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ASSESSING THE PERFORMANCE OF DRIVING SCHOOLS IN SUNYANI MUNICIPALITY IN THE BRONG AHAFO REGION.

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I am grateful to Almighty God for His guidance and protection. Secondly, to my supervisor, Mrs. Martha Danso for making this work possible.

DECLARATION

I, **ASANTE KWAME EMMANUEL,** declare that this dissertation, with the exception of quotations and references contained in published works which have all been identified and acknowledged, is entirely my original work, and it has not been submitted, either in part or whole for another degree elsewhere.

Signature ……..

Date …….

SUPERVISOR'S DECLARATION

I hereby declare that the preparation and presentation of this thesis was supervised in accordance with the guidelines and supervision laid down by the University of Education Winneba.

Name: Martha Danso (Mrs.)

Signature ……

Date ……

ABSTRACT

The main purpose of the study was to assess the performance of driving schools in Sunyani Municipality in the Brong Ahafo Region. This study adopted the case study design. The researcher used both primary and secondary data sources, which were considered to be more appropriate for this study. The researcher used quantitative research approach for the study. The targeted population for the study was 381. The population of the study was made up of drivers, driving school students, tutors and residents of the Sunyani municipality. A sample size of one hundred and ninety one (191) was chosen for the study using purposive and random sampling methods. The main instrument that was used to collect information for the study was questionnaire. Primary data was collected through a field survey of student drivers from the Sunyani Municipality. The data was edited to detect and correct, possible errors and omissions that were likely to occur, to ensure consistency across respondents. The questionnaire data was then coded to enable the respondents to be grouped into limited number of categories. The SPSS version 16 was used to analyse the data. The data was presented in tabular form, graphical and narrative forms. The study findings concluded that publicity and education were essential requirements that raised community awareness and improved the effectiveness of enforcement operations. Also, road safety is an integral component of driver training. Moreover, public education played a big part in educating drivers on safety and getting them to obey traffic laws. Furthermore, driver education reduced alcohol impaired driving by altering social norms, changing risky or dangerous behaviours and created safer environments. Also, effective driver education created the awareness of the general public that accident free driving is the basis for good road traffic safety. The study recommended that students of the driving schools should be taught to obey traffic laws and desist from alcohol, drugs, overloading, over speeding, making calls while driving and change risky or dangerous behaviours and create safer environments.

DEDICATION

This work is dedicated to my children Rhoda Evert Asante, Dennis Eugene Asante and Bevelyn Julia Asante and finally, to my father Mr Kwaku Krah who assisted me in my studies.

LIST OF ABBREVIATION

WHO-World Health Organisation

HMC-High motorised countries

NRSC-National Road Safety Commission

DVLA- Driver Vehicle Licensing Authority

MTTU-Motor Traffic Transport Union

USDHHS-United States Department of Health and Services

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CHAPTER ONE

1.1 Background to the Study

The study assessed the performance of driving schools in the Sunyani Municipality. Road traffic safety refers to methods and measures for reducing the risk of a person using the road network being killed or seriously injured. The users of a road include pedestrians, cyclists, motorists, their passengers, and passengers of on-road public transport, mainly buses. The main aim of driving schools is to inculcate the best practice road safety strategies focus upon the prevention of serious injury and death crashes in spite of human fallibility (International Transport Forum, 2008). The World Medical Association (2006) stated that serious injuries and mortality in road collisions are a public health problem with consequences similar to those of major diseases such as cancer and cardiovascular disease.

World Health Organization (WHO, 2009) estimated that worldwide, about 1.3 million persons were killed on the roads and an additional 20 to 50 million were injured. They pointed out that, road crashes currently rank with tuberculosis and malaria as major killers in global terms and almost half of those who die in road crashes are pedestrians, cyclists and motorcyclists, collectively known as "vulnerable road users". Road traffic injuries were the 11th leading cause of death worldwide and accounted for 21 percent of all deaths globally; road traffic deaths accounted for 23 percent of all injury deaths worldwide; an overwhelming majority (90 percent) of the road traffic deaths occurred in low-income and middle-income countries, where 81 percent of the world's population live and own about 20 percent of the world's vehicles; the overall global increase in road traffic accident mortality was predicted to be 67 percent by 2020 if appropriate action is not taken. The United Nations" report entitled "World Report on Road Traffic Injury Prevention" noted that if action is not taken traffic collisions would become the third major cause of death.

The major victims of these traffic collisions were people between 5 and 44 years of age; and the cost of these collisions represented 2 to 3 percent of countries‟ Gross Domestic Products (Peden, Scurfield, Sleet, Mohan, Hyder, Jarawan & Mathers, 2004).

In Canada traffic collisions were the major causes of death for those aged 5 to 34 and the injuries sustained in collisions were a major burden on the healthcare system in terms of emergency treatment, chronic care, and rehabilitation (Ramage-Morin, 2008). India has the second largest road network in the world with over 3 million kilometers of roads. Over 40 million vehicles used the roads and these had a terrible toll on human life, killing over 80,000 in 2016 people with over one third of a million victims requiring hospital treatment. These crashes did not only cause considerable suffering and hardship, but they also had a major impact on the country's economy, costing an estimated Rs 300 billion or more than 3 percent of India's GDP every year (Global Road Safety Partnership, 2011). According to Kilbey (2011), the reported road casualties in Great Britain estimated that 1,910 people were killed and 24,560 were killed or seriously injured, in the second quarter in the year ending June 2011.

Mortality due to road traffic injuries (RTI) in Africa is among the highest in the world at 28.3 deaths per 100 000 population (Peden et al., 2004). The economic costs associated with RTIs in Africa according to Peden et al. (2004) were estimated to be US$3.7 billion in 2000, translating to approximately 1 to 2 percent of each country's gross national product. Africa's global road fatality share was three times as large (11 percent) as its motor vehicle share. The road fatality toll had grown by over a quarter in African countries like Nigeria, Kenya, Ethiopia, Tanzania, Malawi and Zambia over the past several years. One of the most important differences between High Motorized Countries (HMCs) and the Low Motorized Countries (LMCs) as explained by Peden et al. (2004) was that over the last ten years, whilst the number of deaths fell by about 10 percent in

HMCs, in Africa, Asia/Pacific and Latin America regions, road deaths kept increasing. According to Moira Winslow, Chairman of Drive Alive in South Africa cited in WHO (2004), the road traffic death toll represents only "a tip of the iceberg" of the total waste of human and societal resources from road injury. In South Africa, a total of 3,280,931 deaths were recorded between 2001 and 2006 of which 9.5 percent were due to non-natural causes and road traffic accident deaths comprised 9.3 percent of non-natural deaths. Analysis of the injury burden in South Africa by WHO (2004), showed that the age standardized road traffic injury mortality rates for South Africa were about double the global rate for both males and females. The WHO (2004), estimated that almost 16,000 people die from injuries sustained in road mishaps in Nigeria each year, and several thousands more end up with non-fatal injuries and permanent disabilities. As stated by the report, Nigeria has one of the highest road traffic accident rates in the world, and accidents and injuries were the major cause of death in adults under 50 years.

Statistics on road traffic crashes in Ghana indicated that on a daily basis, four people were reported killed and more than ten persons injured. On the average, 1,600 deaths and over 15,000 injuries were recorded annually as a result of road traffic accidents. These cost the nation 1.6 percent of its annual Gross National Product (GNP) (National Road Safety Commission's Annual Report, 2006). In 2009 the total number of crashes recorded in the country was 12,299 resulting in 2,237 fatalities and 16,259 people suffered injuries. In 2010 road traffic crashes recorded was 11,506 resulting in 1,986 fatalities and 14,918 people suffered injuries (National Road Safety Commission's Annual Report, 2010). In 2011, there were 13,572 recorded road crashes in which 2,330 people died and 13,272 people suffered injuries.

Over the years, the vehicle/population ratio in Ghana has been growing steadily from a vehicle/population ratio of around 31 vehicles per 1,000 population in 2002 to around 44 vehicles per 1,000 population in 2008. The increase in vehicle population in the period 2001 to 2010 was 61,427 as against 43,825 in the period 1991 to 2000, indicating approximately 41 percent increase in the annual rate of vehicle growth rate in the country. Just as the rate of vehicle/population has grown, so has the absolute fatality rates been rising. Within the 5 year period from 2006 to 2010, the number of people killed on Ghana's roads averaged around 2,012 annually. Specifically, in 2009, the number of people killed was 2,237 (NRSC"s Annual Report, 2010).

