the knowledge of a learner’s preference for one and another learning style may help in motivating individuals to work to their strengths while addressing weaknesses through appropriate learning task and materials (Pilkington and Groat 2002 cited in Fasokun, Katahoire & Oduaran, 2005: 113)

Learning styles are mere preferences. Exclusive reliance on one or another may not be conducive to an in-depth approach to learning necessary to achieve understanding (Garrison & Archer, 2000 cited in Fasokun, Katahoire and Oduaran, 2005). Successful learning in every learning environment involves the use of effective learning strategies (Song and Hill, 2007). Adult learners who pursue SDL adopts one’s own learning style and a range of strategies employed is typical of adults than by other group of learners (Rogers, 1986).

### **2.18 Choice of Learning Methods**

The best use of learning style information by the facilitator is to provide learners with insights regarding their learning preferences. In addition, the facilitators should assist learners to expand their thinking strategies in order to be successful in a variety learning settings. Facilitators have a duty to respond to these different learning styles by creating different learning context, activities and experiences for different kinds of learners. There is the need to train adult learners on how to learn and how to learn in more than one approach to learning, so that they are able to select appropriate styles depending on the available materials and learning activities.

### **2.19 Evaluation of Learning Outcomes**

The myriad perspective of evaluation makes it a complex concept. However, in light of the study, the concept of evaluation was examined as a learning process. According to Merriam- Webster (2010), evaluation means “to determine the value, significance, worth, or condition of something by careful appraisal and study” (cited in Miller and Stoeckel, p. 364). Similarly, Metens (2010), describes evaluation as a “selective exercise that attempts to systematically and objectively assess progress towards and achievement of an outcome (p. 50). Also, Scriven (1991) explained evaluation as “a process of determining the merit, worth and value of things. In spite of the difference in terms of the in-depth of the definitions illustrated above, basically, to evaluate suggests to systematically assess or to judge the worth or effectiveness and efficiency of an activity or an object. In relation to learning, to evaluate implies assessing and judging the worth or dependability of the emerging knowledge, skills and attitude in light of the learning objective/goal.

As indicated earlier, evaluation is the act of assessing or examining the worth of an activity. In relation to the process of learning, evaluation is perceived to significantly ensure the, efficiency, effectiveness, enhancement and creativity and continuity of learning activities. This also suggests the possibility of a multiple conduct of evaluation at various stages of a learning process. For instance, evaluation could be conducted at the point of diagnosing a learning need, when the learning activity is underway as well as the outcome of the learning process.

As already indicated above, evaluation forms a vital part of a learning process. Although most learning theories that describe learning process acknowledge evaluation as part of a learning process the theories failed to specify how the evaluation activities are conducted.

Nevertheless, most related literature on evaluation show that evaluation exercises could be carried out in two major forms. These were identified as formative and summative evaluation. However, the tailor made nature of self-directed learning activities suggests that both the formative and summative forms of evaluation activities cannot be strictly adhered to in all learning endeavours especially with regard to informal learning. In view of this, both the formative and summative evaluation are considered in the study as when learners evaluate their learning activities rather methods of evaluation.

Aside the timing of the evaluation exercises, another key feature to consider is the evaluation strategies. Evaluation strategies have been viewed from many angles by various authors. However, due to the dynamic nature of the self-directed learning activities the study considered evaluation strategies form two major categories. These were identified as self-evaluation and feedback evaluation. Self-evaluation basically refers to the evaluation of one's own learning endeavours.

#### Principles of Adult-oriented Learning Assessment

1. Learning is derived from multiple sources.
2. Learning engages the whole person and contributes to the person's development.
3. Learning and capacity for self-direction are promoted through feedback.
4. Learning occurs in context: its significance relates in parts to its impact on those contexts.
5. Learning from experiences is a unique meaning making events that creates diversity among learners. (Kasworm & Marienau, 1997:7).

Evaluation of learning outcomes is widely recognized as a vital activity executed by self-

directed learners in the course of pursuing their self-initiated learning activities (Knowles, 1975; Brockett and Hiemstra, 1991; Garrison, 1997; Rogers: 2002).

## **2.20 Trigger Factors**

A significant number of empirical studies have been conducted in the area of learning and motivation. It was observed that most studies have been conducted in the area of adult participation in adult educational programmes. One other area that has also caught the interest of researchers is in the area of the factors that trigger adult learning. Most of these studies were conducted in North America and Britain. In a study conducted by Houle (1961) on the factors that influenced adults to participate in learning, Houle (1961) finally categorised the reasons the respondents gave under the following themes: goal oriented learners, activity oriented learners and learning oriented learners.

Triggering events of adult learning is yet another major area that has been widely researched. One common finding that cut across studies in this area indicates that life changing circumstances trigger adults learning events. In a study conducted by Spear and Mocker (1984) on the factors that triggered self-directed learning among adults whose educational level was below high school completion. They found out that the respondent's life changing events in which were influenced by their physical, social and psychological environment caused them to learn. A similar nationwide study conducted by Aslanian and Brickell (1980). Their study was on the causes and timings of adult learning. The findings of the study showed that majority (83%) of the respondents indicated that some past, present or future changes in their lives were the reasons for their learning. The transitional areas indicated the following: career (50%), family (16%), leisure (13%), art (5%), health (5%), religion (4%), and citizenship (less than 1%). Studies conducted by Roberson and

Merriam (2005) and Findsen and MacCullen (2007) also confirmed that the motivation to learn was a means of responding to the changes one encountered in lifestyle and environment.

## **2.21 Sources of Knowledge**

The essence of learning is basically for knowledge, attitudes and skills enhancement. However, one may ask how knowledge or skills are discovered or created by individuals. Certainly, there are various ways by which people enhance their knowledge and skills. The various ways by which people acquire knowledge is referred to as sources of knowledge. According to Fraenkel and Wallen (2002), sources of knowledge are personal experience (sensory perception, reasoning, intuition and past experience), experiences of others (authorities, and colleagues), traditional knowledge, precision gadgets/instruments and scientific method. These sources of knowledge were thoroughly examined.

### **2.21.1 Personal Experience**

Personal experience refers to knowledge discovered by an individual through firsthand experience or primary experience encountered. Personal experience as a source of knowledge could also be experienced in the following ways. Thus, one could come by knowledge through sensory experience, reasoning, intuition and past experience.

*Sensory Experience:* One of the primary ways by which we perceive the world is through our five senses (sight, sound, touch, smell and taste). Frankel and Wallen (2002) described knowledge gained through the five senses as sensory experience. These five senses serve as a means through which an individual gets to experience, understand and know the world. In this case, personal experience becomes the knowledge gained through the direct experience of the world through our senses.

*Reasoning:* Goswami (2011), described human reasoning as ‘the mental activity that involves the manipulation of a given information to reach new conclusions’ (p. 399). Reasoning is defined as “the drawing of inferences or conclusions from known or assumed facts” (Goswami, 2011). In view of the above assertions reasoning is perceived as a mental activity where the mind acts on given facts in order to recreate new knowledge. The process of reasoning is of three kinds. These include inductive reasoning, deductive reasoning as well as a combination of both inductive and deductive reasoning. Deductive reasoning is a process of developing specific observations from general principles (Brink, Vander Walt and Van Rensbury, 2006).

*Intuition:* This source of knowledge is “a way of knowing without going through the intellect or the five tangible senses or how we normally experience and know things in life” (Brandon, 2013 p. 16). Thus, it is a situation where an individual knows or accepts information “on the basis of a hunch or “gut feeling” (Gravetter and Forzano, 2009, p. 8). The above views on intuition suggest that knowledge could be discovered personally without reasoning or having a first-hand experience. This often comes as having an insight of a problem or learning challenge. But it is important to also note that intuition does not occur out of nothing. Rather it occurs when the mind has relatively undergone some reasoning and has retired temporarily from the reasoning process. Afterwards one could gain an insight and in-depth understanding of the problem.

*Past Experience:* As self-directed learners Knowles (1975) assumes that they have a store of rich experience that can be used as a source of knowledge. This is evidential because adults past years of constant interaction with their social environment directly or indirectly serve as learning experiences. This is because their past live experiences served as opportunities for acquiring and enhancing their knowledge, skills and attitudes on a wide

range of past events. Rogers (cited in Jarvis, 2004) remarked that a person's skills, attitude, values, feelings, emotions, and beliefs help in constructing a learning experience. Rogers's elements indicated in constructing a learning experience could also be viewed as various forms of experience. This is because each of the elements is experience oriented and could function where applicable as a source of knowledge during a learning process. As small scale automobile master mechanics their past experience on the job as apprentices, as small scale automobile master mechanics and interaction with colleagues helped in shaping their behaviour, attitudes, skills, values and beliefs as automobile mechanics. In addition, these years of past experience on the job serves as a store of knowledge for use in subsequent learning experience. Hence, it is evident that past experience could serve as a vital means of information.

### **2.21.2 Experiences of Others**

The experiences of others could serve as a source of knowledge from which a learner seeks knowledge and skills. This is due to the fact that other people have a vast knowledge and skills that could be tapped into. Examples of other people's experiences include authorities and colleagues. In examining who an authority is Neuman (2014), asserts that an authority is someone in a position. Babbie (2005) too views authority as people who have contributed to new discoveries and understanding. To Godwin (2009), "whenever we accept the validity of information from a source that we judge to be expert or influential in some way, then we are relying on authority" (p. 6). The various perspectives on authority as a source of knowledge appear to vary in terms of the in depth of the concept. For instance, Neuman's (2014) view suggests that people with acknowledged position of authority serve as an authoritative source of knowledge. However, Babbie's (2005) view of authority appears to be restrictive because his idea of authority pertains only to people

who have contributed to knowledge. Godwin (2009) and Neuman (2014) contention implies that any form of expert knowledge that a learner relies on is an authoritative knowledge. Some examples of authorities who could serve as a source of knowledge include the master mechanics, the Garage Association and consultants of automobile services).

Apart from authority as a source of knowledge, Fraenkel and Wallen (2002) pointed out that agreement with others can also serve as a way of checking the accuracy or authenticity of an individual's sensations. This also implies that colleagues or friends could act as a source of knowledge in facilitating a learner's learning endeavour. For instance, a study by Brookfield (cited in Brockett and Hiemsetra, 1991) on how self-directed learners became experts suggests that individuals within a common profession function as a learning resource in light of an authority and colleagues.

### **2.21.3 Precision Gadgets/Technology**

Gadgets or instruments also serve as a source of knowledge. This is because the use of gadgets or instruments facilitate with the provision of precise and relevant information where applicable. For instance, some instruments give information about measurement, others detect faults, among others. In the automobile industry, for instance, one of the gadgets that helps in providing information include, diagnosing machine.

### **2.21.4 Scientific Method**

This source of knowledge is a systematic approach to learning from which knowledge is derived through a process where knowledge is discovered through "a form of critical thinking based on careful collection of evidence, accurate description and measurement.

The scientific method, also known as the Method of Science is a combination of all the sources of knowledge earlier presented (Fraenkel and Wallen, 2002). It is, composed of experience, reasoning and use of precision gadgets at the same time. It follows the four basic principles of first identifying a problem, stating hypothesis, experimenting and drawing of a conclusion.

## **CHAPTER THREE**

### **METHODOLOGY**

#### **3.1 Introduction**

This chapter describes the methods used in the study. It was presented in the following order: philosophical paradigm, population, sample, research design, sampling procedure, sources of data, research instruments, pretest, administration of instruments and finally data analysis.

#### **3.2 Philosophical Paradigm**

The study adopted the pragmatic approach in addressing the research problem. This was because this philosophical stance embraces views from both the positivist and post-positivist paradigm in order to address a research problem. In so doing, the research problem is addressed by converging numeric trends from quantitative data and specific details from qualitative data.

#### **3.3 Population**

The small-scale master automobile mechanics of Odawna with two or more years of continuous working experience were targeted as the population of the study. This population, totaling 807 was chosen due to the following reasons. First, the small-scale automobile business as a profession is heterogeneous in nature. Thus, the various areas of specialization of the small-scale automobile service, it is anticipated that the MAMs have varied learning experiences. The other reason why this population was selected was because Odawna is a suburb of the major business centre in the Greater Accra Metropolitan Assembly. As a result, a relatively large number of the small-scale master automobile mechanics as well as the relatively large number of clients patronize their services. The

small-scale master automobile mechanics of Odawna operate in a very vibrant and competitive locality. However, only the master mechanics with two or more years of continuous working experience were included in the study to ensure that the targeted population has current experience in the automobile mechanic business as a master.

### **3.4 Sample**

A sample of 215 respondents were used for the study. The sample represents 27% of the total population. Out of the 215 sample, 200 of the respondents were used for the quantitative part of the study. This is because the sample (200) is relatively representative enough to gather quantitative data for the study (Freankel & Wallen, 2002). The remaining 15 respondents were used for the qualitative part of the study; the focus group discussion. This sample size of fifteen was chosen because qualitative studies are geared towards giving meaning to a social process rather than quantifying and generalizing to a wider population. In other words, focus group samples are relatively small in number, between 10 – 15 individuals. This allows for detailed discussion of the phenomenon under consideration. It is for this reason that a focus group discussion and a sample of 15 respondents were used for the focus group interview.

### **3.5 Research Design**

Survey research design is used to describe some aspect and characteristics of a population with regard to the descriptive nature of the study and the relatively large number of the master automobile mechanics under study, the survey research design was adopted for primary data collection. The flexible nature of the survey design method in collecting data allowed the researcher to gather data both quantitatively and qualitatively. This enabled the researcher to address the research questions.

### **3.6 Sampling Procedure**

With regard to the mixed method approach adopted for the study, a simple random sampling method was used for the quantitative data. For the qualitative data, purposive and convenience sampling methods were used. The simple random sampling technique was used for the quantitative data because the MAMs of Odawna had an association (Odawna Garage Association) that had a register of the MAMs who operated at Odawna. The Association had a list of 807 operating MAMs (population) with their garage locations indicated. In view of the MAMs register, the study's sampling frame was 807.

In selecting a sample of 200 respondents, a table of random numbers was used. In using this approach, the number of digits of the sampling frame informed the researcher to use a three-digit figure as the basis for the selection of the respondents from the table of random numbers. A table of random numbers were generated with the use of a scientific calculator. The selected figures were recorded and used to identify the respondents from the MAMs register. This procedure was used for the selection of the 200 respondents who provided the data that was subjected to statistical analysis.

Purposive sampling was the other major sampling method used. This sampling technique was used for the purpose of getting an in-depth information about the MAMs conduct of learning projects. In applying this sampling technique, the criteria for the selection was the selection of MAMs with working experience of five years or more as a master. MAMs with minimum working experience of five years were selected because it is obvious that they have gained more learning experiences on the job. Majority of the MAMs were operating within the same geographic location.

Convenience sampling procedure was used to select 15 respondents to form a group for the focus group discussion. Thus, at the Odawna garage, enquiries were made from the mechanics about the locations of the MAMs with the required years of working experience. With this approach, the required number of MAMs who were willing to take part in the focus group discussion but had not been captured in the random sampling were chosen for the study. Through this approach, the fifteen (15) MAMs with the required number of years of working experience who were willing to be part of the study formed part of the study's sample.

### **3.7 Research Instruments**

In light of the research design, both quantitative and qualitative data were required for the study. Two research instruments were designed appropriately for the data collection exercise.

#### **3.7.1 Interview Schedule**

For the quantitative data, an interview schedule was designed for a face to face interview. In order to guide the respondents to stay focused with the needed data, a structured interview schedule was used. In this case, the entire questions in the interview schedule had predetermined answers in a form of multiple choice answers. In addition to the predetermined answers some space was provided for additional information. The space provided for additional information added some flexibility to the instrument. The use of the structured interview schedule helped to achieve uniformity of responses and for easy processing of the data. The interview schedule could be found in the appendix of the study.

The interview schedule was divided into five sections (Section A to F). These sections were related to the study's objectives. In Section A for instance, two biographical

characteristics of the respondents were examined. These included the master automobile mechanics highest level of education as well as their number of years for operating as small-scale master automobile mechanics. Section B of the interview schedule was aimed at finding out the how the MAMs learning projects were triggered. Section C sought to find out how the MAMs determined their learning projects objectives.

Section D was aimed at finding out how the MAMs determined the content of their learning needs. Section E was sought to find out how the MAMs arrived at their choice of learning methods used to go through the content identified. Section F was intended to find out how the MAMs carried out self-evaluation of the learning outcomes of their learning projects. Finally, Section G, was aimed at finding out the relationship between the MAMs educational status against the following: a) The processes that trigger their learning projects b) Their choice of learning content and c) Their choice of learning methods.

### **3.7.2 The Focus Group Discussion Guide**

The focus group discussion guide was also designed in relation to the objectives of the study. Five open ended questions were asked. Questions were asked on how the MAMs determined the need to embark on learning projects, how they arrived at the objectives for their learning projects, how they came by the content of their learning objectives, the learning methods they adopted in enhancing their knowledge, skills and attitude and finally, how they evaluated the learning outcomes of their learning projects.

### **3.8 Validity**

The following measures were taken to ensure the validity of the research instruments that were used for the study. One of the key factors that was considered in checking out for

validity was content validity. In ensuring the collection of an appropriate data for the study, the questions or items in the research instruments were constructed in line with the study's objectives and related questions. Also, simple words and clarity of tenses were some of the key precaution that guided the construction of relevant questions with regard to the objectives of the study. This was to ensure and help the respondents to understand the demands of the questions asked during the data collection exercise. Also, a peer review exercise was conducted. Thus, the data collection instruments were first reviewed by my colleague PhD students. After the peer review, my supervisors who are experts in the field of adult education and research further reviewed the research instruments. The review exercise helped in the re-examination and updating of the questions asked. Another approach used in ensuring validity was to translate the research instruments. Thus, both research instruments written in English language were translated into twi (local language) by a twi expert. Thereafter, the twi version of both research instruments were again translated back from twi to English by another twi expert. The two sets of translations of the research instruments were observed to have similar meanings. This suggested that the content of the data collection instruments were valid. Another strategy adopted was the pretesting of the research instruments. A pretest exercise was conducted among similar respondents of the study. Specifically, the research instruments were pre-tested among master automobile mechanics of Insamanpoum, a suburb in Greater Accra. Responses gathered in the pre-test exercise helped in determining the retrieval of appropriate responses for the study.

### **3.9 Reliability**

A test-retest approach was used in ensuring the consistency of the research instrument (Interview Schedule). Thus, during the pretesting of the research instruments, the research instruments were first administered to a similar group of the study's population (a group

of master automobile mechanics at Insamanpuom, a suburb of Madina in Greater Accra Region). Two weeks after the first administration of research instruments, the same research instruments were again administered to the same group of master automobile mechanics. Subsequently, the responses from the two sets of administered instruments were observed for consistency. The other way by which reliability was ensured was through triangulation. Thus, the conduct of the face to face interview and a focus group discussion served as a means of checking for the consistency of the research instrument.

### **3.10 Trustworthiness of Data**

Unlike the use of reliability and validity procedures in ensuring rigorous data in quantitative studies, in the case of qualitative studies the process of trustworthiness is employed in ensuring quality field data (data that is unbiased and represents the views of the respondents). Therefore, in obtaining a quality qualitative data through a focus group discussion the following processes were involved: credibility, transferability, dependability and confirmability (Lincoln & Guba, 1985).

**Credibility:** This refers to the true value of the data. Thus, the findings of the study must be justifiable as true for the subjects and the context in which the study was executed. In light of this, as a research student together with two trained research assistants conducted the focus group discussion.

**Transferability:** Transferability (applicability) refers to how applicable findings are in related context (outside the present study) or the extent to which findings could be applied in other contexts (Guba and Lincoln, 1985). A key strength in qualitative studies is the subtle nuances of meanings of respondents views (individual views). Also, in order to

ensure that the data was not lost, a detailed description of the how the master automobile mechanics carried out their learning projects was captured during the process of coding and categorization of data. This facilitated the consistency of the results, the findings and final conclusion of the study. Apparently, this study is could be subjected to it being repeated as well as being transferable to other settings or situations.

**Dependability:** This expounds how consistent the findings could be when repeated either in the same or similar context or among the same subject by other persons. Furthermore, Guba and Lincoln (1985) point out that dependability seeks to find out (evaluate) how the findings, interpretation and conclusions of a study are supported by the data. During the data analysis the research assistants were consulted for issues that needed clarification.

**Conformability:** This focuses on measures the researcher puts in place to stay neutral (doing away with bias, motivation and interest) and present accurate findings that represents the views of respondents as it were within the context of study. In ensuring conformability, the researcher and the research assistants made an effort to do away with bias whiles collecting data and the presentation of result. Also the research team endeavoured to remain objective and promote freedom. The research team presented achieved this by presenting the views of the respondents.

Thus, the research team ensured not to view the respondents' responses in light of their personal knowledge and their knowledge of what was in literature. The research team also ensured neutrality by not viewing responses as right or wrong. The values of the respondents were respected irrespective of that of values of the research team.

### **3.11 Ethical Considerations**

The respondents' participation in the study was voluntary. Respondents of the study were well informed about the intent of the study. Prior to the start of each of the interview conducted, the respondents were informed about the duration of the interview. Aside that, the respondents were given the option to stop the interview at their own will. Also, the respondents were not bound to answer any question that was personally disturbing. The respondents were informed not to hesitate to draw the Researcher's attention about anything they found disturbing about the interview.

The respondents were assured of the privacy of whatever they disclosed to be only between Researcher and the Research Assistants. Their anonymity was also assured. For the respondents who took part in the focus group discussions, they were assured that the audio recordings of the focus group discussions would all be destroyed after the analysis had been done. They were given the opportunity to ask any questions for further clarification prior to the interview. The respondents were provided with consent forms to sign which also indicated that they understood what the interview was about and have agreed to participate. Finally, they were given some contact numbers to call in case they had any problem concerning the interview.

### **3.12 Data Collection**

Four research assistants were trained and used to help collect data. Prior visits to the work site of the automobile mechanics at Odawna informed the researcher about the MAMs predominant use of Twi and Ga as their medium of communication at work. In view of this, the research assistants were selected not only for their interest in research but their fluency and ability to speak the Twi and a local language. The four research assistants

were chosen and trained for data collection in view of the relatively large sample size. Before the interview took off, the Garage Association officials of Odawna were informed about the conduct of the interview. This however, helped with the facilitation of the data collection exercise.

The entire field data was collected through the conduct of interviews in a form of a face to face interview and a focus group discussion. The face to face interview was opted for due to the relative low educational background of the respondents. During the process of the face to face interview each of the five-member research team interviewed a respondent in either the twi or Ga local language. At the start of each interview session, the team researchers established rapport, introduced to the respondents what the interview was about before the actual interview took place. During the interview process, the researcher/research assistant asked the respondents questions in the interview guide and as well recorded them. On the average, each interview session lasted for about forty-five minutes. In a day, the researcher and the research assistants, individually interviewed five respondents. The entire face to face interview took a period of ten days to cover the 200 respondents.

During the focus group discussion, the researcher served as a moderator by informing the respondents about the purpose of the discussion and further led the discussion, while two other research assistants also assisted with the recording of the group discussion and the taking of notes. The moderator (researcher) also ensured that all the respondents contributed on each question asked during the discussion. The entire focus group discussion lasted for a period of an hour. At the end of the discussion session, the respondents were thanked for their participation in the successful focus group discussion.

### 3.13 Data Analysis

The research instruments, thus the interview schedule and the focus group discussion guide, used for the data collection exercise generated both quantitative and qualitative data. In this regard both quantitative and qualitative analytical techniques were appropriately selected and used for the analysis of the study's field data. With regard to the interview schedule, the close-ended questions as well as the open ended-questions were coded and fed into the computer. The Software for analyzing quantitative data (SPSS) was used to analyze the close-ended data. The first section of the interview schedule solicited data on biographical data. The section was analyzed using frequencies and percentages as well as normality of the distribution. Descriptive and inferential statistics were used to analyse section B, C, D, E and F. As part of the inferential statistics, chi-square test was employed.