In the past, road safety management in Ghana was characterized by dispersed, uncoordinated, and insufficiently resourced institutional units performing isolated single functions by individual departments within the Ministry of Roads and Transport: Ghana Highways Authority, Department of Urban Roads, Department of Feeder Roads, Driver Vehicle Licensing Authority, and the National Road Safety Committees. Currently, the National Road Safety Commission (NRSC) has been established by an Act of Parliament (ACT 567, 1999) and mandated to plan, develop, promote and coordinate road safety activities in the country. Since 2001, the NRSC has been pursuing a coherent, consistent and comprehensive national road safety strategy in compliance with its mandate to address the incidence of unacceptably high levels of road traffic crashes in the country. Other public and private efforts have also helped manage in stabilizing or decreasing crash rates in Ghana. Yet due to the ever-increasing vehicular fleet in the country, the notoriously bad attitude of road users and the weak enforcement of traffic rules, the absolute number of deaths and injuries fluctuate within unacceptable ranges (NRSC's Annual Report, 2010).

Past road safety efforts addressed the environment of road safety, focusing on engineering, safer cars and highways. In recent years, the emphasis according to Lonero, Clinton, Wilde, Roach, McKnight, MacLean, Guastello & Lamble (2007), had shifted towards encouraging safer road user behaviour and the efforts to change road user behaviour focused on four practical approaches: legislation, enforcement, reinforcement and education. Lonero et al. (2007) explained that legislation works in two ways: its declarative effect and deterrent effect. The declarative effect is dependent on education and communication whereas deterrence is dependent on enforcement. Enforcement they said upholds society's expectations and standards and imposes sanctions when laws are violated and it is the threat of these sanctions that persuades most road users to comply. Reinforcement according to Lonero et al. included incentives, rewards and other aspects of behaviour analysis techniques such as prompts and feedbacks and it focuses mainly on encouraging desirable behaviours rather than discouraging undesirable behaviors. Driver's education teaches traffic code or laws, vehicle operation and proper driving strategies and the consequences for not observing the rules. According to Mayhew and Simpson (2002), the main goal of driver education and training is to produce "safer" drivers, defined in terms of collision involvement. Therefore, this study assessed the performance of driving schools in Sunyani Municipality in the Brong Ahafo Region of Ghana.

1.2 Statement of the Problem

There are so many driving schools in the Sunyani Municipality who face considerable problems with road safety. This manifest in the numerous incidence of road accidents. The effects of these challenges are often aggravated by problems of inadequate training, logistics and funding for road safety activities. There is therefore the need for a

review of the safety management capacity and the preparation of a long term investment strategies and related programmes as well as projects to overcome revealed capacity weaknesses in driving school education.

The process of appraising current road safety performance involved multi-sectoral strategic examination of a range of activities from key government agencies such as Transport, Police, Education and Driver and Vehicle Licensing Authority as well as all stakeholders who are able to contribute to the delivery of road safety results. They produce the interventions to achieve the desired long and medium-term road safety results. Without effective institutional management, Ghana has a little chance of implementing successful road safety interventions and achieving desired results. The question therefore is: how effectively are the performance of driving schools in the Sunyani Municipality in the Brong Ahafo Region of Ghana?

1.3 Purpose of the Study

The main purpose of the study was to assess the effective performance of driving schools in Sunyani Municipality in the Brong Ahafo Region.

1.4 Objectives of the Study

The specific objectives of the study includes;

1. To assess the effective performance of driving schools on road accidents in the Sunyani Municiplity in the Brong Ahafo Region.
2. To identify the benefits likely to accrue from road safety education, especially in terms of skills and behaviours of drivers in the Sunyani Municipality.
3. To find out some of the skills or behaviors targeted by road safety education in the Sunyani Municipality.

1.5 Research Questions

The following research questions would be used for the study.

1. What is the performance of driving schools on road accidents in the Sunyani Municiplity in the Brong Ahafo Region?
2. What benefits are likely to accrue from road safety education, especially in terms of skills and behaviours of commercial drivers?
3. What are some of the skills or behaviors targeted by road safety education?

1.6 Significance of the Study

The study will be significant in helping policy makers such as the driving schools, DVLA, MTTU, national road safety commission (NRSC) and to provide some practicable inputs towards effective education and examination for drivers before issuing them with drivers license. The study will also help to identify the disadvantages of road accidents and how it can be avoided to save lives. Moreover, the study will provide useful information for the Ministry of Transports, driving schools, DVLA, NRSC, MTTU, drivers, passengers, pedestrians etc.

1.7 Scope of the Study

This research is focused on assessing the effective performance of driving schools in the Sunyani Municipality in the Brong Ahafo Region. Thus the study is geographically limited in scope to Sunyani in the Brong Ahafo Region of Ghana. Moreover, the study is theoretically and empirically limited in scope to the research objectives stated above. A study like this required the researcher using many cities in Ghana as possible; however in this study only Sunyani Municipality was selected and used as a case study.

1.8 Organization of the Thesis

This dissertation consists of six chapters. Chapter one deals with the background to the study, the statement of the problem, research questions and objectives of the study, significance and organization of the study. In Chapter two the researcher reviewed related literature whiles chapter three deals with the research methodology used in the study. Other aspects of chapter three describe the research design, the population, sample and sample procedures, data gathering instruments and data collection procedures and methods of data analysis. Chapter four describes the research findings. Chapter five contains the discussion of the main findings and chapter six presented the summary of the findings, conclusions, recommendations and suggestions for further research

CHAPTER TWO

LITERATURE REVIEW

2.1 Theoretical Framework of the Study

This section reviewed literature regarding the benefits likely to accrue from road safety education regarding a change in the behaviour of drivers. The section reviewed theories including the behaviour science theory, social learning theories, social cognitive theories, theory of planned behaviour.

2.1.1 The benefits likely to accrue from road safety education

2.1.2 Behavioural Science Theory

Behaviour is a set of actions, the way we conduct ourselves and the things that we do. Science is a systematic knowledge of natural or physical phenomena, an organized way of thinking and an examination of how something works. Behavioural science is an organized way of understanding people's actions. It helps us to assess individual and community health risks, know with whom, when, where, and how to intervene to prevent risks and how to evaluate the effectiveness of our interventions (New York City Department of Health and Mental Hygiene Programme Evaluation Unit, 2002).

Behavioural science is important to road traffic accident prevention because knowledge about causes of road traffic accident alone is not sufficient for behaviour change to occur. Road traffic accidents occur mainly through behaviours that are linked to human error and risk-taking which occur in a social context. The use of behavioural science theories to road traffic accident prevention can help frame a problem to help choose activities or interventions and meet the road users where they are. The practitioners use common language and it can demonstrate programme effectiveness and funders believe in it. To develop a successful intervention in road traffic accident prevention using behavioural

science involve key components such as identification and knowledge of key target populations, identification of behavioural goals, identification of influencing factors, identification of appropriate strategy for affecting each influencing factor. Behavioural science theories according to New York City Department of Health and Mental Hygiene Programme Evaluation Unit (2002) focus on behaviour change, approaches behaviour from slightly different angles and focus on just a few behavioural factors or influences and successful interventions.

2.1.2 Theories and Models of Behaviour Change

Behaviour modification is the traditional term for the use of empirically demonstrated behaviour change techniques to increase or decrease the frequencies of behaviours through positive and negative reinforcement like extinction, punishment and/or satiation. Behaviour change theories and models are attempts to explain the reasons behind alterations in individuals‟ behavioural patterns. These theories cite environmental, personal, and behavioural characteristics as the major factors in behavioural determination. Behaviour change is often a goal for staff working directly with constituents, organizations, governments or communities. Individuals charged with this task can be thought of as “interventionists” whose goal is to design and implement programmes or interventions that produce the desired behavioural changes (Glanz, Lewis, & Rimers, 2010). As Glanz, Lewis, and Rimers suggested, designing interventions to yield behaviour is best done with an understanding of behaviour change theories and an ability to use them in practice.

2.1.3 Learning and Behaviour Theories

From behaviourists such as B. F. Skinner come the learning theories, which states that complex behaviour is learned gradually through the modification of simpler behaviours (United States Department of Health and Human Services, USDHHS, 2006). Imitation and reinforcement play important roles in these theories, which states that individuals learn by duplication behaviours they observe in others and that rewards are essential to ensuring the repetition of desirable behaviour (Skinner, 2003). Learning theorists have demonstrated that behaviour can be changed by providing appropriate rewards, incentives, and/or disincentives. In learning or behaviourists approaches, these rewards and incentives are typically incorporated into structured reinforcement schedules, and the process of behaviour change is termed behaviour modification. While effective in bringing about behaviour change, such approaches require a high level of external control over both the physical and social environment, and the incentive (or disincentives) used to reinforce certain bahaviours and discourage others. This kind of control is hard to maintain in real life settings, and thus, strict behaviourist approaches are subject to a number of limitations.