A chi-square test was employed to determine whether there is a significant difference between expected frequencies (Trigger process) and observed frequencies (level of formal education and years of working experience). The same test was used to predict how level of formal education and years of working experience influence the learning methods employed by the MAMs. In continuation, a correlation analysis and multiple regression were used to test the strength of relationship as well as to examine the selected key variables as depicted as

Dependent Variable = Learning Method

Independent Variable = trigger process, choice of learning objectives, learning content and evaluation of learning outcomes.

The multiple regression table is as follows  $Y = X_1 + X_2 + X_3 + X_4$

Where

^

$Y$  is the predicted or expected value of the dependent variable and  $X_1 - X_4$  are independent or predictor variable.

With regards to the qualitative data from the focus group discussion, the audio tape recordings were transcribed and translated into the English language (as close as the respondents own words). The transcription and the researcher's field notes were compared for consistency. Thereafter, the transcribed data and the field notes were edited and all non-conforming information removed. In doing so the data was scrutinized to remove preconceived notions and then get the data set neutralised. The remaining data underwent reduction and coding with regard to identified themes that were emerging. Subsequently, patterns and interconnections were identified as the researcher searched for commonalities and divergences. The coded data was then fed into a qualitative data analysis software (Atlas.ti). The emerging themes from the data were supported with verbatim accounts from the FGD participants as presented in the next chapter. A comparative analysis was carried out between the quantitative and qualitative data. This made it possible to identify the key results obtained from the analyzed data and to triangulate the results.

## CHAPTER FOUR

### PRESENTATION OF RESULTS

#### 4.1 Introduction

This chapter presents the results of data obtained from the field. The results were presented in line with the objectives of the study. The following are the objectives as addressed in the study:

The objectives of the study were to:

1. Find out how the learning projects among the MAMs were triggered.
2. Study how the MAMs determined:
  - i. Their intended learning objective
  - ii. The content of their learning.
  - iii. Their learning methods.
  - iv. The evaluation processes of the learning outcomes.
3. Find out the relationship between the MAMs educational status and:
  - i. The processes that trigger learning projects
  - ii. Their choice of learning methods
4. Determine the relationship between the MAMs years of experiences and:
  - i. The processes that trigger learning projects
  - ii. Their choice of learning methods

The nature of the study required that tables, charts and narratives are generated. The study also made use of focus group discussion and interview schedule as a means of data collection. In all, data was collected from 200 respondents made up of master automobile mechanics at Odawna in the Greater Accra Region. In addition, the study made use of one focus group discussion. The focus group discussion was made up of 15 discussants.

#### 4.2 Demographic Characteristics

The demographic characteristics of the respondents focused on level of education and years of experience. The section is relevant as it helped in drawing a relationship between education, years of experience and the study objectives as analysed in the subsequent sections. The observations are presented in Table 1:

**Table 1: Demographic Characteristics of Respondents**

Demographic Characteristics	f (%)	Skewness		Kurtosis	
		Static	SE	Static	SE
<b>Level of Education</b>					
No Formal Schooling	25 (12.5%)	.573	.172	.661	.342
Basic Education	125 (62.5%)				
Senior High School	41 (20.5%)				
Tertiary Education	9 (4.5%)				
<b>Years of Experience Attained</b>					
Up to 5 Years	11 (5.5%)	-2.291	.172	4.224	.342
6 – 10 Years	24 (12.0%)				
11 Years and Above	165 (82.5%)				

**Source: Field Data (2017) (n = 200)**

The table shows demographic characteristics of respondents in percentages. Out of the total respondents (n = 200), 12.5% respondents had no formal schooling. 62.5% of the respondents had attained basic education. 20.5% of the respondents had senior high school. 4.5% of the respondents had the tertiary education. Out of the total respondents (n = 200), 5.5% respondents had up to 5 years of experience. 12% of the respondents had attained experience from 6 to 10 years. 82.5% of the respondents had 11 years and over of work experience.

### 4.3 Triggering of Learning Projects among MAMs

It is thought that certain situations trigger learning among MAMs. These situations include environmental, social and technological among others. In this wise, learning behaviors are initiated by trigger events. Thus to say, learners do not just participate in a learning activity without cause. Before adult learners undergo a conscious and a major learning experience, they first encounter some triggering events that make them experience some gap in what they already know and what they need to know (learning needs). These triggering events are what stimulate the latent adult learner into an active adult learner. The situations (processes) that triggered learning projects among the MAMs are shown in Table 2.

**Table 2: Mean Ratings of Events that Trigger the Process of MAMs Learning Projects**

Trigger Events	Mean	SD	Interpretation
Inability to fix a service requested by a client	3.84	1.055	A
Manufacturers introduction of new versions of an automobile model	3.57	1.068	A
When manufacturers release new brands	3.84	.928	A
High demand for specific skills or service	3.63	.974	A
Desire of expanding business	3.70	1.103	A
Fear of losing clients	3.43	1.091	N
Preservation of reputation as a master automobile mechanic	3.02	1.205	N
Desire of building strong professional skills	3.09	1.148	N
Unsatisfactory feedback from clients	3.99	.995	A
Desire to make money	3.69	.927	A

(n= 200)

Table 2 indicates the mean ratings of events that triggered the MAMs learning project processes. The results showed that unsatisfactory feedback from clients (mean=3.99, SD=.995) was rated the highest. This suggests that overwhelming majority of the

respondents agree that they are mostly triggered by negative reports that clients make about the services received from the MAMs workshops. Thus, unsatisfactory feedback from the clients of the MAMs was a major event that triggered the initiation of learning projects among them (MAMs) operating in the Odawna areas of Accra.

Also, it could be observed in Table 2 that two other variables were the second highest of the mean ratings on the situations/events that triggered learning projects among the MAMs. The mean ratings of these variables which are inability to fix a service requested by a client (mean=3.84, SD= 1.055) and manufacturers release of new brands (mean= 3.84, SD= .926) suggest that the inability to fix a service requested by a client and manufacturer's release of new brands were the other events that triggered learning projects among the MAMs.

Furthermore, other mean ratings in the table (Table 2) also depict some agreement among the respondents that some other variables in the table (Table 2) activated their learning project. These variables included desire of expanding business (mean=3.70, SD= 1.035), desire to make money (mean=3.69, SD= .927), high demand for specific skills or service (mean=3.63, SD= .974) as well as manufacturers introduction of new versions of an automobile model (mean=3.57, SD= 1.068). This means that the desire to expand business and to make money as well as manufacturers introduction of new versions of automobile models were instances (situations/events) that triggered some of the MAMs learning projects in their workplace.

However, the result in Table 2 illustrate that three of the variables were rated neutral. These were fear of losing clients (mean=3.43, SD = 1.09), desire of building strong professional

skills (mean = 3.09, SD = 1.148) and preservation of reputation as a master automobile mechanic (mean 3.02, SD = 1.205). This result implies that the MAMs were not sure if fear of losing clients, desire of building strong professional skills and preservation of reputation as a master mechanic triggered their learning projects.

**Table 3: MAM's Responses on Trigger Processes**

Trigger Processes of Learning	SD	D	N	A	SA
	<i>f</i> (%)	<i>f</i> (%)	<i>f</i> (%)	<i>f</i> (%)	<i>f</i> (%)
Inability to fix a service requested by a client	8 (4.0)	14 (7.0)	40 (20.0)	79 (39.5)	59 (29.5)
Manufacturers introduction of new versions of an automobile model	10 (5.0)	20 (10.0)	56 (28.0)	75 (37.5)	39 (19.5)
When manufacturers release new brands	5 (2.5)	10 (5.0)	45 (22.5)	93 (46.5)	47 (23.5)
High demand for specific skills or service	7 (3.5)	16 (8.0)	55 (27.5)	88 (44.0)	34 (17.0)
Desire of expanding business	10 (5.0)	21 (10.5)	37 (18.5)	83 (41.5)	49 (24.5)
Fear of losing clients	12 (6.0)	25 (12.5)	62 (31.0)	68 (34.0)	33 (16.5)
Preservation of reputation as a master automobile mechanic	28 (14.0)	34 (17.0)	70 (35.0)	43 (21.5)	25 (12.5)
Desire of building strong professional skills	21 (10.5)	38 (19.0)	65 (32.5)	54 (27.0)	22 (11.0)
Unsatisfactory feedback from clients	4 (2.0)	14 (7.0)	34 (17.0)	77 (38.5)	71 (35.5)
Desire to make money	4 (2.0)	16 (8.0)	55 (27.5)	89 (44.5)	36 (18.0)

**SD=Strongly Disagree, D=Disagree, N=Neutral, A=Agree, SA= Strongly Agree**

**n=200**

Table 3 shows the results of the chi-square of the trigger processes and responses among MAMs. The results of chi-square of the trigger processes among MAMs are explained below. The responses among the MAMs on inability to fix a service requested by a client

indicated 11% (22) disagreement and 69% (138) agreement; 20% (40) neutral. This implies majority of the MAMs agreed that their learning projects were triggered by their inability to fix a service requested by a client. Nevertheless, while few of the MAMs disagreed to this response, some of the MAMs were indecisive on inability to fix a service requested by a client triggering their learning projects. The response on manufacturers' introduction of new versions of an automobile models serving as a trigger process showed that 15% (30) and 57% (114) of MAMs disagreed and agreed respectively. Nonetheless, 28% (56) gave a neutral response. This shows that majority of the MAMs shared the view that manufacturers introduction of new versions of automobiles triggered their initiation of learning projects.

With regard to manufacturers release of new brands, 7.5% (15) of the MAMs disagreed while 70% (140) agreed that it triggered learning process. The responses to this variable implies that manufacturer's release of new brands was another situation (process) that triggered majority of the MAMs learning projects. The responses on high demand for specific skills or service shows that 11.5% (23) of the MAMs disagreed while 61% (122) also agreed. This shows that most of the respondents (the MAMs) were of the view that high demand for specific skills or service was also part of the processes that triggered their learning projects. The respondents' responses on desire of expanding business, indicated that 15.5% (31) of MAMs disagreed while 66% (132) agreed and the remaining 18.5% (37) of the respondents gave a neutral response. The responses on desire of expanding business shows that it was a trigger process for majority of the MAMs although there was 15.5% disagreement and 18.5% neutral response.

For fear of losing clients, 18.5% (37) of the MAMs disagreed while 50.5% (101) of the MAMs agreed that it triggered learning process. However, 31.0% (62) of the respondents

indicated a neutral response. This shows that although fear of losing clients was agreed as a trigger process by majority of respondents the responses on disagreed and neutral were quite high. In view of the responses on preservation of reputation as a master automobile mechanic, 31% (62) of the MAMs disagreed and 34% (78) of the MAMs agreed meanwhile 35.0% (70) of the respondents gave a neutral response. The responses on preservation of reputation shows that it was not a major trigger process among the MAMs. The responses given on desire of building strong professional skills show that 29% (59) of MAMs disagreed while 38% (76) agreed and 27.0% of the MAMs indicated neutral.

This implies that the desire of building strong professional skills is not a major trigger process among the respondents. With unsatisfactory feedback from clients 9% (18) of MAMs disagreed while 74% (148) of the MAMs agreed that it triggered learning and 17.0% (34) of the MAMs responded neutral. This implies that unsatisfactory feedback from clients was a trigger process that initiated learning projects among the MAMs. Responses on desire to make money show, 10% (20) of MAMs disagreed while 62.5% (125) agreed and 27.5% (55) were neutral in their response. This implies that majority of the MAMs agreed that the desire to make money triggered the initiation of their learning projects.

To buttress the results from the respondents (Tables 2 and 3), a focus group discussion was conducted to solicit responses from the MAMs. This section sought to find answers to the research question: What factors triggered learning projects among the MAMs of Odawna? Out of the responses two key themes emerged. These were:

- *Introduction and use of electronic cars*
- *Extinction of old models*

## **Introduction and Use of Electronic Cars**

With reference to introduction and use of electronic cars, respondents were of the view that manufacturing of electronic cars comes with some difficulties because most of the technologies used are not known to them. They are consequently confronted with difficulties in repairing and fixing new vehicle models. As a result of the challenges that the MAMs encounter, they are triggered to undertake learning projects among themselves. The respondents reiterated that the only way to survive in a changing world was to be abreast with current technology. From the responses, it could be said that advancement in technology (use of electronic cars) trigger learning projects among the MAMs. Some of the participants had this to say:

Participant A:

*One major thing that disturbs us over here is electronics. Those electronic cars; especially, that one, anywhere you go, unless the person does not want to speak the truth. If you don't know how to work on them they laugh at you. The electronic car is now more in the system and it isn't all of us who have gone to school that much to be able to read a manual and easily detect faults from these electronic cars. Some of them, before you even know what the fault is, unless you bring a machine to test it and even some of the machines do not work on every car. (2/12/2017).*

Similarly, another Participant commented:

Participant B:

*You see... working with car engines... we have the diesel engines and petrol engines. So looking at myself, as a master someone brings his car, me being a pump specialist, I must at least be able to solve the problem if only it is the pump side. But here lies the case... manual pumps, I don't have any problem with that, no matter how it is, I can work on it. If I cannot work on it, then it means that, a part of it is very hard to get from the market... you see... that will only be the difficulty with that part. But apart from that, the electronic cars that come into the system become the main problem. And the way you put the question, not money moves me but the work itself, as you are doing it, then the money will come in return. If you are able to do the work and do it well, the work itself will bring you the money you want. But you I can't say that because of the money that I am working or even learning to do new*

*things... I believe by now at least we should have had some small training about the electronic ones. The old ones are leaving the system. (2/ 12/ 2017)*

Participant C:

*Well as for me, I am a diesel mechanic... apart from diesel cars, I don't work on any other cars. Concerning situations that push me, just like my brother said, the new cars... electronics, these are the main issues that push us to learn something about them. We want to be able to work on these electronic cars so that they wouldn't affect our output that much. The main problem is the electronic ones, because for the manual cars, we have been working on them since time immemorial... however, the electronic ones that have come into the system..., that control board is what disturbs us... that is what (why) we are force to learn so that one day it will help. (2/12/2017)*

The above statements made by the MAMs affirm their strong conviction that the introduction of modern electronic cars pose as one of the greatest challenges that confront their trade.

A few respondents on the other hand, had different views. According to such respondents, one of the main challenges faced by MAMs was their inability to read car manuals carefully. The respondent indicated that majority of the MAMs had none or few years of formal education experience. He espoused that situations that trigger learning in their field was “trial and error”. Thus, the more they try and fail, the more they yearned or sought to find solutions to problems. One of such MAMs, a petrol engine specialist, expressed his idea by saying:

*“We don't use machines to detect faults in this area. We normally learn on the job. This comes about as we try and fail or succeed. This is what pushes us to learn. We have little education and can't read manuals. That is the truth. That is why everyone is a specialist in a small area to avoid ridicule” (2/11/2017).*

Interestingly, confirmation from the data showed that one of the key situations that trigger learning among MAM's is the introduction of new version and models of cars with

complicated manuals that most MAMs cannot read. Even though, one respondent had a different view, a majority confirmed that new models and brand (electronic cars) triggered learning processes among MAM's. This goes to confirm the generated quantitative results.

- ***Extinction of Old car Models***

Some of the MAM emphasized that extinction of old car models in Ghana and other parts of the world as a key instance that triggered learning. According them, they were trained with old car models. However, most of the old car models are in extinction and in order not to be left out as well as bridge the gap between past and present, they are pushed to learn about the new models that are coming out. A participant Petrol and diesel engine specialist, expresses the challenge they face with emerging electronic cars:

*I agree that it is just as my brothers have said. First I used to work on petrol and diesel engines... but now everything has become electronic. Some cars even use remote. If you don't take time, you can just press something on the remote and before you realise, everything on the car is locked, including the doors...but from the beginning, we didn't learn the job with these remote-controlled cars. So what can you do? Right now, the electronic cars are very challenging for us. As for the manual cars, at least I have some in-depth knowledge about it so anytime a fault comes, I know exactly what to do...with this electronic cars, you can remove everything from the car and replace them all, but before you realize, some red light starts blinking, indicating the presence of a fault and you have to go bring in a machine to check it. (2/12/2017).*

All other respondents were in support of this response. From all angles, it can be said that new brands and models of cars constitute major events that triggered learning among respondents. The MAMs try to catch-up to avoid disgrace or being ridiculed at the shops. Interestingly, it is evident in both theory and practice that, the world is changing at a very fast pace and all other things within the world is also changing and in other to bridge the gap between past and present situations, learning has to take place. Same can be said about auto-mechanics.

In conclusion, learning projects were triggered among the MAMs mainly as a result of fear of ridicule emanating from release of new brands and models of vehicles that they cannot service because of the cars electronic nature and the MAMs inability to read and understand accompanying manuals. This is followed by the desire to increase income through business expansion. Other miscellaneous factors such as professional competence were the least to trigger the MAMs learning project processes.

#### 4.4 MAMs Determination of Learning Objectives

The relevance of formulating learning objectives cannot be overemphasized. They serve as a guide in the conduct of programmes, projects and adult education activities. The learning projects of the MAMs are similarly guided by objectives that drive them towards desired goals. It is in view of this that the study sought to find out how the MAMs came by their objectives for their learning activities. The sources of the MAMs objectives were categorized under intuition, business interactions, social networks and interactions and finally media sources.

**Table 4: Mean Ratings on Determination of MAMs Learning Objectives**

<b>Learning Objectives</b>	<b>Mean</b>	<b>SD</b>	<b>Interpretation</b>
Personal Experience	3.71	1.010	A
Interaction with clients	3.75	1.232	A
Interaction with other master MAMs at the workplace or outside your workplace	3.58	1.140	A
Interaction with apprentices	3.49	1.089	N
Through garage association meetings	3.49	1.103	N
Visits to workplace by automobile service companies	4.00	.980	A
Through related radio discussion programs	3.73	.987	A
Through watching of related T.V programs	3.56	1.101	A
Through browsing of the internet	3.40	1.003	A
Through social networking	3.75	.962	A

(n= 200)

Table 4 indicates the result of the mean ratings on sources of the MAMs learning objectives. The results showed that visits to workplace by automobile service companies (mean=4.0, SD=.980) was rated the highest source of learning objectives. This indicates that a significant majority of the MAMs agreed that they determined their learning objectives through visits of automobile service companies to their workplaces.

Other items in the table that majority of the MAMs rated as Agreed included interaction with clients (mean=3.71, SD= 1.015), through social networking (mean= 3.75, SD= .962), listening to related radio discussion programs (mean=3.73, SD= .987), through personal experience (mean=3.71, SD= 1.010), interaction with other MAMs at the workplace or outside your workplace (mean=3.58, SD= 1.140), Through watching of related T.V programs (mean=3.56, SD= 1.101) and through garage association meetings (mean=3.49, SD= 1.103). These responses imply that the MAMs agreed that they determined their learning objectives through interaction with other MAMs (both within and outside their workplace), interaction with clients, through social networking, listening to related radio discussion programme Interaction with apprentices (mean=3.49, SD= 1.089) and Through browsing of the Internet (mean=3.40, SD= .962) was rated the least.

**Table 5: MAM's Responses on Determination of Learning Objectives**

Learning Objectives	SD	D	N	A	SA
	<i>f</i> (%)	<i>f</i> (%)	<i>f</i> (%)	<i>f</i> (%)	<i>f</i> (%)
Personal Experience	(6) 3.00	(16)8.0	(55) 27.5	(76) 38.0	(47) 23.5
Interaction with clients	(18) 9.0	(16) 8.0	(27) 13.5	(77) 38.5	(62) 31.0
Interaction with colleague master automobile mechanics	(15) 7.5	17 (8.5)	(48) 24.0	77 (38.5)	(43) 21.5
Interaction with apprentices	(8) 4.0	36 (18.0)	(39) 19.5	(84) 43.0	(33) 16.5
Through garage association meetings	(17) 8.5	(15) 7.5	(51) 25.5	(87) 43.5	30 (15.0)
Visits to workplace by automobile service companies	(6) 3.0	(7) 3.5	(39) 19.5	(78) 39.0	(70) 35.0
Through related radio discussion programs	(4) 2.0	(20) 10.0	(48) 24.0	(83) 41.5	(45) 22.5
Through watching related T.V programs	(12) 6.0	(17) 8.5	(62) 31.0	(66)33.0	(43) 21.5
Through browsing of the internet	(11) 5.5	(19) 9.5	(73) 36.5	(73) 36.5	(24) 12.0
Through social networking	(7) 3.5	(6) 3.0	(64) 32.0	(77) 38.5	(46) 23.0

**SD=Strongly Disagree, D=Disagree, N=Neutral, A=Agree, SA=**

**Strongly Agree n=200**

Table 5 shows the results of the chi-square of how the MAMs determined their learning objectives for their learning projects. The results show that 61.5% (123) of the MAMs agreed to the use of personal experience to determine their learning objectives while 11% (22) of the MAMs disagreed and 25.5% (55) gave a neutral response. Thus, the majority of the MAMs agreed that their personal experiences was a source that helped them to determine their learning objectives.

The MAMs responses on interaction with clients showed that 17% (34) and 69.5% (139) of the respondents disagreed and agreed respectively. This implies that majority of the MAMs agreed that their clients were a major source, of those they interacted with, for determining their learning objectives. The responses on interaction with other master automobile mechanics at the workplace or outside the workplace showed that, 16% (32)

of MAMs disagreed while 60% (120) agreed and 24.0% (48) neutral with their response. This implies that majority of the respondents depended on their colleagues (other MAMs) in their efforts to identify their learning project objectives.

In response to interaction with apprentices, 22% (44) of MAMs disagreed while 59.5% (117) also agreed and 19.5% (39) indicated neutral. This shows that although majority of MAMs agreed that their apprentices served as a source of deriving learning objectives, it is also worth noting that 22% (44) disagreed and 19.5% (39) were neutral in their responses. The MAMs response on garage association meetings indicated that 16% (32) disagreed while 68.5% (117) agreed respectively and 25.5% (51) of the respondents indicated a neutral response. This shows that majority of the MAMs share the view that garage association meetings helped in their determination of learning objectives. It is interesting to acknowledge the fact that 16% (32) disagreed and 25.5% (51) were neutral in their response.

Visits to workplace by automobile service companies showed 6.5% (13) of disagreement while 74% (148) of the respondents also indicated agreed and the remaining 19.5% (39) of the respondents gave a neutral response. This shows that there was an agreement among majority of the MAMs that visits of automobile companies to their workplaces was one of the sources that them in determining their learning objectives. In response to the use of related radio discussion programs, it was observed that 12% (24) of the respondents disagreed and 64% (128) of the respondents agreed while the response for neutral was 31.0% (62).

This result implies that listening to related radio discussion was also a source that the MAMs used to determine their learning objectives. The responses indicated on watching related T.V programs shows that 14.5% (26) of MAMs disagreed while 54.5% (109) agreed and 31% (62) of the respondents gave a neutral response. This implies that majority of the MAMs agreed that related TV was also another source for determining their learning objectives.

In response to browsing of the Internet, the MAMs responses showed that 10.5% (30) of MAMs disagreed while 48.5% (97) of the MAMs indicated agreed, however, the remaining 36.5% (73) of the respondents indicated a neutral response. This shows that browsing of the internet was not a major source for deriving learning objectives among the MAMs. Finally, the responses on the use of social networking indicated that, 6.5% (13) of MAMs disagreed and 61.5% (125) agreed while 32.0% of the respondents were neutral in their response. This shows that social networking was not often used by the MAMs in determining their learning objectives.

In support of the quantitative data, a focus group discussion addressed the research question: how do the MAMs determined their learning objectives? The respondents indicated that they determined their learning objectives through interaction with their colleagues, clients and apprentices. Other respondents also depended on their personal past experiences and the experiences of their colleagues. Out of responses given the following themes emerged:

- Consultation with others.
- Through past experience.

### **Consultation with Others**

From the focus group discussion, it was observed that most of the respondents consulted others in the process of identifying their learning objectives. Among the people who were consulted, most of the participants indicated that they consulted their colleague MAMs. In addition to their colleague MAMs others also consulted their apprentices and clients while a few of the participants consulted experts from the automobile companies. These were some of the verbatim statements showing that the MAMs consulted others in an effort to determine the learning objectives of their learning projects.

Participant A:

*Actually, when I am faced with a challenge in terms of a particular brand or model of a car, the only thing I do is to call on a friend who is more knowledgeable in that area to help me out. Sometimes the situation that presents itself tells you what you lack and what you need to know in order to handle such issues with the car involved.*

This statement is collaborated by the statement of another participant as follows:

Participant B:

*... the times we started working with cars, the ones in the system now were not there at that time... it was the manual ones that my boss taught me with. Looking at those models and comparing it to today's ones, you will realise that there are difference in the old models and the new ones. If for instance, it is lining, we know how it is for both the new and old so you consult about the new ones. In fact, we consult each other to determine what to learn when problem arises.*

Participant C:

The statement made by participant C also confirms the idea that the MAMs consulted each other, including senior apprentices and even clients in times of difficulty. He stated that:

*Sometimes, areas that guide us to learn are determined with customers [clients], masters [colleague MAMs] and even our apprentices. We develop it together and this makes the work much easier. As a result, we are able to know the problems of the new and old cars.*

Participant D:

*As for me, I often interact with my customers. This makes it much easier to determine what to learn to improve my knowledge. This increases trust between the customer and me. The customer himself is able to know that, indeed, his car is in a good shape or there is some difference... from where it was to where it is now... but when you finish working on it and you realise that, the engine sound is different and does not produce a good sound, then you will know by you yourself that, at least, what you learnt has not been the best. We have seen some before where it happens that, you remove all engine, fix it back and still the best is not seen. Then you really have to go learn that skills again or call for help.*

In continuation, it was also discovered that some of the MAM's determine their learning objectives by reading the manuals documented for the faulty vehicle. According to two of the respondents who happened to have worked previously with Toyota Ghana, reading of the automobile manuals is very essential.

Some other respondents said that reading of the manuals and interacting with engineers of automobile companies were the means through which his team determined their learning objectives. One of such participant: stated in the discussion that he consulted an expert (former master):

Participant E:

*Cars such as Toyota Land Cruiser needs expert's advice. You cannot learn without consulting a firm that specializes on that particular automobile. As a matter of fact, personally, even though, I am a master and have 12 apprentice, I always consult my former employer for expert advice when faced with challenges. I always share and impact knowledge gained with my apprentices and other MAMs.*

Participant F:

*As my brother said, it is very important to car manuals to know what to touch and when not to touch during repairs. The manuals gives you in-depth understanding of the functioning of the cars. The manuals from the*

*manufacturers are very detailed. It helps to detect and solve problems. This is one of the key ways of learning.*

The responses from the participants explain that learning objectives are also determined in consultation with automobile companies.

### **Through Past Experience**

Some other MAMs indicated they determine their learning objectives through personal experience. A section of the participants indicated that previous experiences have shaped them and improved the way they think. According to them, little years of formal education does not give them the opportunity to read manuals let alone use gadgets to determine learning objectives. Accordingly, they determined their learning objectives by their personal experience and through experiences of others (personal experience and experiences of their masters thus; those who taught them). Such respondents commented:

*Determine learning objectives through previous experience*

*“Master, this whole idea of reading before learning does not happen in our case. We don’t have time to read and to be honest with you, some of us cannot read. We determine our learning objectives by what we were taught by our masters. Also, we develop and determine learning objectives via the experiences we have had over the years. We also use our own instincts”*

Through personal experience and fellow MAMs

*“I have 26 years of experience in the field. I have mentored and trained several people. Determination of objectives are not anything that has been documented. We just know what to do when confronted with learning gap. We use our instincts or consult our colleagues”.*

*Confirms observation of other MAM in Tables*

*“I technically learn and teach my apprentices through what I think they need to know. In our field, there is no classroom experience. We learn through observation. The more we are confronted with problems, the more we learn on the job. We assign daily task to apprentices and we guide them through questioning and answers. This is basis upon which we learn.”*

It could be deduced from the responses that MAMs determine learning objectives through multiple sources. This include interacting with people that matters, consultation with other MAM's, consultation with automobile companies as well as through personal experience.

In conclusion, the results from both the quantitative and qualitative shows that the MAMs determined the objectives of their learning projects mostly through business interactions with especially other MAMs and apprentices as compared to interactions with MAMs' clients and automobile service companies. Aside business interactions, the MAMs somehow used personal experience as a method for the formulating their learning objectives. Occasionally, the MAMs used social networks and interactions as well as media sources in their efforts to determine their learning objectives. Although, the use of social networks and interactions as well as media sources were not very often used. Also, with regard to media sources, the use of the internet was relatively more compared to watching of related TV programmes and listening to related radio programmes.

#### **4.5 Determination of the MAMs Learning Project Content**

Educational programmes are designed to close the gap between the situation that is and what is desired. The gap exposed informs the content to be learnt. Based on this, the study determined the sources of content of learning projects of the MAMs with regards to personal experience, experience of others, media and gadgets all of which formed part of the context within which the MAMs operated. Detail analysis of the responses are depicted in Tables 6 and 7.

**Table 6: Mean Ratings of Sources of MAMs Learning Content**

Content of Learning Needs	Mean	SD	Interpretation
Observation of previous work	3.55	.965	A
Hands on previous work	3.92	1.060	A
Anticipation of unfamiliar situation	3.71	1.055	A
Consultation with a mentor/ experts	3.97	.984	A
Consultation with peers/ other MAMs	3.60	1.003	A
Discussion with apprentices	3.75	1.026	A
Related radio programs on auto mechanics	3.23	1.063	N
The use of social media platform information	2.99	1.203	N
Use of diagnostic equipment	3.61	1.079	A
Online information through mobile phones /personal computer	3.24	1.179	N

**SD=Strongly Disagree, D=Disagree, N=Neutral, A=Agree, SA= Strongly Agree**

**(n= 200)**

Table 6 indicates mean ratings of sources of content of learning projects among the MAMs. Results showed that, consultation with a mentor/experts (mean=3.97, SD=.984) was rated the highest. This implies the respondents had mentors/experts whom they (MAMs) consulted for their learning content. The following mean ratings: Hands on previous work (mean=3.92, SD= 1.060), Discussion with apprentices (mean= 3.75, SD= 1.026), Anticipation of unfamiliar situation (mean=3.71, SD= 1.055), Use of diagnostic equipment (mean=3.61, SD= 1.079), Consultation with peers/ other MAMs (mean=3.60, SD= 1.003) and Observation of previous work (mean=3.55, SD= .965) agreement among majority of the MAMs. Thus, hands on previous work, discussion with apprentices, anticipation of unfamiliar situation, use of diagnostic equipment, consultation with peers/other MAMs and observation of previous work formed the sources of learning content used by the MAMs for their learning projects.

However, few of the mean ratings including: Online information through mobile phones or personal computers (mean=3.24, SD= 1.179): Listening to related radio programs on automobile mechanics (mean=3.23, SD= 1.063) and: Through the use of social media

platform information (mean=2.99, SD= 1.203) was rated the least. Thus, online information through mobiles phones or personal computers, listening to related radio programs on automobile mechanics and the use of social media platform information were not major sources of learning content among the MAMs.

**Table 7: MAM's Responses on Determination on Learning Content**

Content of Learning Needs	SD	D	N	A	SA
	<i>f</i> (%)	<i>f</i> (%)	<i>f</i> (%)	<i>f</i> (%)	<i>f</i> (%)
Observation of previous work	(7) 3.5	(16) 8.0	68 (34.0)	(78) 39.0	(31) 15.5
Hands on previous work	(8) 4.0	(10) 5.0	43 (21.5)	(69) 34.5	(70) 35.0
Anticipation of unfamiliar situation	(8) 4.0	(18) 9.0	47 (23.5)	(79) 39.5	(48) 24.0
Consultation with a mentor/ expert	(6) 3.0	(11) 5.5	31 (15.5)	(88) 44.0	(64) 32.0
Consultation with peers/ other MAMs	(8) 4.0	(18) 9.0	54 (27.0)	(86) 43.0	(34)17.0
Discussion with apprentices	(7) 3.5	(14) 7.0	(52) 26.0	(76) 38.0	(51) 25.5
By listening to related radio programs on auto mechanics	(11) 5.5	(40)20.0	(64) 32.0	(63) 31.5	(22) 11.0
Through the use of social media platform information	(16) 8.0	17 (8.5)	(54) 27.0	(68) 34.0	(45) 22.5
Use of diagnostic equipment	(13) 6.5	13 (6.5)	(54) 27.0	(80) 40.0	(40) 20.0
Online information through mobile phones or pc	(18) 9.0	37(18.5)	(53) 31.5	(63) 31.5	(29) 14.5

**SD=Strongly Disagree, D=Disagree, N=Neutral, A=Agree, SA= Strongly Agree**

**n=200**

Table 7 shows the results of the chi-square of sources of learning content and responses among the MAMs. The results on: Observation of previous work shows that, 11.5% (23) of MAMs disagreed while 54.5% (109) agreed and 34.0 (68) gave a neutral response. Thus, majority of the MAMs agreed that observation of previous work served as a source of learning content. Hands on previous work showed 9% (18) and 69.5% (139) of MAMs disagreed and agreed respectively and 21.5% (43) neutral response. Anticipation of unfamiliar situation showed that, 13% (26) of MAMs disagreed while 33.5% (127) agreed and 23.5% (47) neutral response. Consultation with a mentor/ expert showed that, 8.5%

(17) of MAMs disagreed while 76% (154) also agreed and 15.5% (31) response was neutral.

Consultation with peers/ other MAMs showed that, 13% (26) of MAMs disagreed whereas 60% (120) agreed and the neutral response was 27.0% (54). Discussion with apprentices, 10.5% (21) of MAMs disagreed while 60% (117) agreed and neutral response was 26.0% (52). By listening to related radio programs on automobile mechanics showed that, 25.5% (51) of MAMs disagreed while 63.5% (127) agreed and 32.0% (64) were neutral in their response. Through the use of social media platform information, 16.5% (33) disagreed and 46.5% (113) agreed while 27.0% (54) gave a neutral response. Use of diagnostic equipment, 13% (26) of MAMs disagreed while 60% (120) agreed and neutral response was 27% (54). Online information through mobile phones or personal computer showed that, 27.7% (55) of MAMs disagreed while 46% (92) agreed and 31.5% (53) gave a neutral response.

The responses on the MAMs source of learning content show that observation of previous work, hands on previous work, anticipation of unfamiliar situation, consultation with peers/other MAMs, discussions with apprentices and use of diagnostic equipment were the sources of content used by majority of the MAMs. Nevertheless, listening to related radio programs on automobile mechanic, the use of social media platform information as well as online information through mobile phones and personal computer were not widely used among the MAMs.

The responses captured from the focus group discussion on how the MAM's determine learning content from three major sources. These were identified as:

- Consultation with other MAM's,
- Consultation with mentors and
- Previous Personal Experiences

### **Consultation with other MAMs**

Most of the participants of the focus group discussion indicated that they consulted their colleague MAMs to determine the content of their learning project. The following are some of the statements indicating that the MAMs consulted other MAMs:

Participant A-

*We determine what needs to be learnt during informal discussions with fellow MAM's. We often discuss issues relating to work. We share our experiences with each other. Every challenge encountered on the job becomes an issues for discussion. This enables us to share our problems and find means of addressing them (2/12/2017).*

The above statement of participant A is affirmed by participant B that MAMs consulted each other for guidance. Participant B stated;

*There are lot of experienced people in our midst. We rely on each other to determine leaning gaps and by so doing, we all discuss and put it to trial on sample cars or parts. If it works, we further share the knowledge with apprentices. (2/12/2017)*

### **Consultation with Mentors**

In advancement of the view that MAMs used consultation, the study captured some views of respondents indicating that they determine the content of learning projects by consulting mentors. According to the respondents, everyone has a mentor and that their mentors assist them in varied ways as they are always there for consultation. Accordingly, the FGD captured some voices as saying:

Participant C:

*We have master of master. Those people have had over 40 years in the field and they are still working. Those people are able to solve all problems relating to auto mechanics. For an example Killer, there is no electronic problem he cannot solve. All electricians consult him in times for need and he is able to appropriately tell you what you need to do to some of the problem. The whole of Odawna, no one challenge killer when it comes to electronics (2/12/2017).*

Participant D:

*Even though I am a master in diesel engine, I put my pride away to consult my mentor, he educates me enough and tells me what is new in the field and what I need to learn to able to deal with challenges. My mentor is always researching on new areas to development. My mentor has travelled to many places to learn. He is a Kumasi based mechanic. (2/12/2017).*

Participant E:

*Personally, I determine what needs to be learned in consultation with my mentor. He is more experienced and he usually shares his experiences with me (2/12/2017).*

The responses above confirms that the MAMs consulted their colleagues and mentors.

- **Previous Personal Experience**

Participant F:

*Constant practices and specialty on job is means by which we determine the content of learning. You will realise that everyone is an expert in a particular area. We don't learn everything about auto-mechanics. No man can learn everything. We rather specialize in a particular field. Previous experiences as well as specializing in a field are means by which we determine what needs to be learnt. (2/12/2017)*

Participant F expresses the use of previous experience as a means of determining the MAMs learning content.

In conclusion, the content of the MAMs learning projects were mainly obtained through their interactions with their colleagues, apprentices and mentors in tapping their experiences. The use of intuition as a means of determining their learning content was quite common as compared to their interactions with others. However, the MAMs use of media and scientific gadgets in determining their learning content was not so frequently used. But it is important to note that with regard to the use of media, the MAMs mostly accessed information online as compared to other media sources like listening to radio, watching TV programmes and the use of social media.

#### 4.6 MAMs Determination of Learning Methods

Learning methods describe the process by which learners pursued their needed knowledge, skills and attitude. As part of the MAMs responsibilities or control over their learning projects, they determined their preferred learning methods (delivery processes). The following results indicated how the MAMs determined their learning methods. The results obtained are depicted in Tables 8 and 9.

**Table 8: Mean Ratings of items MAMs used to Determine Learning Methods**

Learning Methods	Mean	SD	Interpretation
Reflecting on previous experience	3.49	1.152	A
Consultation with a mentor	2.99	1.201	N
Consultation with other MAMs	4.21	1.014	A
Observing other MAMs at work	3.70	1.017	A
Participating in workshop programs that are related to learning objectives	4.07	1.010	A

**SD=Strongly Disagree, D=Disagree, N=Neutral, A=Agree, SA= Strongly Agree**

*(n= 200)*

Table 8 shows mean ratings on the sources of learning methods among the MAMs. The results showed that, consultation with other MAMs (mean=4.21, SD=1.014) was rated the highest. The following mean ratings; participating in workshop programs that are related to learning objectives (mean=4.07, SD= 1.010), observing other MAMs at work (mean= 3.70, SD= 1.017), reflecting on previous experience (mean=3.49, SD= 1.152), and consultation with a mentor on methods (mean=2.99, SD= 1.201) was rated the least. These mean ratings implies that the MAMs colleagues and participating in workshop programs that are related to the respondents learning objectives were the major sources the respondents used for determining the learning methods to use for their learning projects. Other sources that helped the MAMs in deciding on the learning methods to use were observation of other MAMs at work and reflecting on previous experience. However, the mean rating on consultation with mentors on methods shows that it was not a major source used by the MAMs for determining their learning methods for their learning projects.

**Table 9: MAM's Reponses on Determination of Learning Methods**

Learning Methods	SD	D	N	A	SA
	<i>f</i> (%)	<i>f</i> (%)	<i>f</i> (%)	<i>f</i> (%)	<i>f</i> (%)
Reflecting on previous experience	(15) 7.5	(22) 11.0	(54) 27.0	(69) 34.5	(40) 20.0
Consultation with a mentor on methods	(21) 10.5	(57) 28.5	(51) 25.5	(46) 23.0	(25) 12.5
Consultation with other MAMs	(7) 3.5	4 2.0	(32) 16.0	(55) 27.5	(102) 51.0
Observing other MAMs at work	(7) 3.5	(17) 8.5	(49) 24.5	(83) 41.5	(44) 22.0
Participating in workshop programs that are related to learning objectives	(5) 2.5	(14) 7.0	(23) 11.5	(78) 39.0	(80) 40.0

**SD=Strongly Disagree, D=Disagree, N=Neutral, A=Agree, SA= Strongly Agree**

**n=200**

Table 9 shows the results of the chi-square of sources of learning methods and the MAMs responses. The results on reflecting on previous experience shows that, 18.5% (37) of MAMs disagreed while 54% (109) agreed and 27% (54) gave a neutral response. This shows that there was an agreement among majority of the MAMs that reflection on their previous experiences as guided them in determining the appropriate learning methods for their learning projects. Consultation with a mentor on methods 39% (78) and 35.5% (71) of MAMs disagreed and agreed respectively while 25.5% (51) of the MAMs neutral in their response. Thus, the MAMs seldom consulted their mentors on learning methods for their learning projects. Consultation with other mams showed that, 5.5% (11) of MAMs disagreed while 78.5% (157) agreed and 16.2% (32) neutral. This shows that the MAMs colleagues (other MAMs) served as a major source for determining learning methods among the MAMs. Observing other master automobile mechanics at work showed that, 12% (24) of MAMs disagreed while 63.5% (127) also agreed with a neutral response of 24.5% (49). Thus, observation of other MAMs at work formed part of the major sources used in deciding on the learning methods to adopt among the MAMs. Participating in workshop programmes that are related to learning objectives indicated that, 9.5% (19) of MAMs disagreed while 79% (158) agreed and 11.5% (23) neutral. It implies that majority of the MAMs agreed that participation in workshop programs that were related to their learning objectives was also included as part of the major sources used by the MAMs for determining their learning methods.

This section of the focus group discussion addressed the research question: How do the MAMs determine their learning method of choice? The responses from the focus group discussion shows that the MAMs choice of learning methods was determined by previous learning experience and by contacting their fellow MAMs. The following themes were generated from their responses:

- Previous experience
- Consultation with other MAMs

### **Consultation with Other MAMs**

The following statements portray how the MAMs determine their learning methods through consultation of others MAMs.

Participant A:

*my experience is that let's take this for example if this is the car I am working on and it's not working, I will call on a Master with more expertise who might have worked on a similar vehicle before to come and work on it for me so as he is doing it I will carefully observe and learn and that is how I acquire my expertise. So next time I will be able to do it myself. That is how the fitting work is we always consult. (2/12/2017)*

Participants B's statement affirms how learning methods were determined through consultation with other MAMs:

Participant B:

*Yes .... If you are stranded, you call on someone else to help you out. At first, when we were learning this job, we had nobody fixing the gear box it was the mechanic working on it that could fix it but now the cars that are coming you could be trying and it will not work unless you call a gear box specialist to fix it so ..... if I do the timing and all that he knows and will ask me if I have fixed the timing well then he will be working on the pumps so when all is done we start the car and we are gone. (2/12/2017)*

### **Previous Experience**

Participant C:

*Ok for me when I came to learn the fitting here we were doing everything already... we were fixing everything but before... in fact now when you go into the fitting it is there but for we pump mechanics the pumps are the same .... so we fix all but now if you go to the fitting they have now generalised everything if it is Japan cars that they fix it in only Japan cars so if you go with a German car they will direct you to a German specialist but for the pump work the pumps look-alike so we are able to fix and work on all pumps. (2/12/2017)*

The following statement shows that the MAMs dislike getting knowledge from official training institutes or workshops as also shown in Table 4. They rather depend on other colleagues who have previous experiences.

Participant D:

*Yes.... we are lacking with regard to that may be someone may not be able to tell you ....err.... The way the thing is if you know this is where you will get the knowledge you could get the machine if you have the money and go and learn I believe many would have taken that step to go and learn.... It is not there.... Nobody knows this is where they could get the knowledge it is not there... this is the work that we do and we know some of our friends who went to learn at NVTI when they vacate they come here and they were thought how to turn they are not able to turn... So if you have established a school and maybe I am learning things relating to engine and the engine has locked and has been there for so many years what exactly am I going to learn? Nothing.... So it is at work when someone brings a vehicle to repair and you are unable to you just consult the other person to fix and while fixing he could teach you.... all these are learning experiences we could get but unfortunately we are not able to (2/12/2017)*

The above statements support the view that majority of the MAMs preferred to consult their peers and mentors for the determination of the learning methods rather than through formal training programmes.

In conclusion, the MAMs determined their learning methods mostly by consulting particularly their mentors and peers than consulting their apprentices and spying on other MAMs at work. Another approach often used by the MAMs to determine their learning methods of choice was through reflecting on on-going and past experience to make meaning. However, participation in training programmes such as workshops to determine learning method of choice was rarely used.

#### 4.7 MAMs Evaluation Strategies of Learning Outcomes

The MAMs were examined on how they conducted evaluation of the learning outcomes of their learning projects. Table 10 and 11 shows the results obtained on the strategies used by the MAMs to evaluate the learning outcomes of their learning projects.

**Table 10: Mean Ratings on Strategies for Evaluating Learning Outcomes Among the MAMs**

Evaluation of Learning Outcomes	Mean	SD	Interpretation
Ability to exhibit knowledge, skills and attitude intended to achieve	3.43	1.171	N
Feedback from other MAMs	4.18	1.041	A
Feedback from apprentices/clients	3.63	.984	A
Certification for participating in a workshop	4.10	.962	A
Comparing performance with other MAMs	3.44	.985	N
Ability to teach other MAMs with similar learning objectives	4.03	1.105	A

**SD=Strongly Disagree, D=Disagree, N=Neutral, A=Agree, SA= Strongly Agree**

**(n = 200)**

Table 10 shows the mean ratings on strategies used for evaluation of learning outcomes by MAMs. The results showed that, feedback from other MAMs (mean=4.18, SD=1.041) was rated the highest followed by certification of participation in a workshop (mean=4.10, SD= .962), ability to teach other MAMs with similar learning objectives, (mean= 4.03, SD= 1.105), feedback from apprentices/clients (mean=3.63, SD= .984). Comparing performance with other MAMs (mean=3.44, SD= .985), and ability to exhibit knowledge, skills and attitude intended to achieve (mean=3.43, SD= 1.171), was rated the least. A summary of the table shows that the MAMs were definite about evaluating the learning outcomes of their learning projects through feedback from other MAMs, feedback from apprentices/clients, getting certification for participation in a workshop and ability to teach other MAMs.

The MAMs responses on the evaluation strategies they used in evaluating the learning outcomes of their learning projects are presented in Table 11.

**Table 11: MAM's Responses on Evaluation Strategies**

Evaluation of Learning Outcomes	SD	D	N	A	SA	Interpretation
	<i>f</i> (%)	<i>f</i> (%)	<i>f</i> (%)	<i>f</i> (%)	<i>f</i> (%)	
Ability to exhibit knowledge, skills and Attitude intended to achieve	(15) 7.5	(27) 13.5	(56) 28.0	(62) 31.0	(40) 20.0	N
Feedback from other MAMs	(6) 3.0	(12) 6.0	(21) 10.5	(62) 31.0	(99) 49.5	A
Feedback from other apprentices	(7) 3.5	(15) 7.5	(60) 30.0	(81) 40.5	(37) 18.5	A
Certificate for Participating in a workshop	(5) 2.5	(8) 4.0	(29) 14.5	(78) 39.0	(80) 40.0	A
Comparing performance with other MAMs	(8) 4.0	(20) 10.0	(77) 38.5	(67) 33.5	(28) 14.0	N
Ability to teach other MAMs with similar learning objectives	(9) 4.5	(12) 6.0	(29) 14.5	(65) 32.5	(85) 42.5	A

**SD=Strongly Disagree, D=Disagree, N=Neutral, A=Agree, SA= Strongly Agree**

**n=200**

Table 11 shows the results of the chi-square of the evaluation strategies of learning outcomes and the MAMs responses. The responses on ability to exhibit the knowledge, skills and attitude intended to achieve shows that, 21% (42) of MAMs disagreed while 51% (102) agreed and 28.0% (56) gave a neutral response. This implies that majority of the MAMs agreed that their ability to exhibit the knowledge, skills and attitude intended served as one of the strategies they used to evaluate the learning outcomes of their learning projects. However, not all the MAMs agreed to the use of this strategy.

The MAMs response on the use of feedback from other MAMs showed 9% (18) and 80.5% (161) of MAMs disagreed and agreed respectively while 10.5% (21) gave a neutral response.