2.1.4 Social Learning Theory

The social learning theory was proposed by Albert Bandura and while it was rooted in many of the basic concepts of traditional learning theory, Bandura (1986) believed that direct reinforcement could not account for all types of learning. His theory added a social element, arguing that people could learn new information and behaviours by watching other people. Social learning theory viewed the individual as an active participant in his or her behaviour, interpreting events and selecting courses of action based on past experience. Also known as observational learning (or modeling), this type of learning

could be used to explain a wide variety of behaviours (Kendra, 2012). Kendra stated three core concepts of social learning theory: the idea that people could learn through observation; the idea that internal mental states were essential part of this process; and the theory recognized that just because something has been learned, does not mean that it will result in a change in behaviour.

2.1.5 Social Cognitive Theory

Bandura's Social Cognitive Theory proposes that people are driven not by inner forces, but by external factors. This model suggests that human functioning can be explained by a triadic interaction of behaviour, personal and environmental factors (Bandura, 1986; Perry, Barnowski, & Parcel, 1990). It addresses both the psychological dynamics underlying behaviour and their methods for promoting behaviour change.

Source: Pajares (2002).

Figure 2.1: Conceptual Model of Social Cognitive Theory

This is often known as reciprocal determinism. Environmental factors represent situational influences and environment in which behaviour is performed while personal factors include instincts, drives, traits, and other individual motivational forces. Several constructs underlie the process of human learning and behaviour change (Bandura, 1986).

These variables may also intervene in the process of behaviour change (Perry et al., 1990):

Self-efficacy

A judgment of one's confidence in the ability to perform the behaviour and persist in behaviour. It was seen by Bandura (1986) as perhaps the single most important factor in promoting changes in behaviour. In general, higher levels of self-efficacy for a given activity are associated with higher participation in that activity;

Outcome Expectations

A judgment of the likely consequences a behaviour will produce. The importance of these expectations (expectancies) may also drive behaviour;

Self-Control – the ability of an individual to control behaviours;

Reinforcement – something that increases or decreases the likelihood a behaviour will continue;

Emotional Coping – the ability of an individual to cope with emotional stimuli; and

Observational Learning – the acquisition of behaviours by observing actions and outcomes of others behaviour.

In applying this theory to the study:

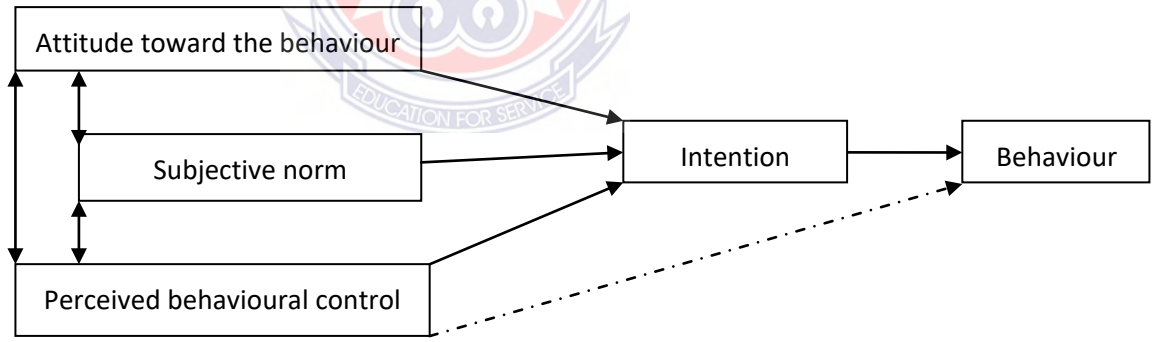
To increase the levels of self-efficacy of drivers, it is important for road safety practitioners to provide resources and support to raise individual confidence and also, behaviour change should be approached as a series of small steps;

Even when individual drivers have a strong sense of efficacy they may not perform the behaviour if they have no incentive. So if we are interested in getting others to enact behaviour change it may be important to provide incentives and rewards for the behaviours;

Shaping the driving environment may encourage behaviour change. This may include providing opportunities for behaviour change, assisting with those changes, and offering social support. It is important to recognize environmental constraints of drivers that might deter behaviour change.

2.1.6 Theory of Planned Behaviour

Ajzen and his colleagues developed and refined a model focusing on intentions as the key link between attitudes and actual behaviour. The theory of planned behaviour suggested that behaviour is dependent on one's intention to perform the behaviour (Ajzen, 2011; Armitage & Conner, 2001; and Grizzell, 2007). Ajzen's theory of planned behaviour showed three separate but interacting determinants of one's intention (planned behaviour) to do something (actual behaviour).



Source: Reprinted from Organizational Behaviour and Human Decision Processes. I. Ajzen. "The Theory of Planned Behaviour." 2011.

Figure 2.2: Ajzen's Theory of Planned Behaviour

Ajzen (2011) explained the nature and roles of the three determinants of intention as follows:

- The attitude toward the behaviour referred to the degree to which a person has favourable or unfavourable evaluation or appraisal of the behaviour in question (beliefs and values about the outcome of the behaviour);

- Subjective norms or social factors referred to the perceived social pressure to perform or not to perform the behaviour (beliefs about what other people think the person should do); and

- Degree of perceived behaviour control referred to the perceived ease or difficulty of performing the behaviour and it was assumed to reflect past experience as well as anticipated impediments and obstacles (an individual's perceptions of their ability or feelings of self-efficacy to perform the behaviour).

This relationship is typically dependent on the type of relationship and the nature of the situation.

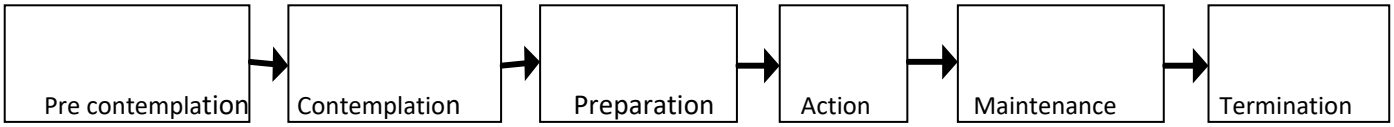
This theory only predicts behaviour under the individual's control, not behaviour due to circumstances beyond one's control. This model can help predict the likelihood of commercial drivers putting up behaviours such as exceeding speed limit, driving under the influence of alcohol or drug, overloading, wrong overtaking, driving tired, mobile phone use while driving and failing to attend driver education and training to upgrade their knowledge and skills.

To bring the theory to the study, intention has been shown to be the most important variable in predicting behaviour change, suggesting that behaviours are often linked with one's personal motivation (Godin & Kok, 2005), so to change drivers‟ road safety behaviour, it may be important to present information to help shape positive attitudes towards the behaviour and stress subjective norms or opinions that support

the behaviour. For perceived behavioural control to influence road safety behaviour change among drivers, much like with self-efficacy, a driver must perceive that they have the ability to perform the behaviour and perceived control over opportunities, resources, and skills needed is an important part of the change process. From a practical management standpoint of the behavioural intention model, road safety practitioners need to appreciate the dynamic relationships between attitudes, subjective norms and behavioural intentions when attempting to foster productive behaviour. Although attitudes are often resistant to change, they can be influenced indirectly through education and training experiences that change underlying beliefs.

2.1.7 Trans theoretical (Stages of Change) Model

Evidence suggests that behaviour change occurs in stages or steps, and that movement through these stages is neither unitary nor linear, but rather, cyclical, involving a pattern of adoption, maintenance, relapse, and read option over time (Prochaska and DiClemente, 2006). The trans theoretical model proposes that behaviour change occurs as a process of six stages according to Prochaska, *et. al*, (2008).



Source: Prochaska, Johnson, & Lee (2008)

Figure 3: Stages of Change

Pre-contemplation stage of change is the stage in which people are not intending to make a change in the near future (often defined as the next 6 months). Contemplation is the stage where people intend to change (within the next 6 months). People in this stage are

aware of the pros of changing but also can identify the cons. Preparation represents the stage where people have a plan of action and intend to take action in the immediate future (within a month). Action is the stage in which people make the behaviour change and maintenance represents the stage where people work to prevent relapse. Finally, termination represents that stage where individuals have 100 percent efficacy and will maintain their behaviour. This stage is the most difficult to maintain, so many people remain a lifetime in maintenance.