This response shows that a significant majority of the MAMs agreed that feedback from other MAMs on their performance served as part of the strategies they used in evaluating their learning outcomes. The responses on feedback from apprentices/clients showed that, 11% (22) of MAMs disagreed while 59% (118) agreed and 30.0% (60) of the MAMs indicated a neutral response. This means that majority of the MAMs agreed that receiving feedback from clients formed part of the strategies they used in evaluating their learning outcomes. The MAMs indicated the following response on certification for participating in a workshop, 6.5% (13) of MAMs disagreed while 79% (158) also agreed and the remaining 14.5% (29) gave a neutral response

The result imply that majority of the MAMs accepted that their certificates of participation in workshops formed part of their evaluation strategies they adopted Response on comparing performance with other MAMs indicated that, 14% (28) of MAMs disagreed while 47.5% (95) agreed and 38.5% (77) were neutral in their response. This implies comparison of performance among the MAMs was not a major strategy adopted by the MAMs. With regard to ability to teach other MAMs with similar learning objectives, the respondents' responses showed that, 10.5% (21) of MAMs disagreed while 75% (150) agreed and 14.5% (29) of the MAMs indicated neutral response. It implies that the MAMs ability to teach others with similar learning objectives was also noted as a common strategy used among the MAMs for evaluation of their learning outcomes.

The focus group discussion on the MAMs evaluation process address the research question: How do the MAMs evaluate the learning outcomes of their learning projects?

The following themes were generated from the responses provided:

- Feedback from colleagues, clients and diagnostic machines.
- Ability to perform task on hand successfully.

## **Ability to Perform**

Participant A:

*How I am able to assess my self is that if I fix a car and it is not working I will not be working, so I will call a friend with the machine to come and help me out and so if he puts the machine on the vehicle I will look at the position. So I will look at the position he will set for the car to work so next time if I call a different person I will let him know that this is what and how the other person solved a similar problem and so next time there will be no need to call for the assistance of someone again I will do it myself. If I don't call anybody and I fix it then I know I have passed. Customers and friends or the computer can also let me know that I now qualify. (2/12/2017)*

The above statement confirms that the MAMs evaluated their learning outcomes through their ability to perform successfully and through feedback from their colleague MAMs.

The presented sources of evaluation of learning outcomes for the MAMs was collaborated by another MAM during the FGD as follows:

Participant B:

*No! No! No! that is so next time I will be able to do it myself. If I get money to buy some of the machine (diagnostic machine) now I will purchase one and do the programming myself if I have the knowledge and use the machine on vehicles myself and there will be no need to call someone else. And that is how I get my experience..... so if I practice the experience and it works then it becomes a new experience it works then it becomes. (2/12/2017)*

Similarly, this participant

## **Feedback from colleagues, clients and diagnostic machines.**

Participants:

*Ooh..... It is exactly what my brothers have said .... you see as my brother said back in the days when someone's vehicle got spoilt all that we learnt were related to that time but now we are in the modern era and things have totally changed .... a lot of things have changed and now the whites have changed our minds and a lot of things in cars*

*..... A car like Navara is really disturbing us as mechanics in Ghana it is a new electronics car that is really disturbing us ... that car.... you could*

*realize that you have been able to fix it but still the person will bring it back to you that it has not worked so you have to resort to the use of the diagnostic machine but still .... In fact, it could work there but immediately the car moves there is a problem... so the electronics is really disturbing us and that is our only problem if it had been the manual, we wouldn't have faced much problems but it is the electronics and now it is like we don't often learn on our job and the people working with us operating the machines are not too good so they could put the machine on car and they may \* \*think its ok but in reality the problem has not yet been fixed. It is only when the clients are satisfied then we know we have succeeded and become happy. (2/12/2017)*

The above statement affirms that feedback from clients was part of the strategies used by the MAMs to evaluate their learning outcomes.

In conclusion, it was observed that the MAMs evaluated the learning outcomes of their learning projects mainly through feedback especially from their colleague MAMs and apprentices/clients as compared to feedback from their apprentices and trainers. The MAMs ability to perform task successfully was another method that used by the MAMs to evaluate their learning outcomes. The MAMs ability to successfully perform task was mostly determined through ability to exhibit through practice intended knowledge, skills and attitudes compared to the MAMs ability to teach other MAMs. Finally, performance comparison was the least evaluation method used by the MAMs. This method was executed mainly through comparing of performances among the MAMs. It was revealed that positive feedback form colleagues and clients, ability to perform task successfully, performance comparison were the strategies adopted by the MAMs to evaluate their learning outcomes.

#### **4.8 Correlation Analysis**

The correlation is used to describe the linear relationship between two continuous variables. In general, the study correlated educational level, years of experience as against

the processes that trigger learning projects and their choice of learning methods. This was done to measure the strength and direction of the linear relationship between the variables mentioned. The analysis is depicted in Tables 12 to 27 respectively.

**Table 12: Chi square Result of Education \* Inability to Fix a Service Requested by a Client**

Level of Education	Inability to Fix a Service Requested by a Client				
	SD	D	N	A	SA
	n (%)	n (%)	n (%)	n (%)	n (%)
No Formal Education	0 (0.0%)	5 (20.0%)	6 (24.0%)	7 (28.0%)	7 (28.0%)
Basic Education	5 (4.0%)	6 (4.8%)	29 (23.3%)	46 (36.8%)	39 (31.2%)
Secondary Education	3 (7.3%)	3 (7.3%)	1 (2.4%)	23 (56.1%)	11 (26.8%)
Tertiary Education	0 (0.0%)	0 (0.0%)	4 (44.4%)	3 (33.3%)	2 (22.2%)

$$X^2 = (12, n = 200) = 24.291, P < .019 \text{ (n= 200)}$$

Table 12 shows the chi-square of the level of education among MAMs and the trigger processes that stimulate learning. According to the table, the results of chi-square between the MAMs educational level and their inability to fix a service requested by a client are explained below.

Among the MAMs with no formal education, 20% (5) disagreed while 56% (14) agreed that inability to fix a service requested by a client triggered learning. Among the MAMs with basic education, 11(8.8%) and 85(68%) disagreed and agreed respectively. For those with secondary education 14.6% (6) disagreed while 34(82.9%) agreed. Finally, among MAMs with tertiary education, 5 (55.5%) agreed that inability to fix a service requested by a client triggered learning.

Computed chi- square results revealed that, there was a significant relationship between MAMs level of education and their inability to fix a service requested by a client ( $X^2 = (12, n = 200) = 24.291, P < .019$ )

**Table 13: Chi-square Result of Level of Education \* Manufacturers Introduction of New Versions of an Automobile Model**

Level of Education	Manufacturers Introduction of New Versions of An Automobile Model				
	SD	D	N	A	SA
	n (%)	n (%)	n (%)	n (%)	n (%)
No Formal Education	3 (12.0%)	3 (12.0%)	6 (24.0%)	6 (24.0%)	7 (28.0%)
Basic Education	6 (4.8%)	13 (10.4%)	33 (26.4%)	49 (39.2%)	24 (19.2%)
Secondary Education	0 (0.0%)	3 (7.3%)	12 (29.35)	18 (43.9%)	8 (19.5%)
Tertiary Education	1 (11.1%)	1 (11.1%)	5 (55.6%)	2 (22.2%)	0 (0.0%)

$$X^2 = (12, n = 200) = 13.337, P = .345$$

Table 13 also shows the chi-square of the level of education among MAMs and the manufacturers introduction of new versions of an automobile model. The results of the chi-square between the MAMs level of education and manufacturers introduction of new versions of an automobile model are explained below.

Among the MAMs with no formal education, 6(24%) disagreed while 13(52%) agreed that manufacturers introduction of new versions of an automobile model triggered learning. Among the MAMs with basic education, 19(15.2%) and 73(58.4%) disagreed and Agreed respectively. For those with secondary education 3(7.3%) disagreed while 26(53.4%) agreed. Finally, among MAMs with tertiary education, 2(22.2%) disagreed while 2(22.2%) also agreed that manufacturers introduction of new versions of an automobile model triggered learning. Computed chi- square results revealed that, there was no significant relationship between MAMs level of education and manufacturers introduction of new versions of an automobile model ( $X^2 = (12, n = 200) = 13.337, P = .345$ ).

**Table 14: Chi-square Result of Level of Education \*When Manufacturers Release New Brands of Automobiles**

Level of Education	When Manufacturers Release New Brands of Automobiles				
	SD	D	N	A	SD
	n (%)	n (%)	n (%)	n (%)	n (%)
No Formal Education	2 (8.0%)	1 (4.0%)	4 (16.0%)	13 (52.0%)	5 (20.0%)
Basic Education	2 (1.6%)	8 (6.4%)	30 (24.0%)	56 (44.8%)	29 (23.2%)
Secondary Education	0 (0.0%)	1 (2.4%)	8 (19.5%)	22 (53.7%)	10 (24.4%)
Tertiary Education	1 (11.1%)	0 (0.0%)	3 (33.3%)	2 (22.2%)	3 (33.3%)

$$X^2 = (12, n = 200) = 12.231, P = .427$$

Table 14 presents the chi-square of the level of education among MAMs and the trigger processes that stimulate learning. According to the table, the results of chi-square between the MAMs level of education and when manufacturers release new brands of automobiles are explained below.

Among the MAMs with no formal education, 12% (3) disagreed while 72% (18) agreed that when manufacturers release new brands of automobiles triggered learning. Among the MAMs with basic education, 8% (10) and 68% (85) disagreed and agreed respectively. For those with secondary education 2.4% (1) disagreed while 78.1% (32) agreed. Finally, among MAMs with tertiary education, 11.1 % (1) disagreed while 55.5% (5) also agreed that when manufacturers release new brands of automobiles, it triggered learning. Computed chi- square results revealed that, there was no significant relationship between MAMs level of education and when manufacturers release new brands of automobiles ( $X^2 = (12, n = 200) = 12.231, P = .427$ )

**Table 15: Chi-square Result of Level of Education \* High Demand for Specific Skills or Service**

Level of Education	High Demand for Specific Skills or Service				
	SD	D	N	A	SD
	n (%)	n (%)	n (%)	n (%)	n (%)
No Formal Education	0 (0.0%)	4 (16.0%)	10 (40.0%)	8 (32.0%)	5 (20.0%)
Basic Education	7 (5.6%)	10 (8.0%)	28 (22.4%)	57 (45.6%)	29 (23.2%)
Secondary Education	0 (0.0%)	1 (2.4%)	13 (31.7%)	20 (48.8%)	10 (24.4%)
Tertiary Education	7 (3.5%)	1 (11.1%)	4 (44.4%)	3 (33.3%)	3 (33.3%)

$$X^2 = (12, n = 200) = 13.732, P = .318$$

Table 15 presents the chi-square of the highest level of education among MAMs and the trigger processes that stimulate learning. According to the table, the results of chi-square between the MAM level of education and high demand for specific skills or service are explained below. Among the MAMs with no formal education, 16% (4) disagreed while 52% (13) agreed that high demand for specific skills or service triggered learning. Among the MAMs with basic education, 13.6% (17) and 68.8% (86) disagreed and agreed respectively. For those with secondary education 2.4% (1) disagreed while 73.2% (30) agreed. Finally, among MAMs with tertiary education, 14.6% (8) disagreed while 66.6% (6) also agreed. Computed chi-square results revealed that, there were no significant relationship between MAMs level of education and high demand for specific skills or service ( $X^2 = (12, n = 200) = 13.732, P = .318$ )

**Table 16: Chi-square Result of Level of Education \* Desire of Expanding Business**

Level of Education	Desire of Expanding Business				
	SD	D	N	A	SD
	n (%)	n (%)	n (%)	n (%)	n (%)
No Formal Education	1 (4.0%)	4 (16.0%)	5 (20.0%)	8 (32.0%)	7 (28.0%)
Basic Education	8 (6.4%)	13 (10.4%)	21 (16.8%)	54 (43.2%)	29 (23.2%)
Secondary Education	1 (2.4%)	2 (4.9%)	9 (22.0%)	16 (39.0%)	13 (31.7%)
Tertiary Education	0 (0.0%)	2 (22.2%)	37 (18.5%)	5 (55.6%)	0 (0.0%)

$$X^2 = (12, n = 200) = 9.623, P = .649$$

Table 16 presents the chi-square of the level of education among MAMs and the trigger processes that stimulate learning. According to the table, the results of chi-square between the MAMs level of education and their desire of expanding business are explained below.

Among the MAMs with no formal education, 20% (5) disagreed while 60% (15) agreed that desire of expanding business triggered learning. Among the MAMs with basic education, 16.8% (21) and 66.4% (83) disagreed and agreed respectively. For those with secondary education 7.3% (3) disagreed while 70.7% (29) agreed. Finally, among MAMs with tertiary education, 22.2% (2) disagreed while 5(55.6%) also agreed that desire of expanding business triggered learning. Computed chi- square results revealed that, there was no significant relationship between MAMs level of education and desire of expanding business ( $X^2 = (12, n = 200) = 9.623, P = .649$ )

**Table 17: Chi-square Result of Level of Education \* Fear of Losing Clients**

Level of Education	Fear of Losing Clients				
	SD	D	N	A	SD
	n (%)	n (%)	n (%)	n (%)	n (%)
No Formal Education	3 (12.0%)	6 (24.0%)	6 (24.0%)	8 (32.0%)	2 (8.0%)
Basic Education	7 (5.6%)	16 (12.8%)	37 (29.6%)	43 (34.4%)	22 (17.6%)
Secondary Education	2 (4.9%)	3 (7.3%)	14 (34.1%)	14 (34.1%)	8 (19.5%)
Tertiary Education	0 (0.0%)	0 (0.0%)	5 (55.6%)	3 (33.3%)	1 (11.1%)

$$X^2 = (12, n = 200) = 10.782, P = .548$$

Table 17 presents the chi-square of the level of education among MAMs and the trigger processes that stimulate learning. According to the table, the results of chi-square between the MAMs level of education and fear of losing clients are explained below.

Among the MAMs with no formal education, 36% (9) disagreed while 40% (10) agreed that fear of losing clients triggered learning. Among the MAMs with basic education, 18.4% (23) and 65(52%) disagreed and agreed respectively. For those with secondary education 12.2% (5) disagreed while 53.6% (22) agreed. Finally, among MAMs with tertiary education, 44.4% (4) also agreed that fear of losing clients triggered learning. Computed chi- square results revealed that, there were no significant relationship between MAMs level of education and fear of losing clients ( $X^2 = (12, n = 200) = 10.782, P = .548$ )

**Table 18: Chi-square Result of Level of Education \* Preservation of Reputation as a Master Automobile Mechanic**

Level of Education	Preservation of Reputation as a Master Automobile Mechanic				
	SD	D	N	A	SD
	n (%)	n (%)	n (%)	n (%)	n (%)
No Formal Education	3 (12.0%)	6 (24.0%)	10 (40.0%)	3 (12.0%)	3 (12.0%)
Basic Education	19 (15.2%)	19 (15.2%)	42 (33.6%)	30 (24.0%)	15 (12.0%)
Secondary Education	6 (14.6%)	8 (19.5%)	13 (31.7%)	7 (17.1%)	7 (17.1%)
Tertiary Education	0 (0.0%)	1 (11.1%)	5 (55.6%)	3 (33.3%)	0 (0.0%)

$$X^2 = (12, n = 200) = 8.442, P = .750$$

Table 18 presents the chi-square of the level of education among MAMs and the trigger processes that stimulate learning. According to the table, the results of chi-square between the MAMs level of education and their preservation of reputation as a master automobile mechanic are explained below.

Among the MAMs with no formal education, 36% (9) disagreed while 6(24%) agreed that preservation of reputation as a master automobile mechanic triggered learning. Among the MAMs with basic education, 30.4% (38) and 36% (45) disagreed and agreed respectively. For those with secondary education 34.1% (14) disagreed while 34.2% (14) agreed. Finally, among MAMs with tertiary education, 11.1% (1) disagreed while 33.3% (3) also agreed that preservation of reputation as a master automobile mechanic triggered learning. Computed chi- square results revealed that, there was no significant relationship between MAMs level of education and preservation of reputation as a master automobile mechanic ( $X^2 = (12, n = 200) = 8.442, P = .750$ )

**Table 19: Chi-square Result of Level of Education \* Desire of Building Strong Professional Skills**

Level of Education	Desire of Building Strong Professional Skills				
	SD n (%)	D n (%)	N n (%)	A n (%)	SD n (%)
No Formal Education	3 (12.0%)	3 (12.0%)	11 (44.0%)	3 (12.0%)	5 (20.0%)
Basic Education	13 (10.4%)	25 (20.0%)	39 (31.2%)	37 (29.6%)	11 (8.8%)
Secondary Education	5 (12.2%)	8 (19.5%)	11 (26.8%)	11 (26.8%)	6 (14.6%)
Tertiary Education	0 (0.0%)	2 (22.2%)	4 (44.4%)	3 (33.3%)	0 (0.0%)

$$X^2 = (12, n = 200) = 10.164, P = .602$$

Table 19 presents the chi-square of level of education among MAMs and the trigger processes that stimulate learning. According to the table, the results of chi-square between the MAMs level of education and desire of building strong professional skills are explained below.

Among the MAMs with no formal education, 24% (6) disagreed while 32% (8) agreed that desire of building strong professional skills triggered learning. Among the MAMs with basic education, 30.4% (38) and 38.4% (48) disagreed and agreed respectively. For those with secondary education 31.7% (13) disagreed while 41.4% (17) agreed. Finally, among MAMs with tertiary education, 22.2% (2) disagreed while 33.3% (3) also agreed that desire of building strong professional skills triggered learning. Computed chi-square results showed that, there was no significant relationship between MAMs level of education and their desire of building strong professional skills ( $X^2 = (12, n = 200) = 10.164, P = .602$ )

**Table 20: Chi-square Result of Level of Education \* Unsatisfactory Feedback from Clients**

Level of Education	Unsatisfactory Feedback from Clients				
	SD n (%)	D n (%)	N n (%)	A n (%)	SD n (%)
No Formal Education	0 (0.0%)	0 (0.0%)	6 (24.0%)	8 (32.0%)	11 (44.0%)
Basic Education	3 (2.4%)	9 (7.2%)	22 (17.6%)	48 (38.4%)	43 (34.4%)
Secondary Education	1 (2.4%)	4 (9.8%)	4 (9.8%)	19 (46.3%)	13 (31.7%)
Tertiary Education	0 (0.0%)	1 (11.1%)	2 (22.2%)	2 (22.2%)	4 (44.4%)

$$X^2 = (12, n = 200) = 7.865, P = .796$$

Table 20 presents the chi-square of the level of education among MAMs and the trigger processes that stimulate learning. According to the table, the results of chi-square between the MAM level of education and unsatisfactory feedback from clients are explained below.

Among the MAMs with no formal education, 72% (19) agreed that unsatisfactory feedback from clients triggered learning. Among the MAMs with basic education, 9.6% (12) and 72.8% (91) disagreed and agreed respectively. For those with secondary education 12.2% (5) disagreed while 60% (32) agreed. Finally, among MAMs with tertiary education, 11.1% (1) disagreed while 66.6% (6) also agreed that unsatisfactory feedback from clients triggered learning. Moreover, computed chi-square results revealed that, there was no significant relationship between MAMs level of education and unsatisfactory feedback from clients ( $X^2 = (12, n = 200) = 7.865, P = .796$ )

**Table 21: Chi-square Result of Level of Education \* Desire to Make Money**

Level of Education	Desire to Make Money				
	SD	D	N	A	SA
	n (%)	n (%)	n (%)	n (%)	n (%)
No Formal Education	1 (4.0%)	3 (12.0%)	5 (20.0%)	11 (44.0%)	5 (20.0%)
Basic Education	1 (0.8%)	10 (8.0%)	33 (26.4%)	60 (48.0%)	21 (16.8%)
Secondary Education	2 (4.9%)	2 (4.9%)	13 (31.7%)	15 (36.6%)	9 (22.0%)
Tertiary Education	0 (0.0%)	1 (11.1%)	4 (44.4%)	3 (33.3%)	1 (11.1%)

$$X^2 = (12, N = 200) = 8.080, P = .779$$

Table 21 presents the chi-square of the level of education among MAMs and the trigger processes that stimulate learning. According to the table, the results of chi-square between the MAM- level of education and their desire to make money are explained below.

Among the MAMs with no formal education, 4(16%) disagreed while 64% (16) agreed that desire to make money triggered learning. Among the MAMs with basic education, 8.8% (11) and 81(64.8%) disagreed and agreed respectively. For those with secondary education 9.8% (4) disagreed while 58.6% (24) agreed. Finally, among MAMs with tertiary education, 11.1% (1) disagreed while 44.4% (4) also agreed that desire to make money triggered learning. Computed chi- square results indicated that, there was no significant relationship between MAMs level of education and desire to make money ( $X^2 = (12, n = 200) = 8.080, P = .779$ )

**4.8.1 The Relationship between the MAMS Educational Status and Their Choice of Learning Methods**

**Table 22: Chi-square Result of Level of Education \* Reflecting on Previous Experience**

Level of Education	Reflecting on Previous Experience				
	SD	D	N	A	SD
	n (%)	n (%)	n (%)	n (%)	n (%)
No Formal Education	1 (4.0%)	4 (16.0%)	10 (40.0%)	5 (20.0%)	5 (20.0%)
Basic Education	10 (8.0%)	13 (10.4%)	30 (24.0%)	45 (36.0%)	27 (21.6%)
Secondary Education	3 (7.3%)	5 (12.2%)	11 (26.8%)	15 (36.6%)	7 (17.1%)
Tertiary Education	1 (11.1%)	0 (0.0%)	3 (33.3%)	4 (44.4%)	1 (11.1%)

$X^2 = (12, n = 200) = 6.982, P = .859$

Table 22 presents the chi-square of the highest level of education among MAMs and their choice of learning methods that stimulate learning. According to the table 11, the results of chi-square between the MAMs level of education and reflecting on previous experience explained below.

Among the MAMs with no formal education, 20% (5) disagreed while 10(40%) agreed that reflecting on previous experience triggered their choice of learning methods. Among the MAMs with basic education, 18.4% (23) and 57.6% (72) disagreed and agreed respectively. For those with secondary education 19.5% (8) disagreed while 53.7% (22) agreed. Finally, among MAMs with tertiary education, 11.1% (1) disagreed while 55.5% (5) also agreed that reflecting on previous experience triggered their choice of learning methods. Computed chi- square results revealed that, there was no significant relationship between MAMs highest level of education and reflecting on previous experience ( $X^2 = (12, n = 200) = 6.982, P = .859$ )

**Table 23: Chi-square Result of Level of Education \* Consultation with a Mentor on Methods**

Level of Education	consultation with a mentor on methods				
	SD	D	N	A	SD
	n (%)	n (%)	n (%)	n (%)	n (%)
No Formal Education	3 (12.0%)	9 (36.0%)	6 (24.0%)	1 (4.0%)	6 (24.0%)
Basic Education	12 (9.6%)	34 (27.2%)	32 (25.6%)	32 (25.6%)	15 (12.0%)
Secondary Education	5 (12.2%)	12 (29.3%)	11 (26.8%)	10 (24.4%)	3 (7.3%)
Tertiary Education	1 (11.1%)	2 (22.2%)	2 (22.2%)	3 (33.3%)	1 (11.1%)

$$X^2 = (12, n = 200) = 9.363, P = .672$$

Table 23 presents the chi-square of the highest level of education among MAMs and their choice of learning methods that stimulate learning. According to the table, the results of chi-square between the MAM level of education and consultation with a mentor on methods are explained below.