In applying this theory to the study, it is essential to match behaviour change interventions to people's stage because each of the stages of behaviour change involves different cognitive processes and requires different treatments or intervention strategies for the overall change process to be successful. For instance, if an individual is in the pre-contemplation stage it is important to raise his/her awareness about a behaviour in order for him/her to contemplate making a behaviour change. Without a planned intervention, people will remain stuck in the early stages due to a lack of motivation to move through the stages. Prochaska, *et. al,* (2008) suggested a series of activities that have received empirical support, which help individuals progress through the stages such as, consciousness raising – increasing awareness of the causes (providing educational materials, confrontation, media campaigns, feedbacks); dramatic relief – producing an emotional experience which is followed by reduced effect if some action can be taken (personal testimonies, drama, media campaigns); self-reevaluation – inviting individuals to make cognitive and emotional assessments of their self image (clarify values, provide healthy models, using imagery); and environmental reevaluation – assessment of how the presence or absence of a behaviour might impact on one's social environment (documentaries, personal stories). A major insight offered by stage theories of behaviour change is the emphasis they place on matching interventions to the stage of readiness of

the individual. This kind of approach provides an excellent framework for understanding and examining individual differences in motivation for, and involvement in, change in road safety behaviours of commercial drivers over time, including patterns of initiation, maintenance, relapse, and resumption.

2.1.8 Etzioni's Compliance Theory

Etzioni developed an innovative approach to the structure of organizations that he called compliance theory. He classified organizations by the type of power they use to direct behaviour of their members and the type of involvement of the participants. Etzioni identified three types of organizational power: coercive, utilitarian and normative, and related these to three types of involvement: alienative, calculative and moral.

Types of involvement	*Types of power*		
	Coercive	**Utilitarian**	**Normative**
Alienation	X		
Calculative		X	
Moral			X

Source: Amitai Etzioni, (1975). *A Comparative Analysis of Complex Organizations*, rev. ed. (New York: Free Press).

Figure 2.4: Etzioni's Compliance Types

Coercive power uses force and fear to control lower-level participants and organizations that rely on coercive power include prisons and training in the military. Utilitarian power uses remuneration or extrinsic rewards to control lower-level participants. This reward includes salary, fringe benefits, working conditions and job security and is used by unions and government agencies. Normative power

controls through allocation of intrinsic rewards such as interesting work, identification with goals and making contribution to society. Management's power in this case rests on its ability to manipulate symbolic rewards, allocate esteem and prestige symbols and influence the distribution of acceptance and positive response in the organization and is used by churches and political organizations. According to Etzioni, all three types of power can be useful in obtaining subordinates' cooperation in organizations. However, the relative effectiveness of each approach depends on the organizational participant's involvement. Etzioni said involvement refers to the orientation of a person to an object, characterized in terms of intensity and direction. Accordingly people can be placed on an involvement continuum that ranges from highly negative to highly positive. Etzioni suggested that participant involvement can be broadly categorized as alienative, calculative or moral. Alienative involvement designates an intense negative orientation; calculative involvement designates either a negative or positive orientation of low intensity; and moral involvement designates a positive orientation of high intensity. According to Etzioni, when an organization employs coercive power, participants usually react to the organization with hostility, which is alienative involvement. Utilitarian power often results in calculative involvement, that is, participants desire to maximize personal gain. Normative power frequently creates moral involvement, that is, participants are committed to the socially beneficial features of the organization.

In applying this theory to the study, transport unions and organizations should use utilitarian and normative powers to gain compliance from their members. If the leaders use types of power that are not appropriate for the environment it can reduce organizational effectiveness. Depending on the circumstances, road traffic legislation and enforcement agencies can use any of the three types of power to gain

compliance from road users. Road safety education providers can use both utilitarian and normative powers in the provision of driver education and training, but if they use coercive control in gaining driver compliance, this can lead to the displacement of educational goals.

2.2 Demographic Factors of Driving

There were several demographic factors that were related to crashes. Age was associated with crash involvement with younger drivers having a higher crash risk (McKenna, 2006). The vast majority of new drivers as explained by McKenna tend to be young which was particularly unfortunate because young drivers tend to choose faster speeds, adopt closer following distances, have poor hazard perception skills and have higher proportion of their driving at night. Having passed the practical driving test (Hutchins, 2008), newly qualified drivers are immediately entitled to drive unaccompanied and they find themselves without the support of an experienced and qualified driver and have to face a plethora of new and demanding challenges such as navigation to destinations without instructions; decision making for road and traffic hazards; and coping with situations potentially not experienced in their driving lessons.

Sensation seeking was found as the underlying factor in the age effect, and that younger drivers were higher in sensation seeking which was associated with risky driving such as speeding. Another factor that underlies the age effect was experience. McCartt, Shabanova and Leaf (2003), explained that driving experience was an important factor and it was found out that the crash rate decreased rapidly in the first couple of months of driving. McCartt et al. (2003) gave three options for increasing experience in a safe manner. One was to provide a graduated licensing system in which the first few months drivers are not allowed to expose themselves to high risk situations such as night driving.

Another method was to extend the training phase to increase supervised driving and the third method was to focus on hazard perception since it was known that inexperienced drivers were slow to detect hazards. Gregersen, Berg, Engstrom, Nolen, Nyberg & Rimmo (2000) believed that increasing the licensing age and increasing the experience of new drivers would be effective. Extending the licensing period for practice was implemented in Sweden and produced a decrease in crash involvement. According to Hutchins (2008), the driving learning process continues long after passing the practical test and the withdrawal of support and the requirement to drive independently result in increased accident liability.

Thew (2006) thinks there are demographic differences in crash rates and although young people tend to have good reaction times, disproportionately more young male drivers featured in accidents. This he explained, result from the fact that many young males exhibited behaviours and attitudes to risk that could place them in more hazardous situations than other road users. Older drivers with slower reaction might be expected to be involved in more accidents, but this had not been the case as they tend to drive less and, apparently, more cautiously. Hutchins (2008), identified some challenges faced by solo drivers as poor opportunity for feedback, involvement in a variety of traffic conditions, different manoeuvres, unexpected actions of other drivers, different types of road and distractions. Hutchins also mentioned some skill deficits new drivers need to safely interact with the driving environment as poor appreciation of their own abilities; poorly developed mental models of driving; and poorly developed hazard perception and visual scanning.

National Highway Traffic Safety Administration (2008) believes that young people today are driving in a more complex traffic environment than ever before. There are more cars, more congestion, more complex intersections and roadways, and today's

drivers are considered by many to be more rude, aggressive, and distracted. Young drivers are influenced by the complexity of this environment as well as many other factors in their lives, as a result, in spite of safer vehicles and roadways; driver behaviour remains frustratingly less than ideal. In a study conducted by the National Road Safety Commission (2006), the demographic profile of the driver population was determined to be very favourable for good safety practice. Most of the drivers (80 percent) were male adults within the active age group of (18-59). About 80 percent of them were educated with about 60 percent meeting the minimum requirement of Junior Secondary Education set by the Driver and Vehicle Licensing Authority (DVLA) for 2008. The mode of training was predominantly informal resulting in the transfer of bad driving habits from one bad driver to the other. About 12 percent were even self-taught, which poses a great danger to other road users. Even though most of them (70 percent) claim to have valid "DVLA licenses", only 19 percent of them were driving with valid licenses. Much as their knowledge in driving rules and regulation was acceptable, knowledge in road signage and marking was poor.

2.3 The skills or behaviours targeted by road safety education

2.3.1 Methods Used to Change Road Safety Behaviour in Driving Education

Road safety interventions seek to manage exposure to the risk of crashes, prevent crashes, and reduce crash injury severity and the consequences of crash injury. Interventions comprises standards and rules specifying how the road network is to be used safely by setting speed and alcohol limits, occupant restraint and helmet requirements, vehicle standards and vehicle and driver licensing requirements. They also comprise systems for ensuring compliance with standards and rules using a combination of education, enforcement and incentives (Bliss & Breen, 2008). Success in managing road

safety outcomes requires a systematic and planned response and strengthening across the road safety management system. Road safety was viewed by several international organizations as a production process, where institutional management functions provide the engine room to deliver a range of effective, system-wide interventions to achieve results, expressed as long-term goals and interim quantitative targets (Global Road Safety Facility World Bank, 2009, cited in United Nations Economic Commission for Europe, 2010).