Among the MAMs with no formal education, 48% (12) disagreed while 28% (7) agreed that consultation with a mentor on methods triggered their choice of learning methods. Among the MAMs with basic education, 36.8% (46) and 37.6% (47) disagreed and agreed respectively. For those with secondary education 41.5% (17) disagreed while 31.7% (13) agreed. Finally, among MAMs with tertiary education, 33.3% (3) disagreed while 44.4% (4) also agreed that consultation with a mentor on methods triggered their choice of learning methods. Computed chi- square results revealed that, there was no significant relationship between MAMs level of education and consultation with a mentor on methods ( $X^2 = (12, n = 200) = 9.363, P = .672$ )

**Table 24: Chi-square Result of Level of Education \* Consultation with Other MAMs**

Level of Education	Consultation with Other MAMs				
	SD	D	N	A	SD
	n (%)	n (%)	n (%)	n (%)	n (%)
No Formal Education	1 (4.0%)	0 (0.0%)	5 (20.0%)	4 (16.0%)	15 (60.0%)
Basic Education	6 (4.8%)	2 (1.6%)	19 (15.2%)	42 (33.6%)	56 (44.8%)
Secondary Education	0 (0.0%)	0 (0.0%)	7 (17.1%)	9 (22.0%)	25 (61.0%)
Tertiary Education	0 (0.0%)	2 (22.2%)	1 (11.1%)	0 (0.0%)	6 (66.7%)

$$X^2 = (12, n = 200) = 31.058, P > .002$$

Table 24 presents the chi-square of the level of education among MAMs and their choice of learning methods that stimulate learning. According to the table, the results of chi-square between the MAMs level of education and consultation with other MAMs are explained below.

Among the MAMs with no formal education, 4% (1) disagreed while 76% (19) agreed that consultation with other MAMs triggered their choice of learning methods. Among the MAMs with basic education, 6.4% (8) and 78.4% (98) disagreed and agreed respectively. For those with secondary education 83% (34) agreed. Finally, among MAMs with tertiary education, 22.2% (2) disagreed while 66.7% (6) also agreed that consultation with other MAMs triggered their choice of learning methods. Computed chi-square results revealed that, there was no significant relationship between MAMs level of education and consultation with other MAMs ( $X^2 = (12, n = 200) = 31.058, P > .002$ )

**Table 25: Level of Education \* Observing Other Master automobile Mechanics at Work**

Level of Education	Observing Other Master Automobile Mechanics at Work				
	SD	D	N	A	SD
	n (%)	n (%)	n (%)	n (%)	n (%)
No Formal Education	1 (4.0%)	0 (0.0%)	6 (24.0%)	9 (36.0%)	9 (36.0%)
Basic Education	4 (3.2%)	13 (10.4%)	28 (22.4%)	57 (45.6%)	23 (18.4%)
Secondary Education	2 (4.9%)	3 (7.3%)	10 (24.4%)	15 (36.6%)	11 (26.8%)
Tertiary Education	0 (0.0%)	1 (11.1%)	5 (55.6%)	2 (22.2%)	1 (11.1%)

$$X^2 = (12, N = 200) = 12.770, P = .386$$

Table 25 presents the chi-square of the level of education among MAMs and their choice of learning methods that stimulate learning. According to the table 14, the results of chi-square between the MAMs level of education and observing other MAMs at work are explained below.

Among the MAMs with no formal education, 4% (1) disagreed while 72% (18) agreed that observing other MAMs at work triggered their choice of learning methods. Among the MAMs with basic education, 13.6% (17) and 64% (80) disagreed and agreed respectively. For those with secondary education 12.2% (5) disagreed while 63.4% (26) agreed. Finally, among MAMs with tertiary education, 11.1% (1) disagreed while 33.3% (3) also agreed that observing other MAMs at work triggered their choice of learning methods. Computed chi-square results showed that, there was no significant relationship between MAMs level of education and observing other master automobile mechanics at work ( $X^2 = (12, n = 200) = 12.770, P = .386$ )

**Table 26: Chi-square Result of Level of Education \* Participating in Workshop Programmes that are Related to Learning Objectives**

Level of Education	Participating in workshop Programmes that are Related to Learning Objectives				
	SD	D	N	A	SA
	n (%)	n (%)	n (%)	n (%)	n (%)
No Formal Education	1 (4.0%)	2 (8.0%)	2 (8.0%)	7 (28.0%)	13 (52.0%)
Basic Education	3 (2.4%)	12 (9.6%)	14 (11.2%)	52 (41.6%)	44 (35.2%)
Secondary Education	0 (0.0%)	0 (0.0%)	4 (9.8%)	16 (39.0%)	21 (51.2%)
Tertiary Education	1 (11.1%)	0 (0.0%)	3 (33.3%)	3 (33.3%)	2 (22.2%)

$X^2 = (12, N = 200) = 17.470, P = .133$

Table 26 shows the chi-square of the level of education among MAMs and their choice of learning methods that stimulate learning. According to the table 15, the results of chi-square between the MAMs level of education and participating in workshop programmes that are related to learning objectives are explained below.

Among the MAMs with no formal education, 12% (3) disagreed while 80% (20) agreed that participating in workshop programmes that are related to learning objectives triggered their choice of learning methods. Among the MAMs with basic education, 12% (15) and 76.8% (96) disagreed and agreed respectively. For those with secondary education 90.2% (37) agreed. Finally, among MAMs with tertiary education, 11.1% (1) disagreed while 55.5% (5) also agreed that participating in workshop programmes that are related to learning objectives triggered their choice of learning methods. Computed chi-square results showed that, there was no significant relationship between MAMs highest level of education and participating in workshop programmes that are related to learning objectives ( $X^2 = (12, n = 200) = 17.470, P = .133$ )

**4.8.2 Relationship between Years of Experience against Trigger Processes and Choice of Learning Methods**

**Table 27: Chi-square Result of Years of Experience Attained \* Inability to Fix a Service Requested by a Client**

Years of Experience	Inability to Fix a Service Requested by a Client				
	SD	D	N	A	SD
	n (%)	n (%)	n (%)	n (%)	n (%)
Up to Five Year	2 (18.2%)	2 (18.2%)	2 (18.2%)	4 (36.4%)	1 (9.1%)
Six to Ten Years	0 (0.0%)	1 (4.2%)	5 (20.8%)	8 (33.3%)	10 (41.7%)
Eleven Years and Above	6 (3.6%)	11 (6.7%)	33 (20.0%)	67 (40.6%)	48 (29.1%)

$X^2 = (8, n = 200) = 11.915, P = .155$

Table 27 shows the chi-square of years of experience among MAMs and the trigger processes that stimulate learning. According to the table, the results of chi-square between the MAM years of experience and their inability to fix a service requested by a client are explained below.

Among the MAMs with up to five years of experience, 36.4% (4) disagreed while 45.5% (5) agreed that inability to fix a service requested by a client triggered learning. Among the MAMs with six to ten years of experience, 4.2% (1) and 75% (18) disagreed and agreed respectively.

For those with eleven years and above experience, 10.3% (17) disagreed while 69.7% (115) also agreed that inability to fix a service requested by a client triggered learning. Computed chi-square results revealed that, there was no significant relationship between MAMs years of experience and their inability to fix a service requested by a client ( $X^2 = (8, n = 200) = 11.915, P = .155$ )

**Table 28: Chi-square Result of Years of Experience Attained \* Manufacturers Introduction of New Versions of an Automobile Model**

Years of Experience	Manufacturers Introduction of New Versions of An Automobile Model				
	SD	D	N	A	SD
	n (%)	n (%)	n (%)	n (%)	n (%)
Up to Five Year	0 (0.0%)	1 (9.1%)	3 (27.3%)	6 (54.5%)	1 (9.1%)
Six to Ten Years	3 (12.5%)	3 (12.5%)	7 (29.2%)	9 (37.5%)	2 (8.3%)
Eleven Years and Above	7 (4.2%)	16 (9.7%)	46 (27.9%)	60 (36.4%)	36 (21.8%)

$$X^2 = (8, N = 200) = 7.138, P = .522$$

Table 28 shows the chi-square of years of experience among MAMs and the trigger processes that stimulate learning. According to the table, the results of chi-square between the MAMs years of experience and manufacturers introduction of new versions of an automobile model are explained below

Among the MAMs with up to five years of experience, 9.1% (1) disagreed while 63.6% (7) agreed that manufacturers introduction of new versions of an automobile model triggered learning. Among the MAMs with six to ten years of experience, 25% (6) and 45.8% (11) disagreed and agreed respectively. For those with eleven years and above experience, 13.9% (23) disagreed while 96 (58.2%) also agreed that manufacturers introduction of new versions of an automobile model triggered learning. Computed chi-square results revealed that, there was no significant relationship between MAMs years of experience and manufacturers introduction of new versions of an automobile model ( $X^2 = (8, n = 200) = 7.138, P = .522$ )

**Table 29: Chi-square Result of Years of Experience Attained \* When Manufacturers Release New Brands**

Years of Experience	When Manufacturers Release New Brands				
	SD	D	N	A	SD
	n (%)	n (%)	n (%)	n (%)	n (%)
Up to Five Year	0 (0.0%)	0 (0.0%)	4 (36.4%)	5 (45.5%)	2 (18.2%)
Six to Ten Years	4 (4.2%)	3 (12.5%)	4 (16.7%)	11 (45.8%)	5 (20.8%)
Eleven Years and Above	4 (2.4%)	7 (4.2%)	37 (22.4%)	77 (46.7%)	40 (24.2%)

$$X^2 = (8, n = 200) = 5.537, P = .699$$

Table 29 shows the chi-square of years of experience among MAMs and the trigger processes that stimulate learning. According to the table, the results of chi-square between the MAM years of experience and when manufacturers release new brands are explained below. Among the MAMs with up to five years of experience, 7(63.7%) agreed that, when manufacturers release new brands triggered learning. Among the MAMs with six to ten years of experience, 16.7% (7) and 66.6% (16) disagreed and agreed respectively. For those with eleven years and above experience, 6.6% (11) disagreed while 71.2% (117) also agreed that when manufacturers release new brands triggered learning. Computed chi-square results revealed that, there was no significant relationship between MAMs years of experience and when manufacturers release new brands ( $X^2 = (8, n = 200) = 5.537, P = .699$ )

**Table 30: Chi-square Result of Years of Experience Attained \* High Demand for Specific Skills or Service**

Years of Experience	High Demand for Specific Skills or Service				
	SD	D	N	A	SD
	n (%)	n (%)	n (%)	n (%)	n (%)
Up to Five Year	0 (0.0%)	1 (9.1%)	5 (45.5%)	4 (36.4%)	1 (9.1%)
Six to Ten Years	2 (8.3%)	3 (12.5%)	1 (4.2%)	14 (58.3%)	4 (16.7%)
Eleven Years and Above	5 (3.0%)	12 (7.3%)	49 (29.7%)	70 (42.4%)	29 (17.6%)

$$X^2 = (8, n = 200) = 10.952, P = .204$$

Table 30 shows the chi-square of years of experience among MAMs and the trigger processes that stimulate learning. According to the table, the results of chi-square between the MAM years of experience and their high demand for specific skills or service are explained below.

Among the MAMs with up to five years of experience, 1(9.1%) disagreed while 5(45.5%) agreed that high demand for specific skills or service triggered learning. Among the MAMs with six to ten years of experience, 5(20.8%) and 18(75%) disagreed and Agreed respectively. For those with eleven years and above experience, 17(10.3%) disagreed while 96(60%) also agreed that high demand for specific skills or service triggered learning. Computed chi- square results showed that, there were no significant relationship between MAMs years of experience and their high demand for specific skills or service ( $X^2 = (8, n = 200) = 10.952, P = .204$ )

**Table 31: Chi-square Result of Years of Experience Attained \* Desire of Expanding Business**

Years of Experience	Desire of Expanding Business				
	SD n (%)	D n (%)	N n (%)	A n (%)	SD n (%)
Up to Five Year	1 (9.1%)	0 (0.0%)	2 (18.2.5%)	5 (45.5%)	3 (27.3%)
Six to Ten Years	2 (8.3%)	1 (4.2%)	4 (16.7%)	9 (37.5%)	8 (33.3%)
Eleven Years and Above	7 (4.2%)	20 (12.1%)	31 (18.8%)	69 (41.8%)	38 (23.0%)

$$X^2 = (8, n = 200) = 4.710, P = .788$$

Table 31 shows the chi-square of years of experience among MAMs and the trigger processes that stimulate learning. According to the table, the results of chi-square between the MAM years of experience and their desire of expanding business are explained below.

Among the MAMs with up to five years of experience, 1(9.1%) disagreed while 8(72.8%) agreed that desire of expanding business triggered learning. Among the MAMs with six to ten years of experience, 3(12.5%) and 17(70.8%) disagreed and Agreed respectively. For those with eleven years and above experience, 27(16.3%) disagreed while 107(64.8%) also agreed that desire of expanding business desire of expanding business triggered learning. Computed chi- square results revealed that, there was no significant relationship between MAMs years of experience and their desire of expanding business ( $X^2 = (8, n = 200) = 4.710, P = .788$ )

**Table 32: Chi-square Result of Years of Experience Attained \* Fear of Losing Clients**

Years of Experience	Fear of Losing Clients				
	SD n (%)	D n (%)	N n (%)	A n (%)	SD n (%)
Up to Five Year	0 (0.0%)	3 (27.3%)	1 (9.1%)	6 (54.5%)	1 (9.1%)
Six to Ten Years	3 (12.5%)	4 (16.7%)	8 (33.3%)	6 (25.0%)	3 (12.5%)
Eleven Years and Above	9 (5.5%)	18 (10.9%)	53 (32.1%)	56 (33.9%)	29 (17.6%)

$$X^2 = (8, n = 200) = 9.484, P = .303$$

Table 32 shows the chi-square of years of experience among MAMs and the trigger processes that stimulate learning. According to the table, the results of chi-square between the MAM years of experience and their fear of losing clients are explained below.

Among the MAMs with up to five years of experience, 3(27.3%) disagreed while 7(63.6%) agreed that fear of losing clients triggered learning. Among the MAMs with six to ten years of experience, 7(29.2%) and 9(37.5%) disagreed and Agreed respectively. For those with eleven years and above experience, 28(16.4%) disagreed while 85(51.5%) also agreed that fear of losing clients triggered learning. Computed chi-square results revealed that, there was no significant relationship between MAMs years of experience and their fear of losing clients ( $X^2 = (8, n = 200) = 9.484, P = .303$ )

**Table 33: Chi-square Result of Years of Experience Attained \* Preservation of Reputation as a Master Automobile Mechanic**

Years of Experience	Preservation of Reputation as a Master Automobile Mechanic				
	SD n (%)	D n (%)	N n (%)	A n (%)	SD n (%)
Up to Five Year	0 (0.0%)	4 (36.4%)	2 (18.2%)	2 (18.2%)	3 (27.3%)
Six to Ten Years	7 (29.2%)	2 (8.3%)	10 (41.7%)	3 (12.5%)	2 (8.3%)
Eleven Years and Above	21 (12.7%)	28 (17.0%)	58 (35.2%)	38 (23.0%)	20 (12.1%)

$$X^2 = (8, n = 200) = 13.769, P = .088$$

Table 33 shows the chi-square of years of experience among MAMs and the trigger processes that stimulate learning. According to the table, the results of chi-square between the MAM years of experience and preservation of reputation as a master automobile mechanic are explained below.

Among the MAMs with up to five years of experience, 4(36.4%) disagreed while 5(45.5%) agreed that preservation of reputation as a master automobile mechanic triggered learning. Among the MAMs with six to ten years of experience, 9(37.5%) and 5(20.8%) disagreed and Agreed respectively. For those with eleven years and above experience, 49(29.7%) disagreed while 58 (35.1%) also agreed that preservation of reputation as a master automobile mechanic triggered learning. Computed chi- square results revealed that, there was no significant relationship between MAMs years of experience and preservation of reputation as a master automobile mechanic ( $X^2 = (8, n = 200) = 13.769, P = .088$ )

**Table 34: Years of Experience Attained \* Desire of Building Strong Professional Skills**

Years of Experience	Desire of Building Strong Professional Skills				
	SD n (%)	D n (%)	N n (%)	A n (%)	SD n (%)
Up to Five Year	0 (0.0%)	6 (54.5%)	2 (18.2%)	1 (9.1%)	2 (18.2%)
Six to Ten Years	4 (16.7%)	3 (12.5%)	6 (25.0%)	8 (33.3%)	3 (12.5%)
Eleven Years and Above	17 (10.3%)	29 (17.0%)	57 (34.5%)	45 (27.3%)	17 (10.3%)

$$X^2 = (8, n = 200) = 13.682, P = .090$$

Table 34 shows the chi-square of years of experience among MAMs and the trigger processes that stimulate learning. According to the table, the results of chi-square between the MAM years of experience and desire of building strong professional skills are explained below.

Among the MAMs with up to five years of experience, 6(54.5%) disagreed while 3(27.3%) agreed that desire of building strong professional skills triggered learning. Among the MAMs with six to ten years of experience, 7(29.2%) and 11(45.8%) disagreed and Agreed respectively. For those with eleven years and above experience, 49(27.3%) disagreed while 62(37.6%) also agreed that desire for building strong professional skills triggered learning. Computed chi- square results showed that, there was no significant relationship between MAMs years of experience and desire of building strong professional skills ( $X^2 = (8, n = 200) = 13.682, P = .090$ )

**Table 35: Chi-square Result of Years of Experience Attained \* Unsatisfactory Feedback from Clients**

Years of Experience	Unsatisfactory Feedback from Clients				
	SD n (%)	D n (%)	N n (%)	A n (%)	SD n (%)
Up to Five Year	1 (9.1%)	0 (0.0%)	4 (36.4%)	2 (18.2%)	4 (36.4%)
Six to Ten Years	0 (0.0%)	1 (4.2%)	1 (4.2%)	12 (50.0%)	10 (41.7%)
Eleven Years and Above	3 (1.8%)	13 (7.9%)	29 (17.6%)	63 (38.2%)	57 (34.5%)

$$X^2 = (8, n = 200) = 11.593, P = .170$$

Table 35 shows the chi-square of years of experience among MAMs and unsatisfactory feedback from client that stimulate learning. According to the table, the results of chi-square between the MAM years of experience and unsatisfactory feedback from clients are explained below.

Among the MAMs with up to five years of experience, 9.1% (1) disagreed while 54.6% (6) agreed that unsatisfactory feedback from clients triggered learning. Among the MAMs with six to ten years of experience, 4.2% (1) and 91.7% (22) disagreed and agreed respectively. For those with eleven years and above experience, 9.7% (16) disagreed while 72.7% (120) also agreed that unsatisfactory feedback from clients triggered learning. Computed chi-square results revealed that, there was no significant relationship between MAMs years of experience and unsatisfactory feedback from clients ability to fix a service requested by a client ( $X^2 = (8, n = 200) = 11.593, P = 170$ )

**Table 36: Chi-square Result of Years of Experience Attained \* Desire to Make Money**

Years of Experience	Desire to Make Money				
	SD n (%)	D n (%)	N n (%)	A n (%)	SD n (%)
Up to Five Year	0 (0.0%)	1 (9.1%)	3 (27.3%)	5 (45.5%)	2 (18.2%)
Six to Ten Years	1 (4.2%)	1 (4.2%)	6 (25.0%)	10 (41.7%)	6 (25.0%)
Eleven Years and Above	3 (1.8%)	14 (8.5%)	46 (27.9%)	74 (44.8%)	28 (17.0%)

$X^2 = (8, n= 200) = 2.181, P = .975$

Table 36 shows the chi-square of years of experience among MAMs and the trigger processes that stimulate learning. According to the table, the results of chi-square between the MAM years of experience and their desire to make money are explained below.

Among the MAMs with up to five years of experience, 9.1% (1) disagreed while 63.7% (7) agreed that desire to make money triggered learning. Among the MAMs with six to ten years of experience, 8.4% (2) and 66.7% (16) disagreed and agreed respectively. For those with eleven years and above experience, (10.3% (17) disagreed while 61.8% (102) also agreed that desire to make money triggered learning. Computed chi- square results revealed that, there was no significant relationship between MAMs years of experience and their desire to make money ( $X^2 = (8, n = 200) = 2.181, P = .975$ )

### 4.8.3 Chi-Square between Years of Experience and Choice of learning Methods

**Table 37: Years of Experience Attained \* Reflecting on Previous Experience**

Years of Experience	Reflecting on Previous Experience				
	SD n (%)	D n (%)	N n (%)	A n (%)	SD n (%)
Up to Five Year	1 (9.1%)	3 (27.3%)	2 (18.2%)	4 (36.4%)	9 (36.0%)
Six to Ten Years	2 (8.2%)	4 (16.7%)	8 (33.3%)	6 (25.0%)	23 (18.4%)
Eleven Years and Above	12 (7.3%)	15 (9.1%)	44 (26.7%)	59 (35.8%)	11 (26.8%)

$$X^2 = (8, N = 200) = 6.270, P = .617$$

Table 37 shows the chi-square of years of experience among MAMs and the choice of learning methods that stimulate learning. According to the table, the results of chi-square between the MAM years of experience and their reflecting on previous experience are explained below.

Among the MAMs with up to five years of experience, 4(36.4%) disagreed while 13(72.4%) agreed that reflecting on previous experience triggered their choice of learning methods. Among the MAMs with six to ten years of experience, 6(24.9%) and 29(43.4%) disagreed and Agreed respectively. For those with eleven years and above experience, 27(16.4%) disagreed while 70(62.6%) also agreed that reflecting on previous experience triggered their choice of learning methods. Computed chi- square results revealed that, there was no significant relationship between MAMs years of experience and their reflecting on previous experience ( $X^2 = (8, N = 200) = 6.270, P = .617$ )

**Table 38: Chi-square Result of Years of Experience Attained \* Consultation with a Mentor on Methods**

Years of Experience	Consultation with a mentor on methods				
	SD n (%)	D n (%)	N n (%)	A n (%)	SD n (%)
Up to Five Year	1 (9.1%)	2 (18.2%)	5 (45.5%)	3 (27.3%)	0 (0.0%)
Six to Ten Years	2 (8.3%)	8 (33.3%)	6 (25.0%)	3 (12.5%)	5 (20.8%)
Eleven Years and Above	18 (10.9%)	47 (28.5%)	40 (24.2%)	40 (24.2%)	20 (12.1%)

$$X^2 = (8, n= 200) = 6.660, P = .574$$

Table 38 shows the chi-square of years of experience among MAMs and the choice of learning methods that stimulate learning. According to the table, the results of chi-square between the MAM years of experience and consultation with a mentor on methods are explained below.

Among the MAMs with up to five years of experience, 27.3% (3) disagreed while 27.3% (3) agreed that consultation with a mentor on methods triggered their choice of learning methods. Among the MAMs with six to ten years of experience, 10(41.6%) and 8(33.3%) disagreed and Agreed respectively. For those with eleven years and above experience, 65(39.4%) disagreed while 60(36.3%) also agreed that consultation with a mentor on methods triggered their choice of learning methods. Computed chi- square results showed that, there was no significant relationship between MAMs years of experience and consultation with a mentor on methods ( $X^2 = (8, n = 200) = 6.660, P = .574$ )

**Table 39: Chi-square Result of Years of Experience Attained \* Consultation with Other MAMs**

Years of Experience	consultation with other MAMs				
	SD n (%)	D n (%)	N n (%)	A n (%)	SD n (%)
Up to Five Year	0 (0.0%)	0 (0.0%)	2 (18.2%)	4 (36.4%)	5 (45.5%)
Six to Ten Years	2 (8.3%)	0 (0.0%)	4 (16.7%)	6 (25.0%)	12 (50.0%)
Eleven Years and Above	5 (3.0%)	4 (2.4%)	26 (15.8%)	45 (27.3%)	85 (51.5%)

$X^2 = (8, N = 200) = 3.436, P = .904$

Table 39 shows the chi-square of years of experience among MAMs and the choice of learning methods that stimulate learning. According to the table, the results of chi-square between the MAM years of experience and their consultation with other MAMs are explained below.

Among the MAMs with up to five years of experience, 81.9% (9) agreed that consultation with other MAMs triggered their choice of learning methods. Among the MAMs with six to ten years of experience, 8.3% (2) and 75% (18) disagreed and agreed respectively. For those with eleven years and above experience, 5.4% (9) disagreed while 78.8% (130) also agreed that consultation with other MAMs triggered their choice of learning methods. Computed chi-square results revealed that, there was no significant relationship between MAMs years of experience and their consultation with other MAMs ( $X^2 = (8, N = 200) = 3.436, P = .904$ )

**Table 40: Chi-square Result of Years of Experience Attained \* Observing Other Master Automobile Mechanics at Work**

Years of Experience	Observing Other Master Automobile Mechanics at Work				
	SD n (%)	D n (%)	N n (%)	A n (%)	SD n (%)
Up to Five Year	0 (0.0%)	0 (0.0%)	6 (54.5%)	5 (45.5%)	0 (0.0%)
Six to Ten Years	1 (4.2%)	4 (16.7%)	3 (12.5%)	11 (45.8%)	5 (20.8%)
Eleven Years and Above	6 (3.6%)	13 (7.9%)	40 (24.2%)	67 (40.6%)	39 (23.6%)

$$X^2 = (8, n = 200) = 11.603, P = .170$$

Table 40 shows the chi-square of years of experience among MAMs and the choice of learning methods that stimulate learning. According to the table, the results of chi-square between the MAM years of experience and observing other master automobile mechanics at work are explained below.