In-depth analysis of incidents on the road network showed that an accident was the consequence of one or more faults in a complex system involving drivers, vehicles, the road and its surroundings. However, the principal factor in road accidents was human error, so that any effort to increase the level of road safety has to be primarily aimed at the prevention of this type of error as well as at ways to reduce the consequences without, however, ignoring other factors linked to the infrastructure and to vehicles (United Nations Economic Commission for Europe, 2010). According to accident data studied by the United Nations Economic Commission for Europe, the vast majority of traffic accidents were attributable to problems in road user behaviour. Such behaviour was often related to a failure to observe regulations relating in particular to speed, alcohol, seatbelts, or to a poor understanding of specific traffic conditions that require heightened caution, such as night-driving. The review of literature describing past efforts to change road user behaviour focused on four practical approaches: legislation, enforcement, reinforcement and education. One of the main conclusions of the review was that each of these approaches works better when used in conjunction with one or more of the others.

2.3.2 Legislation

All countries active in road safety aimed to ensure that appropriate legislation was in place to meet the road safety task set out and agreed within the national road safety strategy. Typically, a comprehensive framework for the road traffic system safety will have evolved over many years. As stated by Bliss and Breen (2008), the 'legislation' function involved:

- Reviewing the scope of the legislative framework periodically;
- Developing legislation needed for the road safety strategy with due consideration to cost effectiveness, practicality and public acceptability;
- Consolidating legislation; and
- Securing legislative time for road safety.

This function ensured that legislative instruments for road safety were well-matched to the road safety task. Road safety legislation typically addresses land use, road, vehicle, and user safety standards and rules and their compliance, as well as post impact medical care (Bliss, 2004). According to Bliss, road safety legislations in most countries in the world evolved around a number of risk factors for road traffic injuries such as speed limits, seat belt and child restrain use, blood alcohol limits, daytime running lamps, and mobile phone use.

The National Traffic and Motor Vehicle Safety Act were enacted in the United States to empower the federal government to set and administer new safety standards for motor vehicles and road traffic safety in response to increasing number of cars and associated fatalities and injuries on the road following a period when the number of people killed on the road had increased 6-fold and the number of vehicles was up 11-fold since 1925 (National Safety Council, 2010). By 1970, motor-vehicle-related death rates were decreased by both the public health measure (deaths per 100,000 population) and the

traffic safety indicator (deaths per vehicle miles travelled). Changes in driver and passenger behaviour also reduced motor-vehicle crashes and injuries. Enactment and enforcement of traffic safety laws, reinforced by public education, have led to safer behaviour choices.

United Nations Economic Commission for Europe (UNECE, 2010) said establishing driving permit legislation was indispensable in the process of improving driver behaviour, particularly through the driving tests to obtain a driving license. Responding to those road safety demands requires in particular minimum conditions to be established for the issue of driving permits, the definition of the knowledge, skills and behaviour necessary for driving a motor vehicle, the structure of the driving test in relation to these concepts and a definition of the minimum standards as regards physical and mental fitness to drive these vehicles. At the same time particular attention should be paid to possible means of attaining these road safety goals, such as promoting progressive access to different categories of permit, checking that drivers are maintaining the required skills and combating all possibilities of fraud. In this context, greater account also needs to be taken of groups of drivers presenting specific needs such as the handicapped and elderly persons, or specific risks such as young drivers, whether with regard to driving permits or to road safety education. Penalties for people who commit serious driving offences as pointed out by UNECE (2010), must naturally be commensurate with the gravity of the offence, but special attention should also be paid to rehabilitation, for example by introducing specific programmes for offenders. In countries that have introduced programmes of this kind the results, notably a reduction in the number of repeat offences, have been encouraging. Countries that also use a probationary or points-based permit system explored the benefits of rehabilitation courses that offenders took for a permit which has been withdrawn to be restored. While a new law has significant impact, due

mainly to the publicity it gets, legal theorists and researchers generally agreed that legislation by itself has limited influence. According to them, the initial effect declines fairly rapidly and as such, legislation needs more support over the long term if it is to play a dynamic, effective role in permanently changing road user behaviour (Lonero et al., 2007).

Effective enforcement, as explained by the researchers, helps to create a credible deterrent and encourages people to develop the habit of compliance. Reinforcements such as prompts, feedbacks and incentives on the other hand, could increase people's desire to develop good driving habits. Education also helps people develop knowledge, skills and changes in attitude, and feeds the development of internal and informal social controls.

2.4 The knowledge and use of seat belt in driving education

UNECE (2010), pointed out that of the estimated 1.2 million people killed on the roads worldwide each year, 85 percent die in low and middle-income countries, where the use of injury protection devices such as seat belts and child restraints is very low. According to the Commission, failure to use a seat belt and improper use of a child restraint system were major risk factors for motor vehicle occupants. Seat belts and child restraint systems they said had been effective in reducing death and serious injuries in road traffic crashes. Crash research in various countries had found that the rates of seat belt wearing were lower in fatal collisions than in the general population. The level of seat belt use the Commission believed was influenced by mandatory legislation and enforcement accompanied by publicity campaigns. The level of child restraint use was also influenced by laws mandating use of child restraints; public information and enforcement; incentive and education programmes to support enforcement; and child

restraint loan schemes. Evaluations of the effect of legislation on seat belt use by Lonero et al., (2007) considered two criteria, usage rates and casualties. They agreed that generally, legislation substantially increased seat belt use initially, but the effect fell off over time. However, even after time, the usage rate remained higher than before legislation. Use rates in Canada reached over 90 percent as public agencies bolstered the effects of their laws with coordinated education and enforcement efforts.

Safety belt use began to increase globally following enactment of the first state mandatory-use laws in 1984 (Graham, 1993). There were primary laws which allow police to stop vehicles simply because occupants were not wearing safety belts. These as indicated by Graham, were more effective than secondary laws which require that a vehicle be stopped for some other traffic violation. However, maximum effects were created when legislation was accompanied by enforcement. Seat belt legislation in North Carolina was introduced with a grace period before enforcement. There were few published evaluations of child restraint laws. Those that existed showed that the effects have not been dramatic. A study of five states in the United States (U.S.) found that legislation doubled the average use rate, but the impact varied widely among the States. Consequently, a combination of legislation, police enforcement, education and information campaigns was necessary to achieve and maintain significant increases in seat belt and child restraint use. Some States of the U. S. introduced helmet laws and then repealed them in the face of public complaints about loss of freedom and mobility. This allowed a study design that permitted evaluation before legislation, after legislation, and after repeal of the legislation. The U. S. General Accounting Office (GAO) reviewed 46 studies on helmet laws in the U.S. The review concluded that helmet use reduces serious and fatal injuries. The review however, did not support rider complaints that helmets restrict hearing and vision and cause neck injuries in crashes (GAO, 2011).

The most important legislative development in the field of Driving While Intoxicated (DWI) had been the introduction of per se laws that base conviction on the alcohol level in the driver's blood rather than on proof of dangerous driving. Since the late 1960s, such laws had been introduced in Canada, Britain and most states in the U.S. It was well known that driving requires concentration, attention, the right skills, common sense and a concern for the safety of everyone on the road, especially for the vulnerable user. Alertness, perception of the dangers and reaction time could make the difference in the interaction between the driver and the external environment. Peden et al. (2004), in "The World Report on Road Traffic Injury Prevention," classified drinking and driving as one of the five principal risk factors in road safety. The relationship of alcohol to collisions has been well demonstrated. Drivers who have been drinking have a much higher risk of collision involvement than drivers who have not been drinking, and this risk increases rapidly as blood alcohol concentration (BAC) increases. A legal limit on BAC for motor vehicle drivers was set in almost all European countries and defined when a driver was presumed to be too impaired to drive safely. In Europe the BAC legal limit was as low as 0.0 g/l or as high as 0.8 g/l, the most common legal BAC limit being 0.5 g/l. Lower BAC limits however, were often established for young drivers and for drivers of commercial vehicles (United Nations Economic Commission for Europe, 2010).