Among the MAMs with up to five years of experience, 45.5% (5) agreed that observing other master automobile mechanics at work triggered their choice of learning methods. Among the MAMs with six to ten years of experience, 20.9% (5) and 66.6% (15) disagreed and agreed respectively. For those with eleven years and above experience, 11.5% (19) disagreed while 64.2% (106) also agreed that observing other master automobile mechanics at work triggered their choice of learning methods. Computed chi-square results revealed that, there was no significant relationship between MAMs years of experience and their observing other master automobile mechanics at work ( $X^2 = (8, n = 200) = 11.603, P = .170$ )

**Table 41: Chi-square Result of Years of Experience Attained \* Participating in Workshop Programmes that are Related to Learning Objectives**

Years of Experience	Choice of Learning Objectives				
	SD n (%)	D n (%)	N n (%)	A n (%)	SA n (%)
Up to Five Years	0 (0.0%)	0 (0.0%)	1 (9.1%)	4 (36.4%)	6 (54.5%)
Six to Ten Years	1 (4.2%)	3 (12.5%)	0 (0.0%)	8 (33.3%)	12 (50.0%)
Eleven Years and Above	4 (2.4%)	11 (6.7%)	22 (13.3%)	66 (40.0%)	62 (37.6%)

$$X^2 = (8, n = 200) = 7.360, P = .498$$

Table 41 shows the chi-square of years of experience among MAMs and the choice of learning methods that stimulate learning. From the table, the results of chi-square between the MAM years of experience and their choice of learning methods for their learning projects are explained below.

Among the MAMs with up to five years of experience, 90.9% (10) agreed that observing other MAMs at work helped them to determine their choice of learning methods. Among the MAMs with six to ten years of experience, 16.7% (4) and 83.3% (20) disagreed and agreed respectively.

For those with eleven years and above 9.1% (15) disagreed while 77.6% (128) also agreed that observing other experienced MAMs at work influenced their choice of learning methods. Computed chi-square results revealed that, there was no significant relationship between MAMs year of experience and observing other master automobile mechanics at work ( $X^2 = (8, N = 200) = 7.360, P = .498$ )

**Table 42: Means, Standard Deviation and Intercorrelation between Choice of Learning Methods and (Trigger Processes, Learning Objectives, Content of Learning Needs and Evaluation of Learning Methods) (n = 200)**

Variable	M	SD	I
Learning Methods	3.689	.674	-
Trigger Processes	3.577	.533	.519 ***
Learning Objectives	3.644	.625	.552***
Content of Learning Methods	3.554	.612	.599***
Evaluation of Learning Outcomes	3.799	.694	.666***

#### 4.9 Correlation

Results from the MAMs mean ratings revealed that evaluation of learning outcomes (M = 3.799, SD = .674) was rated higher followed by learning method (M = 3.689, SD = .674), learning objectives (M = 3.644, SD = .625), trigger process (M = 3.577, SD = .533) and content of learning (M = 3.554, SD = .612). Correlation analysis from Table 31 indicated that there was a positive and a large significant practical effect relationship between learning methods and trigger processes ( $r = .519$ ,  $p = .000$ ), learning objectives ( $r = .552$ ,  $p = .000$ ), content of learning ( $r = .599$ ,  $p = .000$ ) and evaluation of learning outcomes ( $r = .666$ ,  $p = .000$ ) as reported by Cohen (1988).

**Table 43: Multiple Regression Analysis between Learning Methods as Dependent Variable and Trigger Process, Learning Objectives, Content of Learning Needs and Evaluation of Learning Outcome as Independent Variables (N = 200)**

<b>Variable</b>	<b>B</b>	<b>SE</b>	<b>β</b>	<b>T</b>	<b>P</b>	<b>F</b>	<b>df</b>	<b>R<sup>2</sup></b>	<b>Collinearity</b>	<b>Tolerance VIF</b>
<b>Learning Methods</b>	.252	.245	-	1.028	.305	57.362	4 △	.531	-	-
<b>Triggered Processes</b>	.165	.081	.130*	2.037	.043				.575	1.739
<b>Learning Objectives</b>	.100	.074	.093	1.355	.177				.500	1.998
<b>Content of Learning Needs</b>	.269	.072	.245**	3.747	.000				.553	1.808
<b>Evaluation of Learning Outcomes</b>	.401	.062	.413**	6.488	.000				.581	1.722

Table 43 shows that multicollinearity were less than 1.0 and Variance Inflation Factor (VIF) values were also lower than the cut-off value of 2.5 required for smaller samples. In this view, the researcher concluded that multicollinearity was not a threat to the results of the study. The results also indicated that the regression model (trigger process, learning objectives content of learning methods and evaluation of learning outcomes) significantly explained. Large practical effect ( $R^2 = 53.1\%$ ) of the variance in the learning method variable at  $F(P) = .000$ .

The results further revealed that evaluation of learning outcomes ( $B = .413$ ;  $p \leq .000$ ), content of learning ( $\beta = .245$ ;  $p \leq .001$ ) and trigger process ( $\beta = .130$ ,  $p \leq .05$ ) contributed significantly and positively to the variance in the learning method while learning objectives ( $\beta = .130$ ;  $p = n.s$ ) did not significantly predict the learning methods adopted by the MAMs.

**Table 44: Analysis of Variance and Significant Mean Difference Between Selected Variables and Years of Experience**

Variables	Years of Exp	N	Mean	SD	Mean Square	F	df	P(two-tailed)
<b>Learning Methods</b>	≤ 5 years	11	3.636	.512	.078	.170	2	.844
	6 – 10	24	3.625	.948				
	≥ 11 years	165	3.701	.639				
<b>Trigger Processes</b>	≤ 5 years	11	3.491	.530	.75	.260	2	.771
	6 – 10	24	3.533	.672				
	≥ 11 years	165	3.589	.513				
<b>Learning Objectives</b>	≤ 5 years	11	3.564	.634	.181	.461	2	.631
	6 – 10	24	3.546	.672				
	≥ 11 years	165	3.663	.578				
<b>Content of Learning</b>	≤ 5 years	11	3.702	.477	.271	.722	2	.487
	6 – 10	24	3.443	.788				
	≥ 11 years	165	3.556	.592				
<b>Evaluation of Learning Outcomes</b>	≤ 5 years	11	3.788	.511	.196	.405	2	.667
	6 – 10	24	3.681	.943				
	≥ 11 years	165	3.817	.664				

**ANOVA**

ANOVA results from Table 43 shows that there were no significant mean differences between the years of experience of the MAM's ranging from below 5 years ( $M = 3.636$ ,  $SD = .512$ ), 6 years ( $3.625$ ,  $SD = .948$ ) and those who had 1 year and above experiences ( $M = 3.701$ ,  $SD = .639$ ) and the learning methods they determined [ $F(2, 197) = .170$ ,  $p > .05$ ].

Table 44 presents result of ANOVA on the years of working experience of the MAMs against the processes that triggered their learning project. The results indicate that there was non-existent of significant mean differences between the MAMs years of experience

that ranged from up to 5 years ( $M = 3.491$ ,  $SD = .530$ ), 6 – 10 years ( $M = 3.533$ ,  $SD = .672$ ) as well as the above 10 - 11 years ( $M = 3.589$ ,  $SD = .513$ ) and the process that triggered their learning

In Table 44 the ANOVA results on the MAMs years of working experience and content of their learning projects was presented. It was observed that the MAMs years of working experience which range below 5 years and below ( $M = 3.702$ ,  $SD = .477$ ), 6 – 10 years ( $M = 3.443$ ,  $SD = .788$ ) and above 10 – 11 years ( $M = 3.556$ ,  $SD = .592$ ) and learning content. The above results indicate that there was no significant mean differences between the two variables.

Table 44 shows the ANOVA results on the MAMs years of working experience and the evaluation of the learning outcome of their learning projects. The results in Table... depicts the following. With regards to the MAMs years of working experience those range below 5 years ( $M = 3.788$ ,  $SD = 3.788$ ,  $SD = 511$ ), 6 – 10 years ( $M = 3.681$ ,  $SD = 943$ ), above 10 – 11 years ( $M = 3.817$ ,  $SD = .664$ ) and the evaluation of learning outcome. These results suggest that between the MAMs years of working experience and the evaluation of learning outcomes the mean differences were not significant.

**Table 45: ANOVA: Significant Mean Difference Between Level of Education**

<b>Variables</b>	<b>Level of Education</b>	<b>N</b>	<b>Mean</b>	<b>SD</b>	<b>Mean Square</b>	<b>F</b>	<b>df</b>	<b>P(two-tailed)</b>
<b>Learning Methods (LM)</b>	No Formal Education	25	3.511	.714	.457	.551	3	.648
	Basic Education	125	3.662	.701				
	Secondary Education	41	3.744	.713				
	Tertiary Education	9	3.776	.555				
<b>Trigger Processes (TP)</b>	No Formal Education	25	3.444	.332	.285	.908	3	.438
	Basic Education	125	3.577	.545				
	Secondary Education	41	3.472	.618				
	Tertiary Education	9	3.668	.469				
<b>Learning Objectives (LO)</b>	No Formal Education	25	3.533	.509	.393	.478	3	.698
	Basic Education	125	3.623	.669				
	Secondary Education	41	3.624	.675				
	Tertiary Education	9	3.742	.469				
<b>Content of Learning (CL)</b>	No Formal Education	25	3.303	.653	.373	1.309	3	.273
	Basic Education	125	3.513	.589				
	Secondary Education	41	3.534	.645				
	Tertiary Education	9	3.694	.496				
<b>Evaluation of Learning Outcomes (ELO)</b>	No Formal Education	25	3.611	.717	.484	.644	3	.587
	Basic Education	125	3.768	.739				
	Secondary Education	41	3.860	.770				
	Tertiary Education	9	3.898	.463				

Table 45 shows the ANOVA test on the MAMs level of education and the learning methods. The results in Table 44 depicts the following. With regards to the MAMs level of education those with no formal education ( $M = 3.511$ ,  $SD = .714$ ), basic education ( $M = 3.662$ ,  $SD = .701$ ), senior high ( $M = 3.744$ ,  $SD = .713$ ), Tertiary ( $M = 3.776$ ,  $SD = .555$ ) and the learning method. These results indicate that between the MAMs level of education and the learning methods the mean differences were not significant.

Table 45 presents the ANOVA results on the MAMs level of education and the trigger processes. The MAMs level of education depicted the following: no formal education ( $M = 3.444$ ,  $SD = .332$ ), basic education ( $M = 3.577$ ,  $SD = .545$ ), senior high education ( $M = 3.472$ ,  $SD = .618$ ), tertiary education ( $M = 3.668$ ,  $SD = .469$ ) and trigger processes. The results in this table (Table34) shows that there was no significant mean difference.

The ANOVA results in Table 44 shows the MAMs level of education and learning objective. In the table, the MAMs level of education indicated that those with no formal education ( $M = 3.533$ ,  $SD = .509$ ), basic education ( $M = 3.623$ ,  $SD = .669$ ), senior high education ( $M = 3.624$ ,  $SD = .675$ ), tertiary education ( $M = 3.742$ ,  $SD = .469$ ) and learning objectives. The results show that the mean difference was insignificant.

Table 44 depicts the ANOVA results on MAMs level of education and learning content. The results in the Table 34 indicated that for the MAMs with no formal education ( $M = 3.303$ ,  $SD = .653$ ), basic education ( $M = 3.513$ ,  $SD = .589$ ), senior high education ( $M = 3.534$ ,  $SD = .645$ ), tertiary education ( $M = 3.694$ ,  $SD = .496$ ) and learning content. The ANOVA results on the MAMs level of education and learning content suggest that there was no significant mean difference.

## CHAPTER FIVE

### DISCUSSION OF RESULTS

#### 5.1 Introduction

This chapter discusses the results of the study in view of the objectives and research questions. The objectives of the study were as follows:

- Triggering of MAMs Learning Projects
- How MAMs determined:
  - intended learning objectives
  - content of learning projects
  - learning methods
  - Evaluation of their learning outcomes
- The relationship between MAMs educational status and:
  - Trigger processes
  - Choice of learning methods
- Relationship between the MAMs years of experience and:
  - Trigger processes
  - Choice of learning methods

#### 5.2 Triggering of MAMs Learning Projects

Learners are located within a social world where through social interactions they experience either harmony or disjuncture (Jarvis, 1995, 2007). Experiencing harmony in the course of interaction with the environment suggests no need for learning. However, the experience of any form of disjuncture, as the individual interacts with his/her environment, implies gaps in knowledge and skills and attitudes of that individual. Such situation negatively impinges on the individual's ability to cope with life's challenges.

The experience of disjuncture, therefore, exposes the needs of learner's. This serves as a trigger factor as expounded by Jarvis (2012) and provides opportunity for new learning. Disjuncture consequently drives learners to seek opportunities that will re-establish their harmony.

The results on how the learning projects of the MAMs were triggered could also be attributed to fear of ridicule and the desire to increase income through business expansion. Colleagues could ridicule each other for limited knowledge and skills, poor attitudes and low income due to inability to expand business. Other miscellaneous factors such as personal desires and professional incompetence were the least to trigger the MAMs learning processes. The results confirm Jarvis's (1995, 2007, 2012) view that social interactions naturally result in disjuncture experiences in everyday life context as opposed to the instructional setting where learning is triggered through didactic teaching/facilitation. Thus, the result on the MAMs trigger experiences is an indication of ongoing social interactions among the MAMS in their workplace settings. Such interactions may result in MAMs ridiculing their colleagues about their incompetence or inability to satisfy clients' requests.

The fear of such ridiculing by colleague MAMs triggers them to want to study/learn. Such fear of ridiculing by colleague MAMs may be so strong that it persists as long as social interactions continue among the MAMs. Jarvis (2007) reiterated such a situation and alluded to the fact that disjuncture experiences are inevitable until one disengages him/herself from associating with others; a social phenomenon that hardly exists.

It should be noted that the trigger experiences in this study; the fear of being ridiculed, among the MAMs in their workplace will be an ongoing process as long as they continue

to interact in their workplace context. Thus, MAMs cannot but continue interacting with each other at the workplace as also re-echoed by Jarvis (2012) who opines that “human being rarely act in a mindless and aimless manner – it is regarded as almost unnatural for this to occur – at least until old age (p.16)”. Jarvis (2012) further pointed out two perspectives of motivation. One is to remove uncomfortableness of disjuncture and the other is the intentionality to satisfy our desires, hopes and aspirations. Desire is something that is not self-created but created by such things as watching others who possess those things you desire. The MAMs, as a result of criticisms or ridiculing, became motivated by the desire to remove the discomfort associated with the ridicule through engagement in a learning project.

A closer look at the results on trigger experiences show some underlining combination of both social and personal influences that accounted for the creation of learning need. These two combinations are reflected in Jarvis (2012) and Illeris (2002) suggested ways by which learners experience trigger events as they interact with the external environment. To Jarvis (2012) a disjuncture may be experienced when people are alone, reflection on previous experience or through an experience gained from interacting with the natural world. These disjuncture experiences/situations may not be necessarily articulated in the form of a question yet one could develop a sense of “unknowing”. Illeris (2002) additionally indicated the following five stimuli as means through which learning could be triggered; through perception, communication, transmission, experience, imitation and activity or participation. All these supplements Jarvis (2012) view that social interactions trigger learning; a position that affirms the present result that fear of ridicule triggered that LP of the MAMs that operated in and around Odawna central garage.

In view of the workplace situations that triggered the MAMs learning experience, the

following deductions were made. With regards to the first major situation, fear of ridicule, it could be observed that this situation is related to the MAMs identity as masters which society perceives with expected responsibility and reputation. This expected responsibility and reputation is especially among MAM's clients, colleague mechanics as well as their apprentices and may be termed as the circle of family and friends. This results also confirms the Situational Learning Theory's explanation of how learning involves a change in an individual's identity and ever increasing participation in community of practice.

The result also confirms the theory that as adults assume new roles when they face new challenges and gain new experiences through learning. They learn in order to fulfil their aspirations – Knox (cited in Merriam and Caffarella, 1999); this is the proficiency learning theory. The results on trigger experiences of the MAMs learning projects additionally confirms Jarvis (2012) continuum of trigger experiences. In his continuum trigger events ranges from slight experiences to significant trigger experiences. This results of the trigger experiences of the MAMs learning projects depict the existence of significant trigger events that account for the conduct of their learning projects.

The triggering of learning ties in with one of Knowles (1975) assumptions on andragogy where he expressed the view that people become ready to learn when they experience the need to learn. For especially adult learners, Knowles (1975) shared the view that their learning needs were centred on real life task. Thus, adults learning needs are needs that help them cope better with life. Aslanian and Brickell (1980a) nevertheless hold the view that after the learner has been triggered to learn, the learner has an additional option of exercise his or her right to decide to learn or not. Jarvis (1992) demonstrated similar views when he alluded to the fact that some learners may decide to live in ignorance even after

experiencing some trigger events that are supposed to get them engaged in a learning project.

In conclusion, the MAMs engaged in learning projects as a means of changing their individual professional profiles to avoid being ridiculed for not changing with the dynamic environment of their trade. They also engaged in learning projects as means of addressing their changing workplace needs to become more responsible and be abreast with the rapid introduction of new technologies into their profession. The study has revealed, therefore, that the MAMs fear of being ridiculed by their social and business associates about their perceived incompetence and the MAMs desire to catch up with the ever changing technological advances in their working environment served as important triggers of their learning projects.

### **5.3 MAMs Determination of Intended Learning Objectives**

Adults identify the extent of learning to undertake or how much knowledge and skills to achieve before they commit themselves to their learning projects. This could be termed as analysis of learning gaps. The results of the present study revealed that the MAMs determined their objectives mostly through business interactions or consultation with specialists, especially, other MAMs who are generally more experienced. This is collaborated by Davis, Mazmanian and Fordis (2006) assertion that consultation with experts or sub-specialists provides means of identifying potential gaps in competence or performance.

Existing learning gaps may also be identified through practice guidelines. This second option was absent among the MAMs. The mother organization, Odwana Garage Owners

Association, has no such practice guidelines. The MAMs therefore made no mention of such protocol, thus indicating a sole reliance on consultations. The results also indicated some interactions with apprentices, clients and automobile service companies and others to a very minimal level. It is of no wonder that such contacts are not recorded in research findings in literature. Occasionally, the MAMs used social networks and interactions as well as media sources in their efforts to determine their learning objectives. Such sources may be termed as impulsive source because they may not be reliable, not coming from the MAMs felt deficiency. The easiest gap to identify are those relating to knowledge (Jay and Johnson, 2002).

The study's results on how the MAMs determined their learning objectives confirms how self-directed learning activities are conducted with or without the learner's initiative. This is also in support of the Situational Learning Theory (SLT) and others social learning theories (Hansman, 2002) which perceived learning as a social process where the learner interacts with others and tools within the social context. These interactions between the MAMs as self- directed learners in a real life learning environment (workplace) portrays the independent and dependent nature of learners in a learning situation. Hence, the suggestion made by Brockett and Hemstra (1991) to view self-directed learning in a continuum of independent and dependent learning. With regards to Billet's explanation of workplace learning as participatory practices, he points out that how a learner elects to participate is influenced by the learner's interest, learner's personality as well as workplace affordances. These factors help determine a learner's choice of objectives to his/her learning projects.

From the self-directed learning point of view, it could be observed that the MAMs had knowledge of the various learning resources within the learning environment (workplace)

and based on this knowledge they selected their preferred resources that could help them determine their learning project objectives. This also confirmed Knowles's (1975) self-directed learning process of the possibility of learner's self-reliance in the process of learning.

In view of the Hiemstra characteristics of the learner, the learning process the influence of the learning environment in which the learning is conducted as well as the wider society. These three elements, could be observed in the learners' choice of learning resources, the availability of learning resources within the MAMs workplace environment in which their learning projects were conducted as well as how the wider society also influences the creation of learning opportunity and providing technological means of facilitating self-directed learning. The entire results on how the MAMs determined their learning objectives also depicts Mocker and Spears (1982) lifelong learning model that depicts SDL outside instructional settings as a learning endeavour where the learners have control over their learning objectives and the means of learning. This is in direct contrast to SDL in instructional settings where learning objectives are determined by the instructional organization. It could be noted that the MAMs consultation with their colleagues in a way shows how the experiences of others which represents society influenced the MAMs determination of their learning needs and subsequently, their learning objectives.

The results also depict the view that although learning is an intense and individual activity it is also a social process (Lave and Wenger, 1991). Thus, it could be observed that the MAMs business interactions with others especially their peers in their workplace depicted some sort of social interaction. This suggests that their determination of learning objectives was not done in isolation. The social interactions observed in the MAMs

conduct of learning projects confirms Jarvis (1995), Hansman (2000) and Lave and Wenger (1991) belief that learning is a social process. This apparent since the MAMs did not source their learning objectives in isolation of the social processes.

Considering the transformation of the concept of learning as transfer of knowledge from the teacher to the learner to learning as an interaction between the teacher and the learner or interaction between learners. The result on the MAMs interactions with their colleagues was a vital element that facilitated their means of determining their learning objectives (With regard to the nature of their interactionism)

In conclusion, the study lends support and credence to the PPC self-directed learning model of Hiemtsra and Brockett (2012) and Spears' (1982) lifelong learning model. The study also confirms Lave and Wenger (1991)'s assertion that learning is a social process thereby collaborating with similar assertions by Jarvis (1995) and Hansman (2000).

#### **5.4 MAMs Determination of Content of their Learning**

Well defined goals and objectives form the foundation for selecting appropriate content, learning activities and assessment measures (FSU Handbook, 2011). Learning content determination is a way of controlling what and how people will learn and think (Gboku & Lekoko, 2007). Choosing the educational content for most adult education programmes involves selecting content in areas of knowledge, attitudes, values and beliefs and skills.

The MAMs determined their learning content mainly through interactions with their colleagues, apprentices and mentors in tapping their experiences. The use of self-experience as a means of determining their learning content was quite common as

compared to their interactions with others. However, the MAMs reliance on media and scientific gadgets in determining their learning content was not as strong or so frequently used. But it is important to note that with regard to the use of media, the MAMs mostly accessed information online as compared to other media sources like listening to radio, watching TV programmes and the use of social media.

The results confirm Fenwick's (2000) view that the social context influences the content to be learnt. In support of Fenwick's view, Jarvis (2007) opined that learning is intimately linked to the social environmental context. In other words, whatever, knowledge and skills that learners learn are related to or reflects on the social context in which the learning is conducted. Lave and Wenger (1991) also emphasized that in real world learning situations, social relationships and tools makes up the best learning environment. This is in reference to the social context.

They further elaborated that treating people as they are in a given social context adds to the situated nature of learning. This means that in learning, learners don't only collaborate with experts but they as well relate to just plain folks (refers to as "just plain folks"—those who historically and traditionally have not been counted as "experts,") who are colleague MAMs and apprentices. This assertion is in relation to some studies they conducted. In one of such studies some adults were taught how to calculate mathematical problems. They were observed and interviewed concerning how they used the same type of mathematical equations in grocery store for shopping. It was found that the grocery environment; coupons, and "in- store specials" became tools for solving mathematical problems. In this case the grocery stores and the social interactions with other shoppers or store workers were the social context for learning. Lave (1996) argues that it is not enough

to add situated contexts to learning experiences a more promising alternative lies in treating relations among people, tools, activity as they are given in social practice” (p. 7). In other words, real-world contexts, where there are social relationships and tools, make the best learning environments and contributes very much to determination of learning content.