2.5 Driving education and driver's alcohol and drug abuse

The substances that negatively affect the capacity of driving vehicles included drugs, narcotics, psychotropics, chemical substances and medicines. These substances could seriously impair the perception of the driver, lessen his/her ability to interact and deal safely with unforeseen or unexpected events and may lead to lethal outcomes both for the driver and for other road users. Studies and research according to United Nations

Economic Commission for Europe, (2010) suggested that each year a significant number of people were killed or permanently disabled as a consequence of road traffic accidents associated with driving under the influence of substances. In general, authoritative lists of all the types of substances which may impair driving do not exist. Moreover, while solid documentation existed on the relationship between blood alcohol level and crash risk, the same extent of documentation was not yet available for driving under the influence of substances. During a roadside check it was difficult to identify and classify if a driver was under the effects of substances at that moment. Moskowitz (2009) had shown that DWI legislation, coupled with enforcement programmes, had an effect, at least in the short term. Increased penalties, additional proceedings and per se laws Moskowitz explained ensured fewer fatal crashes, an effect that lasted between a few months and a couple of years. One possible reason why effects of legislation did not last, Lonero et al., (2007) believed, was the low probability of apprehension; one study according to them suggested that there was one arrest per 200 impaired trips. Greater enforcement, they explained, puts a strain on the court system without any real reduction in traffic crashes. In the state of New South Wales, in Australia, they said a programme that involved legislative changes, heavy random breath testing and massive publicity, managed to remain effective over a number of years.

Annual motor-vehicle crash-related fatalities involving alcohol has decreased in the U.S. since 1989 (NHTSA, 2007). Factors that may have contributed to this decline included increased public awareness of the dangers of drinking and driving; new and tougher state laws; stricter law enforcement; an increase in the minimum legal drinking age; prevention programmes that offer alternatives such as safe rides (such as taxicabs and public transportation), designated drivers, and responsible alcohol-serving practices; and a decrease in per capita alcohol consumption. According to Lonero et al. (2007), there could

be sanction of losing one's driving license or jail sentence, but there was a lot of evidence to suggest that losing one's driving license was more effective than fines or jail sentences. They argued that most suspended drivers continue to drive, but apparently much more carefully, and they tend to acquire greater skills and better habits that continue after suspension was ended. Jail sentences they said could be counter-productive because offenders lose the chance to improve their driving skills through practice. They emphasized that the effectiveness of legislation depends on how its implementation was managed in conjunction with other initiatives such as enforcement and education. For longerterm effects new social norms have to be set around DWI with legislation serving as a focus for education, publicity and group activism. The results of a survey of legislative attempts to influence road user behaviour by Lonero et al. (2007) suggested the following guidelines in introducing new legislation:

- The reasons for, and the benefits expected from the legislation should be communicated clearly to the public and the media. It should not be assumed that people understood the reason(s) for it;
- The influence and deterrence of legislation by explicit planning, implementation and evaluation must continue to be improved. Complacency leads to deterioration in effect;
- Deterrent effects must be improved with supporting initiatives in enforcement and publicity developed after analysis of the target populations and their current behaviour;
- Individual values and controls related to health issues and the social costs of careless or irresponsible road use behaviours must be supported;

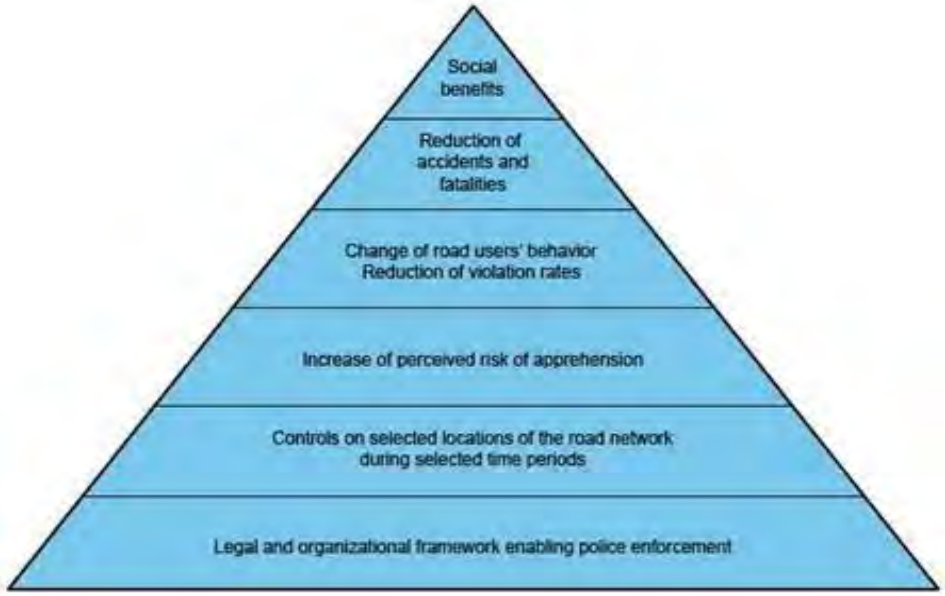
- There should be a look beyond short-term effectiveness of new legislation with careful deliberate interventions designed to maintain positive behaviours and an optimal mix of effective supporting initiatives; and
- There is the need to develop social norms favouring safe road use that will build on people's self-regulating processes.

2.6 Driving education and Road Enforcement

Peden et al. (2004) believed that traffic law enforcement was one of the instruments to secure or improve traffic law compliance. The concepts of 'traffic law enforcement' and 'police enforcement' they said were often used interchangeably but they differ in width. They explained that traffic law enforcement was wider and covers the entire enforcement chain, from detection of a violation through to the penalty, while police enforcement refers to the actual work of detecting a traffic law violation, apprehending the offender, and securing the evidence needed for his prosecution. Police enforcement they reiterated could only be effective if it operated in a supportive environment of laws, regulations, and a sensitive penal system. Consequently, the effectiveness of police enforcement cannot be seen in isolation from how the police collaborate with the other parties in the traffic law enforcement chain. According to Zaal (2004), traffic law enforcement influences driving behaviour through two processes: general deterrence and specific deterrence. General deterrence was defined by Zaal as the impact of the threat of legal punishment on the public at large. Specific deterrence was seen as the impact of the actual legal punishment on those who were apprehended. Thus, general deterrence resulted from the perception of the public that traffic laws were enforced and that there was a risk of detection and punishment when traffic laws were violated. Specific deterrence resulted from actual experiences with detection, prosecution, and punishment of offenders. The general

assumption underlying police enforcement according to Goldenbeld (2005) was that, it should primarily aim at general deterrence, which was achieved by increasing the subjective risk of apprehension. The effectiveness of police enforcement was larger if police enforcement was accompanied by publicity, unpredictable and difficult to avoid, a mix of highly visible and less visible activities, primarily focused on times and locations with high violation (maximum feedback to potential offenders), and continued over a longer period of time. These general principles, Goldenbeld (2005) stated, may need further region-specific tailoring to account for regional differences with regard to violation levels, road network status, and sometimes even social norms because research had shown regional differences in the effectiveness of police enforcement.

Yannis, Louca, Vardaki, and Kanellaidis (2004), described the hierarchy of road safety enforcement. The legal and organizational framework enabling police enforcement provided the foundation for the actual policing operations. Such a framework will result in well-planned, intensified police controls on selected locations of the road network, resulting in an increase in the perceived risk of apprehension. As a result violation rates will decrease. Changes in road user behaviour will result in less traffic crashes and less traffic victims, and in reduced monetary costs for society (social benefits).



Source: Yannis *et. al*, (2004)

Figure 2.5: The hierarchy of road safety enforcement.

Speed, as explained by Yannis *et. al*, (2004) was at the core of the road safety problem and there was a strong relationship between speed and both the number of crashes and the severity of the consequences of a crash. If the number of speeding violations on the roads could be reduced, many lives would be saved. According to Yannis et al., there was no single solution to the problem of excess and inappropriate speeds. A package of countermeasures was necessary in increasing the effectiveness of each individual measure and police enforcement was one of the countermeasures. The most appropriate combination of measures they said was determined by the circumstances. Wegman & Aarts (2006) proposed an integrated, systematic and stepwise approach to speed management:

Step 1: Setting speed limits - A speed limit needs to reflect the safe speed on that particular road, related to road function, traffic composition, and road design characteristics. Furthermore, a speed limit needs to be credible, that is, it must be logical in the light of the characteristics of the road and the road environment.

Step 2: Information about the speed limit - The driver must know the actual speed limit, always and everywhere. This could be done by either by the use of consistent roadside signing and road markings, or by the use of in-vehicle systems that inform drivers about the speed limit in force.

Step 3: Road engineering measures - At particular locations low speeds are crucial for safety such as near schools, at pedestrian crossings and at road intersections. At these locations, physical speed reducing measures such as speed humps, road narrowing and roundabouts could help to ensure cars maintaining a safe speed.

Step 4: Police enforcement to control the intentional speeder - If steps 1 to 3 have been applied, unintentional speed violations will have become an exception. Drivers, who then still exceed the speed limit, do so intentionally. Police enforcement will remain necessary to control and punish that group of drivers.

Each of the steps 1 to 4 as explained by Wegman & Aarts (2006) has to be accompanied by information to drivers on the problem of speed and speeding, what the speed limit system is based on and why, what additional measures have been taken and why, and on the (positive) outcomes of these measures. Within the area of police enforcement, focus was on speed enforcement for two reasons: First, the relationship between excess speed and un-safety was well-established and speed control was one of the major spearheads of road safety programmes world-wide. Secondly, speed enforcement merited special attention in view of the variety of policing methods used to prevent speeding violations and the continuing technological developments in this area. However, that police traffic enforcement

involved much more than just speed enforcement (Peden et al., 2004). The most important requirement for speed enforcement was that it deters drivers from speeding; not only those drivers that have been apprehended for a speeding violation, but even more so, those who have not. This was what was called general deterrence (Zaal, 2004) and for a maximum effect, it is advisable to focus the speed enforcement operations on roads, situations, and times where speeding was considered to have the largest effect on the road safety level.

In major reviews, Organization for Economic Cooperation and Development (OECD, 1999) concluded that enforcement targeted at a limited number of high risk violations was more effective in reducing road crashes than non-targeted general enforcement. There were various reasons given:

- **Organizational:** Given the limited amount of manpower and equipment of police, the enforcement managers will always aim to get maximum value from scarce resources. Focusing on a limited number of high risk violations was more efficient than a nonfocused general enforcement approach.
- **Road safety:** Focusing on one or more high risk violations such as speeding, drink driving, seat belt use and red light running was also justifiable given the scientific evidence of the relationships between these violations and road safety risk;
- **Communication:** it was easier to communicate to road users about a limited and specific number of violations than about traffic violations in general.

Zaal (2004) identified two main methods of speed enforcement. The first one was to check drivers alongside the road and stop offenders and this was often called

stationary enforcement or physical policing. Physical policing, Zaal explained made use of manned (visible or invisible) observation unit and a manned (visible) apprehension unit where the offenders were stopped. When physical policing was randomized in time and location over a large part of the road network, this type of enforcement was called random road watch or network-wide random enforcement. The second method according to Zaal (2004) was to detect speed offenders by means of a speed camera and to send them a fine or a notification by mail. Speed cameras he stated, could be used fulltime at fixed locations (fixed cameras) or can be rotated over different locations (mobile cameras). Speed cameras Zaal explained, could also operate automatically (unmanned) or as part of a manned control (either in a visible or in a hidden car or van).

Psychologists have also pointed out that speed enforcement was essentially an extrinsic motivational approach that relies on negative, external factors like fear of punishment, to change drivers' speed behaviour. This would diminish the intrinsic motivation of drivers to conform to the law, because they want to. The use of punishment instead of reward Goldenbeld (2005) believed could be considered as a one-sided psychological approach. Ideally, traffic enforcement was supported by social norms in a society, and visible police enforcement operations remind road users of the importance of rules and urge them to comply with traffic rules. Whereas, at first, rule compliance may be extrinsically motivated by the aim to avoid punishment, later on drivers may actually change their personal belief about what is the right behaviour and internalize traffic rules. According to Goldenbeld, over the last four decades, under the combined influences of new laws, police enforcement, and public communication campaigns, many drivers worldwide have come to accept the rule 'no drinking and driving' as a strict, personal norm. This

positive development towards an intrinsic motivation for a traffic rule was probably more difficult to achieve for speeding behaviour. For many drivers, the relation between personal speeding and crash risk was less evident than the relation between alcohol and crash risk. More information about the effect of speed on crash and crash severity may help to increase the intrinsic motivation to comply with the speed limit.

Rothengatter (2012) reviewed literature on the short-term effects of enforcement on driver behaviour. He identified three kinds of effects:

- On-view effects – when a driver can see a police unit it can have a substantial impact on elements such as speed, lane choice, overtaking and obeying traffic lights, but the effect operates over narrow ranges of time and distance;
- Memory effect – when a driver travels the same stretch of roadway, it has been measured to last as long as two weeks;
- General "halo" effect – when enforcement influences behaviour over a wide geographic area.

Boom (1983) cited by Lonero *et. al,* (2007) suggested targeting high-risk locations, times and types of violators to create an image of police omnipresence. He hypothesized that drivers' increased awareness of traffic police would make them more careful and would result in fewer traffic violations. Behaviour often changes in the presence of enforcement, particularly if the perceived probability of non-visible enforcement is high enough. Consequently, actual probability is a key factor in the strategy of enforcement authorities, who can be thought of as the driver's opponent in a formal "game." Changes in the behaviour of one player influence the

behaviour of the opponent. Bjornskau and Elvik (2012) offered the idea that drivers' perceptions of the chances of being ticketed were based on the level of enforcement and the level of enforcement set by authorities depended on the speed level of drivers. If more drivers speed, then more enforcement was applied and some drivers slowed down. If speeding was greatly reduced, enforcement would be reduced, and this would cause speeding to increase again. This resulted in a highly unstable situation.

It was concluded by Lonero *et. al,* (2007) that enforcement of road user legislation will be half-hearted because if too much enforcement is set up, it will upset the balance and lead to fewer violations. Then enforcement will have to be reduced. The game model made it clear that fully rational, predictable behaviour could lead to less-than-optimal safety results. They also emphasized that violations and road crashes could be permanently decreased if enforcement was not reduced once it was successful. The most obvious way to do that, they argued, was by automatic surveillance. For manual enforcement, however, an effective strategy would be to allocate enforcement randomly and to keep it at a level just above the "equilibrium strategy," found by evaluation of the effects of enforcement over time.

2.7 Effects of Different Types of Enforcement

Police "job actions" (reduced work or strikes) in Finland and the U.S. had provided opportunities for road safety researchers to study the effect of reduced enforcement. They had found that diminished police presence affected speed and speed variance but had little short-term effect on the number of collisions. Hauer, Ahlin and Bowser (2012) studied the direct local effects of visible enforcement on speeding in four experiments in

Metropolitan Toronto. They explained that when enforcement was visible, average speeds were sharply reduced at the sites. There was a "downstream distance halo effect" that decayed by half every 900 meters. There was also an "upstream halo effect" attributed to CB radio warnings, light flashing and prior experience at the site. A "time halo" was noted, with one day of enforcement having a noticeable effect for about three days, and longer enforcement creating a longer halo.

There have been many evaluations especially in the U.S., where efforts were made to raise seat belt use rates in States that have mandatory use laws. The enforcement programmes began with high baselines created by the introduction of legislation. Consequently, they were focused on the more resistant drivers. Clearly, enforcement raised belt use rates substantially, especially when implemented with publicity and other measures. Beliefs about the motivation for enforcement serve as a barrier to road safety. Evans (2004) cited in McKenna (2006) noted that authorities were accused of using traffic enforcement for revenue collection as opposed to harm reduction. McKenna (2006) also saw public perception of the role for the police as barrier to road safety. According to him, argument frequently encountered was that the police should be out catching real criminals rather than traffic violators. McKenna believed that law breaking by traffic violators could be discouraged by punishing offenders. He explained further that since people were motivated to avoid punishment then success should follow.

McKenna mentioned two features of deterrence as severity and certainty. Severity he explained referred to the magnitude of the punishment with the proposal that as the magnitude of the punishment increases so also does the deterrent effect. Certainty as pointed by McKenna referred to the probability of detection with the proposal that as the probability of detection increases so also does the deterrent effect. However, McKenna argued that although there was consensus that certainty does have an effect, the concern

was that the level of detection was too low. The chance of an individual being caught by the police for a traffic offence was very low. In the U.S., (Lonero *et. al,* 2007) there was approximately one arrest for every 5,000 miles of drunk driving. This rate of enforcement will discourage compliance because of the low risk of sanctions. Highly visible police surveillance, he said, had significant effects on violations. However, those effects were temporary. What was needed as he explained were cues that signal a high degree of certainty that enforcement may take place and have a long duration. McKenna developed an approach for speed enforcement. According to him, to produce a high perceived perception of detection, safety cameras were employed and their positions were prominently displayed. By signaling the presence of the camera drivers were aware that the possibility of detection was high. The issue of duration was addressed by the camera because it could be left operating day and night. The perceived legitimacy was addressed in three ways:

- The cameras were located at areas with a known safety problem so the issue was transparently crash reduction not revenue collection;
- The prominent warning of the cameras made the speeding detection a voluntary offence for the attentive driver;
- Drivers who were caught were offered rehabilitation rather than just punishment.