Billet (2004) also contends that “in considering learning as participation in work, it is important to stress that engagement in and what is learnt from socially-determined practices are not determined by social practice. Instead, individuals decide how they participate in and what they construe and learn from their experience” (p. 316). It was interesting to note that participants in the present study who reported that self-experience was a source for content determination also showed that 94% successfully relied on their own self-experience whereas 6% of the group reported no confidence in relying on self-experience.

Asked about the usefulness of the experiences of others, 38% relied on mentors, 36% relied on colleague MAMs and 26% on apprentices. All these results, however, confirm further that context of learning can be influenced by others experiences, who regardless of who they are. On the issue of media, accessing media on-line was consistently the most popular. It is common nowadays for auto-mechanics to check problems on vehicles with they describe as ‘computer machines’. The machine is a small gadget that detects sources of faults and reports to the manufacturers through the internet. For such gadgets, 60% reported as reliable, whereas had no much confidence in them. The lack of confidence may relate to limited knowledge in the use of sophisticated tools.

The focus group indicated that the MAMs determined their learning content through consultation with other MAMs, mentors and apprentices. This affirms the results obtained from the interview study and collaborates the findings of Fenwick (2000), Lave and Wenger (1991) and Jarvis (2007). Discussions, so far made, indicate that the environment of the MAMs; namely, rich experiences of colleague MAMs, media information and education, electronic innovations, existing gadgets and self-experience formed the source by which the MAMs obtained the content of their learning projects.

### **5.5 MAMs Determination of Learning Methods**

The MAMs determined their learning methods mostly by consulting, particularly, their mentors and peers and also watching other MAMs at work. This process was used by approximately 58% of the population studied. Another approach often used by the MAMs to determine their learning methods of choice was through reflecting on their on-going and past experiences. Only about 6% of training programmes or workshops. It is therefore not surprising that only a few, about six percent of the MAMs, relied on formal training programmes or workshops for determining their choice of learning methods to be used for their learning projects.

The MAM population studied believed in learning from peers and mentors. This is because the results indicated that they relied mostly on experiences of their peers and mentors for their choice of learning methods for their learning projects. They trusted their colleague MAMs who have been successful and adopted their methods. According to Florea (2014), adults do not think classical method needs such as used in teaching formal courses and programmes are engaging and valuable enough. They, thus do not see routine instructional methods as used in schools and official training and learning situations as

friendly. They rather vary their learning methods based on experiences that they have had on their own or that they can gain from their mentors and colleagues as Hardy (2004) also affirms. This is quite revealing in the present study since overwhelming majority of the MAMs studied (94%) indicated that they determined their learning methods for their learning projects through experiences they enquired from their mentors and colleagues at work. They also claimed to have relied on their own past experiences and watching over methods of others as they work.

Experience therefore, seem to be a very crucial factor in the MAMs determination of their learning methods of choice when it comes to the issue of learning project procedures. Experience, according to Florea (2014) reflects on the way students conceptualise and use information in a selected pattern. In conclusion, the MAMs choice of learning methods depended on the success or failure stories about methods they have used before in similar learning situations or methods they have observed others use successfully. It is therefore an interesting revelation that the MAMs population studied determined their learning methods of choice for their learning projects based on their previous successful experiences and that of their colleagues and others they trusted.

### **5.6 Evaluation of the Learning Outcomes of MAMs Learning Projects**

Evaluation of learning outcomes is acknowledged as a crucial in a learning endeavour (Knowles; Rogers; and Brookfield). It serves as an opportunity for the learner to personally determine the achievement of the intended learning outcomes. It could also inform the learner whether there is the need for improvement or not. Thus, the evaluation process helped the MAMs to assess whether first and foremost they have gained the required knowledge with regards to the learning need that triggered the conduct of the learning project. Also to find out if the newly acquired skills are effective and efficient in their

execution of the task that previously was challenging. Finally, the evaluation learning process helped the MAMs examining the right attitude towards the learning need.

The results on the strategies employed by the MAMs in evaluating the learning outcomes of their learning projects revealed that they mostly adopted feedback from others as well as their personal ability to perform. The use of performance comparison was minimal. Furthermore, with regard to the use of feedback from others the result indicated that the MAMs mostly had feedback of their learning project outcomes mainly from their clients and colleague MAMs as compared to feedback from their apprentices. The entire results generally depict that the MAMs evaluation processes involved internal and external sources of evaluation. By this, the MAMs evaluated themselves as well as feedback from others. Butler and Winne (1995) explained that these two sources of evaluation (internal and external) act as catalyst for learning.

Butler and Winne (1995) also shared the view that feedback helped the learners to assume active role in the management of their learning. Thus, as the learners receive feedback they reflect (Jones, 2005). Feedback generally is noted to “confirm existing information, add new information, identify errors, correct errors, improve conditional application of information, and aid the wider restructuring of theoretical schemata” (Butler and Winne, 1995 cited in Topper, 2009:22). The above listed advantages suggest how effective the use of feedback can be examining the worth of a learner’s learning outcomes. It however not surprising the use of feedback was common among the MAMs.

The MAMs use of feedback from their business clients confirms Jarvis (2007)’s assertion of how learners receive feedback from society. Thus, according to him (Jarvis, 2007) the

people upon whom new knowledge, skills and attitude is practiced on either contradict or socially accept the actions of the learner. This view could be observed in the feedback the MAMs receive from their business clients. In this case, a key part of the business interaction that goes on between the MAMs and their clients is that as the MAMs provides their clients with automobile repair and maintenance services their clients directly or indirectly provides feedback on the services provided by the MAMs. Thus, the continuous feedback received from their business clients on the services provided by the MAM serves as a form of regulation of especially their new knowledge, skills and attitudes they gain through the conduct of their learning projects.

The results on the use of feedback indicated that the dependence on feedback from peers (expert peers) was one of the two major forms of feedback used by the MAMs. Similarly, it was also observed that self-regulated learners (similar to self-directed learning) often sought feedback from external sources such as their peers (Butler & Winne, 1995 cited in Lin and Carless, 2006). It was also highlighted that students preferred feedback from their peers because they give richer feedback that is open to negotiation as compared to adults whose feedback is ill-explained (Cole, 1991 cited in Topping, 2009). In other words, feedback from peers serves as information that could be used for self-assessment (Boud, 1995 cited in Lin and Carless, 2006) It is also noted that learners value feedback from people they trust (Cross, 1988). In the case of the MAMs it was obvious from the results that they trusted feedback from their peers and clients.

One of the way by which the MAMs determined their ability to perform was through teaching others (peers and apprentices). This approach of self-assessment confirms Lin and Carless (2006) assertion that one's ability to articulate or express one's knowledge is a form of learning.

### **5.7 Relationship between Demographic Characteristics and Trigger Process and Choice of Learning Methods**

From the results, it was also evident that there was a significant relationship between the MAMs educational level and their inability to fix a service requested by a client. This educational level of the MAMs who participated in the study ranged from those without formal education, those with basic education, secondary education and tertiary education. From this findings, it could be inferred that the educational levels of the individual MAMs was a major factor that could trigger learning. Education is a process of enhancing one's knowledge, skills and attitude in order to identify one's self in the society and also contribute to personal and social development (Oduro-Mensah, 2005).

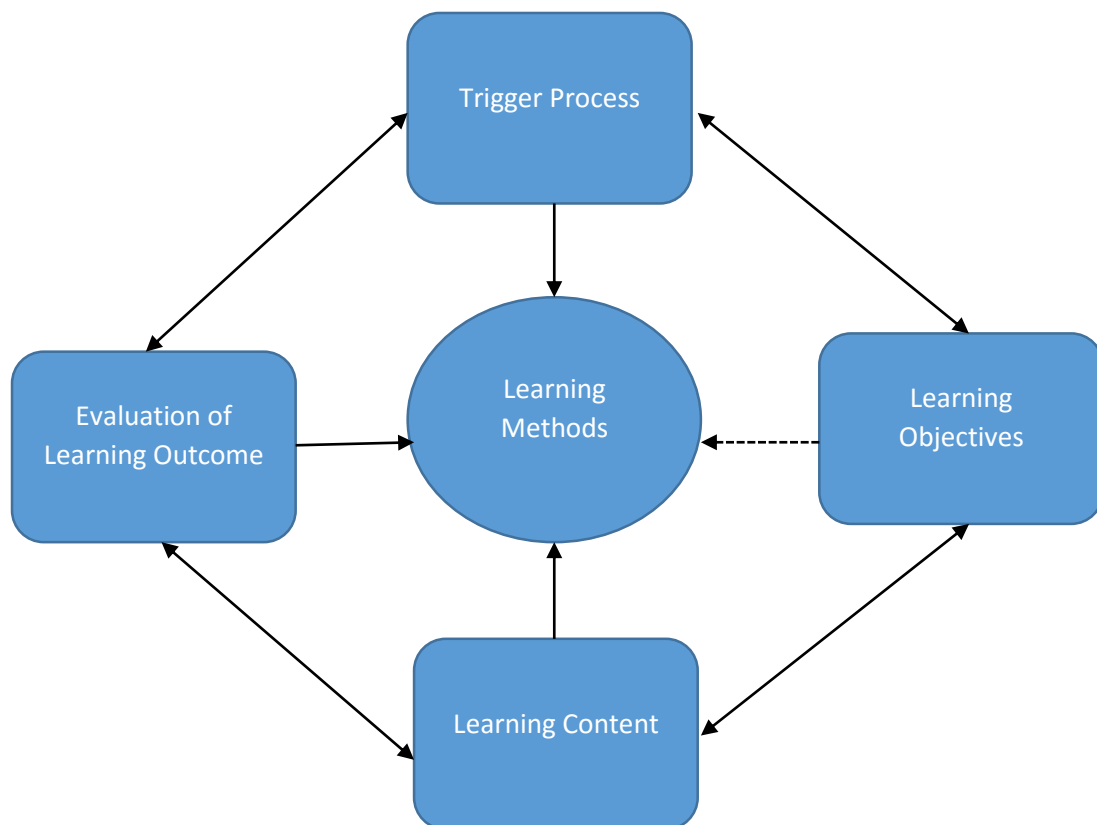
In the current changing world of business, technology is gradually influencing the conduct of work especially the automobile mechanic service industry. In relation to this, individuals no or less formal education are sometimes left behind as they struggle to deal with the acquisition of basic skills in the usage of precision gadgets for diagnosing of faults at work. In this regard, the role of formal education cannot be under estimated as it helps the individual MAMs to think critically and find solutions to challenges related to work. It is likely to help them make decisions.

On the other hand, the results showed that there was no significant relationship between the MAMs years of working experience and the trigger processes as well as their choice of learning methods. Within the automobile service industry experience is used as a basis for determining competence. This could be that as the individual spends more years on the job, the more competent the individual becomes. Interestingly, that was not the case with the present study as majority of the MAMs had eleven years of experience as masters in the automobile industry. This could therefore account for the non-significant relationship between years of experience and the choice of learning methods.

According to Tough (cited in Mocker & Spear, 1982), adult learners experiences cause a trigger to learn especially in real life context. In relation to the present study Aslanian and Brickell (1980), accounted on the role experience and trigger events that characterizes learning. The MAMs embark on learning project for immediate use of knowledge, skills and attitudes to resolve related work challenges. Although the findings from the study suggested that there was no significant relationship between years of experience against trigger process and choice of learning methods.

In summary, the results on relationships suggest indicated that the educational level of the MAMs is significant in determining their inability to fix a service requested by a client. On the other hand, as MAMs spend more years on the job, they tend to experience uniform learning methods as learning becomes diffuse with time.

### 5.8 Learning Methods Determinants



**Figure 4: Learning Methods Determinants (Author's Construct)**

The conceptual model was developed as an author's construct resulting from findings from the above with reference to table 31 and 32. The construct illustrates that there is a large practical and significant relationship between trigger processes, learning objectives, learning content and evaluation of learning outcome. From the study, it was observed that trigger processes, learning content and evaluation of learning outcome predicted learning method while learning objectives did not significantly predict the variable in the learning method.

### **5.9 Conclusion**

Discussions in this chapter has logically related the results of the study to existing literature and has arrived at findings that address the problem that guided the entire research endeavour.

## CHAPTER SIX

### SUMMARY, CONCLUSION AND RECOMMENDATIONS

#### 6.1 Introduction

Chapter six gives a summary of the study; statement of the problem, objectives, methods of data collection, data analysis and research findings. Furthermore, the chapter draws a conclusion, makes recommendations and provides suggestions for further studies. The purpose of the study was to find out the processes that take place as learning projects are undertaken among the MAMs of Odawna, when seeking new knowledge, skills and attitude to become abreast with technological innovations in the automobile industry.

The objectives of the study were to find out:

1. How the learning projects among the MAMs were triggered.
2. How the MAMs determined:
  - i. Their intended learning objective
  - ii. The content of their learning.
  - iii. The learning methods of choice.
  - iv. The evaluation processes of the learning outcomes of their learning projects.
3. The relationship between the MAMs educational status and:
  - i. The processes that trigger learning projects
  - ii. Their choice of learning methods

The relationship between the MAMs years of experience and:

- iii. The processes that trigger learning projects
- iv. Their choice of learning methods

Literature was reviewed in relation to the phenomena under study. The study adopted the pragmatic approach in addressing the research problem. This was because this philosophical stance embraces views from both the positivist and post-positivist paradigm in order to address a research problem. In so doing, the research problem is addressed by converging numeric trends from quantitative data and specific details from qualitative data. The small-scale master automobile mechanics of Odawna with two or more years of continuous working experience were targeted as the population of the study. A sample of 215 respondents were used for the study. The sample represents 27% of the total population. Out of the 215 sample, 200 of the respondents were used for the quantitative part of the study.

Survey research design was used to describe some aspect and characteristics of the population with regard to the descriptive nature of the study and the relatively large number of the master automobile mechanics under study, the survey research design was adopted for primary data collection. The flexible nature of the survey design method in collecting data allowed the researcher to gather data both quantitatively and qualitatively. This enabled the researcher to address the research question comprehensively. Data was further analyzed quantitatively and qualitatively using both tables and narratives. Discussion of results in relation to literature followed. The findings were presented thereafter.

## **6.2 Major Findings of the Study**

The major findings of the study were that:

1. The MAMs were triggered into undertaking learning projects mainly for fear of being ridiculed by their social and business associates over their perceived incompetency and inability to catch up with technological advances in their trade.

2. The MAMs determined their desired learning objectives through interactions with colleagues and clients and also through visits of automobile service companies to their workplaces.
3. The content of the MAMs learning projects were obtained from their environment; rich experiences of their colleague MAMs, media information and education, electronic innovations on vehicles, existing gadgets and through self-experience.
4. Learning methods adopted by the MAMs for their learning projects depended on their own previous successful experiences, the experiences of their colleagues and others they trusted.
5. The MAMs evaluated their learning projects through feedback from colleague MAMs, clients, social contacts and their personal ability to perform or satisfy clients' requests.
6. The educational level of the MAMs is significant in determining their ability to fix a service requested by a client.
7. The MAMs level of education was directly related to the frequency of consultation with their colleagues.
8. The MAMs years of working experience do not determine the processes that trigger their learning projects.
9. The MAMs years or working experience does not determine their choice of learning methods
10. MAMs exhibit uniform learning methods as they spend more years on the job.

### **Other Findings Related to the Study**

A Multiple Regression Analysis between learning Methods as Dependent Variable and Trigger Process, Learning Objectives, Content of Learning and Evaluation of Learning Outcomes as Independent Variables showed that multicollinearity were less than 1.0 and Variance Inflation Factor (VIF) values were also lower than the cut-off value of 2.5 required for smaller samples. In this view, it is concluded that multicollinearity was not a threat to the findings of the study. The findings also indicated that the regression model (trigger process, learning objectives coefficient of learning needs and evaluation of learning outcomes) significantly explained large ( $R^2 = 57.4\%$ ) practical effect of the variance in the learning method variable at  $F(P) = .000$ .

Further findings revealed that evaluation of learning outcomes ( $B = .413$ ;  $p \leq .000$ ), content of learning needs ( $\beta = .245$ ;  $p \leq .001$ ) and trigger process ( $\beta = .130$ ,  $p \leq .05$ ) contributed significantly and positively to the variance in the learning method while learning objectives ( $\beta = .130$ ;  $p = n.s$ ) did not significantly predict the learning methods adopted by the MAMs.

Furtherance to the findings, the MAMs mean ratings revealed that evaluation of learning outcomes ( $M = 3.799$ ,  $SD = .674$ ) was rated higher followed by learning method ( $M = 3.689$ ,  $SD = .674$ ), learning objectives ( $M = 3.644$ ,  $SD = .625$ ), trigger process ( $M = 3.577$ ,  $SD = .533$ ) and content of learning need ( $M = 3.554$ ,  $SD = .612$ ). Correlation analysis from the study revealed that there was a positive and a large significant practical effect relationship between learning methods and trigger processes ( $r = .519$ ,  $p = .000$ ), learning objectives ( $r = .552$ ,  $p = .000$ ), content of learning needs ( $r = .599$ ,  $p = .000$ ) and evaluation of learning outcomes ( $r = .666$ ,  $p = .000$ ) as reported by Cohen (1988).

ANOVA results from the study explained that there were no significant mean differences between the year's experiences of the MAM's ranging from below 5 years ( $M = 3.636$ ,  $SD = .512$ ), 6 – 10 years ( $3.625$ ,  $SD = .948$ ) and those who have 1 year and above experiences ( $M = 3.701$ ,  $SD = .639$ ) and the learning methods they determined [ $F(2, 197) = .170$ ,  $p > .05$ ]. The results indicated that there was non-existent of significant mean differences between the MAMs years of experience that ranged from up to 5 years ( $M = 3.491$ ,  $SD = .530$ ), 6 – 10 years ( $M = 3.533$ ,  $SD = .672$ ) as well as the above 10 - 11 years ( $M = 3.589$ ,  $SD = .513$ ) and the process that triggered their learning.

It was brought to bear that there was no significant mean differences between the two variables as indicated as that the MAMs years of working experience which range below 5 years and below ( $M = 3.702$ ,  $SD = .477$ ), 6 – 10 years ( $M = 3.443$ ,  $SD = .788$ ) and above 1011 years ( $M = 3.556$ ,  $SD = .592$ ) and learning content.

Furtherance to the findings as unearthed from the study, MAMs years of working experience and the evaluation of learning outcomes the mean differences were not significant as depicted as; those range below 5 years ( $M = 3.788$ ,  $SD = 3.788$ ,  $SD = 511$ ), 6 – 10 years ( $M = 3.681$ ,  $SD = 943$ ), above 10 – 11 years ( $M = 3.817$ ,  $SD = .664$ ) and the evaluation of learning outcome.

The MAMs highest level of education and the learning methods, the mean differences were not significant. As shown as MAMs highest level of education those with no formal education ( $M = 3.511$ ,  $SD = .714$ ), basic education ( $M = 3.662$ ,  $SD = 701$ ), senior high ( $M = 3.744$ ,  $SD = .713$ ), Tertiary ( $M = 3.776$ ,  $SD = .555$ ) and the learning method.

The MAMs level of education depicted the following: no formal education (M = 3.444, SD = .332), basic education (M = 3.577, SD = .545), senior high education (M = 3.472, SD = .618), tertiary education (M = 3.668, SD = .469) and trigger processes. The results therefore showed that there was no significant mean difference.

Also, the study found out that the significant mean difference was insignificant. From the study, the MAMs highest level of education indicated that those with no formal education (M= 3.533, SD = .509), basic education (M= 3.623, SD = .669), senior high education (M = 3.624, SD = .675), tertiary education (M = 3.742, SD = .469) and learning objectives.

Last but not the least, ANOVA results on the MAMs highest level of education and learning content suggest that there was no significant mean difference. The findings from the study indicated that MAMs with no formal education (M = 3.303, SD = .653), basic education (M = 3.513, SD = .589), senior high education (M = 3.534, SD = .645), tertiary education (M = 3.694, SD = .496) and learning content.

### **6.3 Conclusion**

In studying the processes that characterized the learning projects of Master Automobile Mechanics in Odawna, in the Greater Accra Region of Ghana, the study came into conclusion that the processes involved were multi-faceted. The MAMs were triggered to undertake Learning Projects for fear of being ridiculed by their colleagues, social and business associates about their own perceived and real incompetency. The incompetency is translated into desire to catch up with the technological innovations that characterize the automobile industry, as most of the acquired skills of the MAMs become redundant as often as new models and brands were introduced. The trigger factors influenced the

choice of methods used by the MAMs for their LPs. As the MAMs make effort to overcome these identified challenges that trigger them to undertake learning projects, they turn to their own experienced colleagues, apprentices, clients, available automobile mechanics training centres and their previous experiences with challenges to determine their objectives, contents, methods and evaluation. The level of education of the MAMs could influence their ability to satisfy client's requests. The experiences of the MAM's influenced their trigger factors but not their learning methods ability to satisfy clients requests but do not influence the undertaking learning projects. It requires that all MAM's seek to update their knowledge, skills and attitude from time to time to stay relevant to their clients and perform the service duties required of them.

#### **6.4 Recommendations**

In view of the findings of the Study, the following recommendations were made:

- The findings on the processes that triggered the MAMs LPs indicated that the fear of being ridiculed by their social and business associates about their incompetence triggered their learning. Based on this, the study recommends that relevant training programmes be designed and used as a learning opportunity to trigger the MAMs to undertake learning projects to enhance their professional skills.
- The findings on how the MAMs determined their learning objectives suggests that their learning objectives were determined in consultation with their other MAMs. It is therefore recommended that more field experts in the Automobile service industry should be allowed to run workshops to facilitate informed learning objectives among the MAMs.
- The findings on how the MAMs determined their learning content

indicated that they relied on their personal experiences and interaction with their colleague MAMs, the media, and gadgets within their workplace to obtain their learning content. The study recommends the provision of computer skills training programmes to enable them interact more with technological gadgets.

- The findings on the how the MAMs determined the learning methods for their learning projects indicated that it was done through consultation with other MAMs and their mentors. It is recommended that more training programmes on learning methods should be organized to update MAMs knowledge about current learning strategies that could be used for their learning projects.
- The findings on the evaluation strategies that the MAMs used indicated that they mostly used feedback from clients and their ability to perform. More training programmes on evaluation strategies should be organized for the MAMs to enhance their evaluation strategies for their learning projects.

## **6.5 Implications for Adult Education Research and Practice**

There is a growing interest in learning across all fields the world-over. This happens, especially, among people the society classifies as adults. Studies into different kinds of learning is much on the increase as individual adults seek to engage in forms of learning with regards to reasons that suit best the circumstances that they find themselves in. The findings of this study call for:

- The strengthening of research into “What characterizes learning process among Master craftsmen at artisanal centres.

- Adult educators must focus on self-directed learning which is a key pillar in Adult Education research and practice.
- More research in Adult Education should be focused on learning processes undertaken by adults as they seek to improve their knowledge, skills and practice.
- Adult educators attention must be drawn to the need for considering learning models affirmed in this study so as to strengthen adult education practices in the field.
- Adult educators need to renew interest in studies in learning projects.

## **6.6 Contributions to Knowledge**

1. A model (Learning methods determinants Model) has been developed to show how choice of learning methods is influenced by related factors (Trigger processes, learning objectives, outcomes and content) under informal learning situations.
2. The study has revealed that trigger factors, learning outcomes and learning content significantly influence learning methods; whereas learning objectives have no significant influence on choice of learning methods.
3. A finding has been made that learner characteristics (person), learning processes and learning context influence self-directed learning of an individual.
4. The findings of the study have revealed that in self-directed learning outside formal instructional learning, learners are capable of exercising

control their own objectives and means of learning (methods).

5. The finding that learning, as occurred among the MAMs, occurs in social context.

This finding corroborates findings earlier made by Lave and Wenger (1991), Jarvis (1995) and Hansman (2001); thus contributes to the strengthening of their ideas.

6. Level of education has significant relationship with the Master Automobile Mechanics ability to satisfy clients' requests but does not relate to other trigger variables.
7. Years of experience has no significant relationship with processes of MAMs learning projects.
8. The findings of the study have contributed to literature on learning projects.

### **6.7 Suggestion for Further Research**

Based on some sections that were not captured in the study, the researcher suggests a further study into the following areas:

- Individual specialization and factors that characterize learning process.
- Use of ICT by MAMs in their learning and trade practices.
- Qualitative study of educational activities of MAMs.
- Factors that account for choice of methods of learning among MAMs.
- The influence of cultural practices on the wider socio-cultural context on the learning projects among MAMs.

## REFERENCES

- Abdullah, M. M. B., Koren, S. F. Muniapan, B., Parasuraman, B., Rathakrishnan, B. (2008). Adult Participation in Self-Directed Learning Program *International Educational Studies* 1 (3) 66-72.
- Alan, R. (2014). *The Base of Iceberg. Informal Learning and its Impact on formal and Non- formal Learning*. Berlin: Budrich.
- Aslanian, C. B., & Brickell, H. M. (1980a). *Americans in transition: Life changes as reasons for adult learning*. New York: College Entrance Examination Board.
- Babbie, E. (2005). *The Basics of Social Research* (3rd). Canada: Thomas Wadsworth.
- Bear, A. A. G. (2012). Technology, learning and individual differences. *Journal of Adult Education*.
- Beard, C., & Wilson, J. P. (2002). *The Power of Experiential learning: A Handbook for Trainers and Educators*. London: Kogan Page.
- Brandon, D. (2013). *Intuition for Beginners: Easy Ways to Awaken Your Natural Abilities*. Minnesota: Llewellyn.
- Brink, H., Vander Walt C., and Van Rensburg, G. (2006). *Fundamentals of Research Methodology for Healthcare Professionals* (2<sup>nd</sup> ed) Cape Town: Juta & Co Ltd.
- Brockett, R. G. & Hiemstra, R. (1991). *Self-direction in adult learning: Perspectives on theory, research and practice*. London: Routedledge.
- Brookfield, S. (1985). The continuing educator and self-directed learning in the community. *New Directions for Continuing Education*. (25), San-Francisco: Jossey Bass.
- Brown, A. (2001). *Bulletin: Self-Directed learning at work*. Warwick: Institute of employment research.
- Brown, J., Collins, A., & Duguid, P. (1989). Situated cognition and culture of learning. *Educational Researcher*. 18(1), 32-42.
- Caffarella, R. S. (1994). *Planning programmes for adult learners*. San-Francisco: Jossey-Bass.
- Caine, R. (2008). How Neuroscience Informs Our Teaching of Elementary Students. In S. R. Parris (Ed). *Comprehension Instruction: Research – Based Best Practices*. New York: The Guliford Publication Incorporated.

- Candy, P. C. (1991). *Self-direction for Lifelong Learning*. San Francisco: Jossey-Bass.
- Christensen, G. (2016). Situated Learning – Beyond Apprenticeship and Social Constructionism 125- 42. Denmark: University Press of Southern Denmark.
- Coakley, J. J. and Dunning, E. (2002). *Handbook of Sports Studies*. London: Sage Publications
- Cohen, J. (1988). *Statistical Power Analysis for the Behavioral Sciences*. New York: Routledge Academic.
- Cross, K. P. (1981). *Adult as Learners* San-Francisco: Jossey Bass.
- Culligan, N. (2005). Theoretical understandings of adult literacy: A literature review. *Adult literacy and employment in Wanganui*. Publishers
- Davis, D. A. Mazmanian, P. E., and Fordis, M. (2006). Accuracy of physician self-assessment in health profession training. *JAMA*. 296: 1094 – 1102
- Delors, J. (2013). *UNESCO Four Pillars of Education*. New York: UNESCO.
- De Placco, V, M N. & De Souza, V. L. T. (2011). Education Processes of the Teacher as an apprentice. In M. Chaib, B. Danermark & S. Selander (Eds). *Education, Profession and Social Representations: On the Transformation of Social Knowledge*. New York Taylor and Francis. *Education*. Vol. 44 (2) 27-42.
- Edunyah, I. (2015). Technology and modern automobile industry – challenges and opportunities for roadside mechanics in Ghana. *International Journal of Scientific Research and Innovative Technology*. 6 58 – 63.
- Ellinger, A. D. (2004). The Concept of self-directed learning and its implications for human *Resource Development Advances in Developing Human Resources*. 6 (2) 158 – 177 London:Sage – Publication.
- Eraut, M. (2004). Informal learning in the workplace. *Studies in Continuing Education*. 26 (2) London: Taylor and Francis Group.
- Fenwick, T. (2000). “Expanding conceptions of experiential learning.” *Adult Education Quarterly*, 50(4), 243–272.
- Fin, D. (2011). Principles of adult learning: An ESL context. *Journal of adult education*. 40, 34-39.
- Freankel, J. R. & Wallen, N. E. (2003). *How to Design and Evaluate Research in Education*. San Francisco:
- Garrison, D. R. (1997). Self-directed learning: Towards a Comprehensive Model, *Adult Education Quarterly*, 48 (1) 18 – 29.

- Gawande, V. & Al-Senaidi, S. (2015). Situated learning: Learning in a contextual environment. *International journal of computing academic research*. 4(4), 207-213 MEACSE.
- Gboku, M. & Lekoko, R. N. (2007). Developing programmes for adult learners in Africa. *African Perspectives on Adult Learning*. UNESCO Institute for Lifelong Learning. Hamburg
- Gessler, M. (2009). Situated learning and cognitive apprenticeship. *International handbook for the changing world of work*. 1611-1625.
- Godwin, C. (2009). *Handbook of Psychology: Methods and Designs*, Wiley.
- Goswami, U. (2011). Inductive and Deductive Reasoning. *Handbook of Childhood Cognitive development* 399-419.
- Guo, S. (2010). Book Review: Jarvis, P. (2006) *The lifelong learning and the learning society trilogy, Vol 1-3. Adult Education Quarterly* 60: 207. London: Sage.
- Gravetter, F. J. and Forzano, L. B. (2009). *Research Methods for Behavioral Sciences*. Belmont, C. A.: Wadsworth Cenage Learning.
- Gurecks T. M. & Markant, D. B. (2012). Self-Directed learning: A cognitive and computational perspective. *Perspectives on psychological science*. 7 (5) 464 481. Sage Publication
- Handley, K., Clark, T., Fincham, R., & Sturdy, A. (2007). Researching situated learning participation, identity & practices in client – consultant relationships. *Management Learning*. 38(2): 173-191. Los Angeles: Sage Publication.
- Hansman, C. A. & Wilson, A. L. (2002). Paper presented at annual meeting of the adult research conference.
- Harking, J., Turner, G., & Dawn, T. (2001). *Teaching Young Adults: A handbook for Teachers in Compulsory Education*. New York: Routeledge Falmer.
- Hiemstra, R. (1994). Self-Directed learning. In T. Husen & T. N. Postlethwaite (Eds). *The encyclopedia of education (Second Edition)*. Oxford: Pergamon Press.
- Hiemstra, R. and Brockett, R. G. (2012). Reframing the meaning of self-directed learning: An updated model. *Proceedings of the 54<sup>th</sup> Annual Adult Education Research Conference* Saratoga Spring, 45, 155-161.
- Houle, C. O. (1961). *The Inquiring Mind*. Madison: University of Wisconsin Press.
- [https://lincs.ed.gov/sites/default/files/11\\_TEAL\\_Adult\\_Learning\\_Theory.pdf](https://lincs.ed.gov/sites/default/files/11_TEAL_Adult_Learning_Theory.pdf) assessed 31st May, 2018.

- Illeris, K. (2007). *How We Learn: Learning and Non-Learning in School and Beyond*. London: Routledge.
- Illeris, K. (2009). *A comprehensive understanding of human learning. Contemporary Theories of Learning*. London: Taylor and Francis
- Jarvis, P. (1995). *Adult and continuing education: Theory and practice* (2<sup>nd</sup> ed.). London: Routledge.
- Jarvis, P. (2004). *Adult Education and Lifelong learning* (3<sup>rd</sup> ed) New York: Routledge.
- Jarvis, P. (2006). *The lifelong learning and the learning society trilogy*,
- Jarvis, P. (2007). *Globalisation, lifelong learning and the learning society: Sociological perspectives*. Vol.2 Abingdon: Routledge.
- Jarvis, P. (2012). *Learning from everyday life*. Vol. 1(1), 1-20
- Jay, J. K. & Johnson, K. L. (2002). *Capturing complexity. Teaching and teacher education*. 18(1), 73 – 85.
- Kasworm, C. E. & Marienau, C. A. (1997). *Principles for assessment of adult learning. New Directions for Adult and Continuing Education*. No. 75, 5-16 San-Francisco: Jossey- Bass Publishers.
- Kiely, R., Sandmann, L. R. & Truluck, J. (2004). *Adult learning theory and pursuit of adult degrees. New Directions for Adult and Continuing Education*. No. 103. : Wiley Periodicals, Inc.
- Knapper, C. (2006). *Lifelong learning means effective and sustainable learning: reasons, ideas, concrete measures*. 25<sup>th</sup> International Course on Vocational Training Education in Agriculture.
- Knowles, M. S. (1975). *Self-directed learning: A guide for learners and teachers*. Chicago: Follet Publishing Company
- Knowles, M. (1975). *Self-directed Learning*, New York: Association Press.
- Knowles, M. S. (1980). *The modern practice of adult education: From pedagogy to andragogy*. New York: Cambridge University Press.
- Knowles, M. S. (1990). *The Adult Learner: A Neglected Species*. 4<sup>th</sup> ed Houston, TX: Gulf Publishing
- Knowles, M.S., Holton III, E. F. & Swanson, R. A. (2005). *The adult learner: The definitive classic. Adult education and human resource development* (6<sup>th</sup> edn), San Diego: Elsevier.
- Kolb, D. (1984). *Experiential Learning*. New Jersey: Englewood Cliffs.

- Kungu, K. & Machtmes, K. (2009). Lifelong learning: Looking at triggers for adult learning. *The international journal of learning*, 16 (7), 501 – 511.
- Laal, M. & Salamati, P. (2012). Lifelong learning: Why do we need it? *Procedia- Social and Behavioral Sciences*. Vol. 31 399- 403. : Elsevier Ltd.
- Larizable, A. S. (1998). *Foundations of Education: Psychological, Sociological and Anthropological*. Philippines: Queen City Press.
- Lave, J. (1996). The Practice of Learning In S. Chaiklin and J. Lave (eds) *Understanding Practice: Perspective on Activity and Context* 3-34 Cambridge, UK: Cambridge University Press.
- Lave, J. & Wenger, E. (1991). *Situated Learning*. Cambridge University Press.
- Lave, J. & Wenger, E. (1990). *Situated learning: Legitimate peripheral participation*. Cambridge UK: Cambridge University Press.
- Le Clus, M. (2011). Informal learning in the workplace: a review of literature. *Australian Journal of Adult Learning*.
- Lindeman, E. C. (1982). *The Meaning of adult education*. New York: New Republic.
- Livingstone, D. W. (2001). Adult's informal learning: Definitions, finding gaps and future research *wall working paper*. No. 21.
- Mackeracher, D. (2004). *Making Sense of Adult Learning*. (2<sup>nd</sup> Edn). Toronto: University of Toronto Press Incorporated.
- Mandl, H. & Kopp B. (2005). Situated Learning: Theories and Models. In P. Nentwig and D. Waddington (eds) *Making it relevant Context based of Learning Science*. Munster: Waxmann.
- Manning, G. (2007). Self-directed learning: A key component of adult learning theory. *Journal of the Washington Institute of Chinese Studies*. Vol. 2 No. 2
- Merriam, S. B. & Caffarella, R. S. (1999). *Learning in adulthood: A comprehensive guide* (2<sup>nd</sup> ed.). San Francisco: Jossey- Bass Publishers.
- Merriam, S. B., Caffarella, R. S. & Baumgartner, L. M. (2012). *Learning in Adulthood: A Comprehensive Guide*. (3<sup>rd</sup> Edn). John Wiley & Sons.
- Merriam, S. B. (2001). Pillars of adult learning theory. *New directions for adult and continuing. Education*. No. 89. 3-14. San-Francisco: Jossey Bass Publishers.
- Merriam, S. B. (2008). Adult learning theory for the twenty-first century. *New Directions for Adult and Continuing Education*. No. 119, 93-98. Wiley Periodicals.

- Metens, D. M. (2010). *Research and Evaluation in Education and Psychology: Integrating Diversity with Qualitative, Quantitative and Mixed Methods*. (3<sup>rd</sup> ed). Thousand Oaks: Sage Publications.
- Mezirow, J. (2003). *Transformational Learning*, 1 (1), 58-63.
- Miller, M. A. & Stoeckel, P. R. (2016). *Client Education: Theory and Practice* (2<sup>nd</sup> ed) Jones and Bartlett Learning.
- Miller, N. & Boud, D. (1996). *Working with Experience: Animal Learning*. New York: Routledge.
- Mocker, D. W. & Spear, G. E. (1982). Lifelong learning: Formal, non-formal, informal and self-directed. *Information series* No. 241 Columbus: Eric clearinghouse on adult, career and vocational education, the national centre for research in vocational education, the Ohio State University (eric document reproduction service No. ED 220 723).
- Module 3 Evaluation in Adult Education.
- Nasri, N. M. & Mansor, A. N. (2016). Teachers Educators' Perspectives on the Sociocultural Dimensions of Self-Directed Learning. *Creative Education* 2755-2773.
- Neuman, W. L. (2014). *Social Research Methods: Qualitative and Quantitative Approaches*. (7<sup>th</sup>ed) Edingburg: Pearson.
- Ocloo, C. E. Akaba, S. & Worwui-Brown, D. K. (2014). Globalisation and competitiveness: Challenges of small and medium enterprises in Accra, Ghana. *International Journal of Business and Social Science*. 5(4) 285-296
- Olaniran, S. O. (2016). Revisiting UNESCO Four Pillars of Education and its Implications for the 21<sup>st</sup> Century Teaching and Learning. First Teaching and Learning Conference
- Rasimiyanto, Saleh, M., Mujiyanto, J. & Shofwan, A. (2017). Andragogy and pedagogy: Learning method orientation for EFL adult learners. *Asian Journal of Educational Research*. Vol.5 32-41. Publishers
- Roberson, D. N. & Merriam, S. B. (2005). The self-directed learning process of older rural Adults *Adult Education Quarterly*. Vol. 55 (4) 269 – 278. American association for adult and continuing education.
- Rogers, C. R. (1969). *Freedom to Learn* Columbus, OH: Merrill.

- Rogers, C. (2002). 'The interpersonal relationship in the facilitation of learning' in R. Harrison, F. Reeve, A. Hanson and J. Clarke (eds) *Supporting Lifelong Learning* Vol. 1 Perspectives on Learning, London: Routledge- Falmer and Open Union 25 – 39.
- Sawatsky, A. P., Ratelle, J. T., Bonnes, S. L., Egginton, J. S. & Beckman, T. J. (2017). A model of SDL in internal medicine residency: A qualitative study using grounded theory. *Bio Med Medical Education*.
- Scriven, M. (1991). *Evaluation Thesaurus*. 4<sup>th</sup> Newbury Park: Sage Publication.
- Self-Directed Learning at Work Institute for Employment Research.
- Shi, H. (2017). Planning effective educational programmes for adult learners. *World of Education*. 7(3), 79 – 83.
- Smith, C. (2016). Self-Directed learning: A toolkit for practitioners in a changing higher education context. *Innovations in Practice* 10 (1) 15-26.
- Song, L. & Hill, J. R. (2007). A conceptual model for understanding self-directed learning in online environments. *Journal of Interactive Online Learning Environment*. 6(1) 27- 42
- Stein, D. (1998). Situated learning in adult education. [http://www.ericdigest.org/1998-3/adult education.html](http://www.ericdigest.org/1998-3/adult%20education.html). Accessed 5/06/2018.
- Stroot, S. A. & (2006). Introduction of Beginning Physical Education Teachers into Setting. In Kirk D., Macdonald D. and O' Sullivan M. (eds) *The Handbook of Physical Education* London: Sage Publication.
- Taylor, M. C. (2006). Informal adult learning and everyday literacy practices. *Journal of Adolescent and Adult Literacy*. Vol. 49. No. 6 Pp 500 – 509. Wiley
- Tennant, M. (2006). *Psychology and adult learning*. New York: Routededge.
- Topping, K. (2009). Peers Assessment, *Theory into Practice* 48: 20-27.
- Tough, A. M. (1979). *The adult learning projects* (2<sup>nd</sup> ed.). Toronto: Ontario Institute for Studies in Education.
- Vaughan, K. (2008). Workplace learning: A literature review report prepared for competenz. New Zealand Council for Educational Research.
- Weiten, W., Dun, D. & Hammer, E. Y. (2012). *Psychology to Modern Life: Ajustments in the 21<sup>st</sup> Century*
- Wenger, E. (2011). *Communities of Practice: A brief Introduction*, Watertown MA: Harvard Business Press.

Zeichner, & Liston, (1996). Reflective teaching: An introduction. Mahwah, New Jersey:  
Lawrence Erlbaum.

## APPENDICES

### Appendix I: Interview Schedule For The Small-Scale Master Automobile Mechanics Of Odawna

#### SECTION A: Biographical Data

9. What is your level of education?

a) No formal education [ ]

b) Primary School [ ]

c) Junior high

School [ ]

Senior High

School [ ]

d) Tertiary Education [ ]

e) If there are others please specify

.....

10. How many years of experience have you attained as a master automobile mechanic?

a) Up to five years [ ]

b) six to ten years [ ]

c) Eleven years and above [ ]

#### Section B (1): Trigger Events

11. What situations at your workplace trigger your undertaking of a learning project? (Please tick as many as applicable)

a) Inability to fix a service requested by a client [ ]

b) Manufacturers introduction of new versions of an automobile model [ ]

c) When manufacturers release new brands of automobiles [ ]

- d) High demand for a specific skill (service) [ ]
  - e) Unsatisfactory feedback from clients [ ]
  - f) Fear of losing clients [ ]
  - g) Preservation of reputation as a master automobile mechanic [ ]
  - h) Desire of building strong professional skills [ ]
  - i) Desire of expanding business [ ]
  - j) Desire to make money [ ]
  - k) Mention other situations if any
- .....

**SECTION B (2) TRIGGER EVENTS LIKERT SCALE**

**Trigger Processes of Learning and MAMs Responses**

<b>Trigger Events of Learning Projects</b>	<b>DS</b>	<b>D</b>	<b>N</b>	<b>A</b>	<b>SA</b>
Inability to fix a service requested by a client					
Manufacturers introduction of new versions of an automobile model					
When manufacturers release new brands					
High demand for specific skills or service					
Desire of expanding business					
Fear of losing clients					
Preservation of reputation as a master automobile mechanic					
Desire of building strong professional skills					
Unsatisfactory feedback from clients					
Desire to make money					

*SD=Strongly Disagree, D=Disagree, N=Neutral, A=Agree, SA= Strongly Agree*

### Section C (1): Learning Objectives

12. How do you arrive at the learning objectives of your learning projects? (Please tick as many responses where applicable)

- a) Personal experience [ ]
- b) Interaction with clients [ ]
- c) Interaction with other master automobile mechanics at workplace/outside your workplace[ ]
- d) Interaction with apprentices[ ]
- e) Through Garage Association Meetings [ ]
- f) Visits to workplace by Automobile Service Companies [ ]
- g) Through related radio discussion programmes[ ]
- h) Through watching of related T.V programmes [ ]
- i) Through browsing of the internet [ ]
- j) Through social networking [ ]
- k) Please, specify others if any

**SECTION C (2): Sources of MAMs Learning Objectives and their**

**Responses Likert Scale**

<b>Sources of Learning Objectives</b>	<b>SD</b>	<b>D</b>	<b>N</b>	<b>A</b>	<b>SA</b>
Personal Experience					
Interaction with clients					
Interaction with colleague master automobile mechanics					
Interaction with apprentices					
Through garage association meetings					
Visits to workplace by automobile service companies					
Through related radio discussion programs					
Through watching related T.V programs					
Through browsing of the internet					
Through social networking					

*SD=Strongly Disagree, D=Disagree, N=Neutral, A=Agree, SA= Strongly Agree*

**SECTION D (1): Sources of MAMs Learning Content**

13. How do you determine what you need to learn (content) in order to achieve your objectives?

(Please tick as many as applicable)

***a). Self-Experience:***

- i.* From the extent of difficulties being encountered at the workshop [  ]b).

***Experience of Others:***

- i.* Through consultation with mentor/ experts [  ]
- ii.* Through discussions with other master automobile mechanics [  ]
- iii.* Through discussion with my apprentices at work [  ] c). ***Media:***

- i. By listening to related radio programmes [ ]
- ii. By watching related Television programmes [ ]
- iii. Accessing online information through the use of mobile phone/personal computer software [ ]
- iv. Through the use of a social network platform

information [ ] d). **Scientific Gadgets:**

- i. Use of diagnostic equipment (Accessing information through the use of the state-of-the-art scientific gadgets) [ ]

**SECTION D (2): Sources of MAMs Learning Content (Likert Scale)**

Sources of Learning Content	SD	D	N	A	SA
Observation of previous work					
Hands on previous work					
Anticipation of unfamiliar situation					
Consultation with a mentor/ expert					
Consultation with peers/ other MAMs					
Discussion with apprentices					
By listening to related radio programs on auto mechanics					
Through the use of social media platform information					
Use of diagnostic equipment					
Online information through mobile phones or pc					

*SD=Strongly Disagree, D=Disagree, N=Neutral, A=Agree, SA= Strongly Agree*

**SECTION E (1): MAMs Sources of Learning Methods**

14. How do you arrive at the methods required to go through the content identified?

- i. Reflecting on the ongoing experience, related past experiences and personal feeling in order to make new meaning [ ]
- ii. Consultation with a mentor on methods [ ]
- iii. Consultation with peers [ ]
- iv. Observing other master automobile mechanics at work [ ]
- v. Participating in workshop programmes that are related to your learning objectives [ ]
- vi. Mention others if any

.....

**SECTION E (2): Sources of MAMs Learning Methods (Likert Scale)**

Sources of Learning Methods	SD	D	N	A	SA
Reflecting on previous experience					
Consultation with a mentor on methods					
Consultation with other MAMs					
Observing other MAMs at work					
Participating in workshop programs that are related to learning objectives					

*SD=Strongly Disagree, D=Disagree, N=Neutral, A=Agree, SA= Strongly Agree*

**SECTION F (1): MAMs Evaluation Strategies of Learning Outcomes**

15. How do you determine you have successfully learnt what you set out to learn?

- a) Through the ability to exhibit the knowledge, skills and attitude you intended to achieve [ ]
- b) Through positive feedback of learning outcomes in the following ways (please tick as many responses as applicable):

- i. Satisfactory feedback from clients whose requested service initiated your learning project [ ]
- ii. Positive feedback from other master automobile mechanics due to your transfer/sharing of your learning outcome [ ]
- iii. Positive feedback of your learning outcome put into practice by apprentices [ ]
- iv. Certification by trainer (NGOs, NABTES) for participation in a workshop [ ]
- v. Mention others if any  
.....

c). Comparison of performance with other master automobile mechanics [ ]

- d). Ability to teach other master automobile mechanics with similar learning objectives [ ]
- e). Mention others if any  
.....

**SECTION F (2): MAMs Evaluation Strategies of Learning Outcomes (Liker Scale)**

<b>Evaluation of Learning Outcomes</b>	<b>SD</b>	<b>D</b>	<b>N</b>	<b>A</b>	<b>SA</b>
Ability to exhibit knowledge, skills and attitude intended to achieve					
Feedback from other MAMs					
Feedback from other apprentices					
Certificate for Participating in a workshop					
Comparing performance with other MAMs					
Ability to teach other MAMs with similar learning objectives					

*SD=Strongly Disagree, D=Disagree, N=Neutral, A=Agree, SA= Strongly Agree*

## **Appendix II:**

### **FOCUS GROUP DISCUSSION FOR THE SMALL-SCALE MASTER AUTOMOBILE MECHANICS OF ODAWNA IN THE GREATER ACCRA REGION OF GHANA**

1. What situations at your workplace determine the need to embark on learning projects?
2. What interactions at the workplace create the need to pursue learning projects?
3. How do you determine your learning objectives?
4. How do you know which content will satisfy your learning objectives?
5. What learning processes do you go through to achieve the objectives of your learning projects?
6. How do you evaluate the learning outcomes of your learning projects?