McKenna stressed further that the rehabilitation was not offered solely to support the issue of perceived legitimacy; otherwise it may support compliance rather than conformity. Conformity he said referred to an enduring change in attitude and behaviour in respond to pressure while compliance referred to a transitory shift without any real change. In other words drivers may comply only in the presence of an impending penalty but with no change in attitude to speeding.

It might be argued that speed is just one offence so what about all the other risk behaviours. Hogg & Vaughn (2005) cited in McKenna (2006) believed that although methods to detect risk behaviours such as close following or mobile phone use were available, they were not as developed as those for speed. Also, when speed was used as the method of detection, other risk behaviours could also be identified. They gave reasons for covering a broad area of risk behaviours rather than confining attention solely to speed:

- Crashes have multiple causes including those other risk behaviours;
- Those who tend to speed also tend to engage in other risk behaviours. That is, those who are more likely to speed are more likely to run red lights, drink-drive, so it was good to take advantage of a unique opportunity to address those other risk areas in addition to speeding.

The rigour with which alcohol-impaired driving laws were enforced had a direct effect on the behaviour of persons driving under the influence of alcohol. Increasing drivers" perception of the risk of being detected was one of the most effective means of deterring alcohol-impaired driving.

The United Nations Economic Commission for Europe (2010), attested to the fact that there was strong evidence from a number of countries for the success of enforcement creating general deterrence on driving under the influence of alcohol, which was, deterring drivers who have not previously been caught. An effective enforcement approach as explained by the Commission included frequent, widespread and highly visible roadside checks. Enforcement, the Commission said was based on the principles of certain detection and conviction, swiftness of the proceeding and on consequences which were severe enough that most drivers would

want to avoid them. The penalty strategy they generally found to be most effective was loss of the driving privilege. Some have advocated severe punishment, such as imprisonment, for alcohol impaired driving offences. However, there was little compelling evidence that imprisonment resulted in lower re-arrest rates for convicted drunk drivers. Some studies according to the Commission have shown a deterrent effect for brief mandatory jail sentences of first-time offenders.

Studies according to Lonero *et. al,* (2007) indicated that it required a balanced programme of enforcement with check points, publicity and preventive behavioural measures such as designated driver programmes to increase drivers' perception of the risks attached to Driving While Intoxicated (DWI). Many legislative and enforcement programmes targeting DWI as presented by Lonero *et. al,* had strong initial effects that have dissipated over time. In British Columbia, collision statistics indicated that the greatest effects came with the greatest levels of public awareness. Random Breath Testing (RBT) they said could have a substantial effect on DWI. When South Australia introduced RBT, the publicity it generated produced a greater effect before it was implemented than after, because it was accompanied by a low level of enforcement. However, the effects in reduced DWI did not last, and there was a marked increase in crashes on back roads as drivers tried to avoid police checkpoints on the main highways. Two other Australian states that introduced RBT with greater enforcement and publicity showed a marked drop in collisions and fatalities. They found that heavy drinkers and those with DWI convictions changed their behaviour more than others. A U.S. study found a need for more standardized and sophisticated sobriety tests that would increase sensitivity to alcohol impairment. Shinar and McKnight (1985) carried out an extensive review of enforcement and related public information that targeted speeding and DWI. They

reached the conclusions that: there could be no perceived risk of enforcement without actual risk; enforcement units must be highly visible to be effective; visible enforcement must appear to be a real threat; uncertainty could extend the range over which drives perceive a real threat; and enforcement efforts must be publicized.

Lonero *et. al,* (2007) produced the following guidelines in introducing enforcement measures to modify road user behaviour:

- ✓ Resources and coordination must be provided to maximize short-term and short-range effects of enforcement and enhance halo effects.
- ✓ Sanctions with real bite, and not just the "cost of doing business," must be created by keeping up to date with public perceptions of probable apprehension.
- ✓ Behaviour analysis in police crash investigation must be improved.

2.8 Reinforcement

James (2007) said prior interventions have not been successful in reducing dangerous driver behaviour because there were two opposing forces working against each other. There were external environmental forces for greater safety (less risk): the construction of more and better roads to accommodate the increasing numbers of drivers every year; the design of better and safer vehicles; a more efficient medical infrastructure to handle victims of crashes; greater use of highway law enforcement and electronic surveillance as deterrents. There were internal individual forces for maintaining high risk (less safety): the acceptance of a competitive norm that values getting ahead of other drivers; the daily round schedule of time pressure and its mismanagement through rushing and disobeying traffic laws; the weak driver education programmes so that most drivers have inadequate training in emotional self-control as drivers; the media portrayal of aggressive driving behaviours in a fun context; and the psychological tendency to maintain a preferred level

of risk, so that increased risks were taken when the environmental forces were introduced ("risk homeostasis"). According to James, scientists and safety officials attribute this resistance to accident reduction to the attitude and behaviour of drivers who tend to respond to safety improvements by driving more dangerously. He reiterated that a critical aspect of driving is the driver's competence in balancing risk with safety. The risk in driving is largely under the control of the driver and the driver decides at every moment what risks to take and what to inhibit or avoid. Risk taking is a tendency that varies greatly between drivers as well as for the same driver at different times. Thus, if a road is made safer by straightening it, or by moving objects that interfere with visibility, drivers will compensate for the greater safety by driving faster on it (("risk homeostasis" phenomenon).

Wilde (1988) developed a Risk Homeostasis Theory (RHT), which warns that drivers may negate some improvements in their road user behaviour by compensating in other ways. For example, less DWI or speeding on main roads is of little benefit if it is offset by more collisions on minor roads. The principal interest in RHT was as a framework for understanding how reinforcements affect road user behaviour, especially incentives. Safety incentive programmes were based upon positive reinforcement of good driving skills and key elements included:

- Standards must be set high but be attainable so as not to reward mediocre behaviour.
- The incentive must be earned.
- The incentive must have some personal value, whether it be an elevation in status, physical reward or both.
- The award should be based upon performance over a reasonable period of time. Not too long or short. For safe driver awards, a yearly interval was

appropriate. For other incentive programmes such as contest, three or six months were appropriate.

- For drivers, individual performance, rather than group performance should be used as criteria.

- It is better for many participants to receive small awards rather than one person to receive a big reward.

- The presentation of an award should be preceded by a celebration to emphasize the importance.

A number of studies reported by Lonero *et. al,* (2007) have also looked at the effects of combining enforcement with feedback signs. One study on two major commuter routes into Dartmouth, Nova Scotia, found that feedback signs such as percentage of drivers not speeding last week, or "Best Record" percentage, substantially decreased the number of drivers who drove at more than 10 km over the limit. Some studies also found that the effect of feedback signs was further increased when police stopped speeders and gave them informational materials and warning tickets, and when police stopped drivers who were traveling close to the limit, thanked them, and gave them token rewards. In the latter case, the number of drivers traveling more than 10 kilometers per hour over the speed limit was reduced by 48 percent and those going more than 20 kilometers per hour over the limit by 64 percent. Studies of the effect of boosting enforcement by doubling patrol density also showed significant effects.

A systematic evaluation of incentives in road safety was carried out in California (Harano & Hubert, 1974). In an innovative and large-scale driver improvement experiment, drivers who had caused crashes or committed violations in the previous year were informed that their licenses would be extended free for 12 months if they

maintained a clean record in the forthcoming year. This carried with it a deferral of the written driver's examination, usually required for license renewal. A control sample of drivers was set up. Significantly fewer drivers in the incentive group had collisions in the first follow-up year. The effect was strongest among the younger drivers and those whose license renewal was to come up within one year after receipt of the letter. In another experiment, a group of drivers was given the free license extension without warning, as a simple reward for a one-year clean record. These drivers performed worse than controls in the subsequent period. These complex findings offered a cautionary note on the use of potentially powerful behavioural techniques that can clearly help but may also harm or be ineffective, depending on details of programme design. Evaluation using appropriate experimental, and control groups is especially critical.

Lonero *et. al,* (2007) confirmed that a large number of evaluation studies have been done on incentive programmes for seat belt use. In general, these studies showed substantial increases in seat belt use when a positive reward was attached to their use. Follow-up studies showed that, although peak use levels slipped, belt use had become habitual for some, and use rates remained above the original baseline.

2.9 Effects of Different Reward Types

In a review of seat belt use in programmes in 28 corporations, using various combinations of the rewards, Geller, Rudd, Kalsher, and Lehman (2007) noted that they were all effective well beyond the end of the programme. But surprisingly, the strongest and longest lasting effect came from the no-reward programme, which included a participative education component. Other studies also showed that no-reward programmes had an

effect that lasted longer after the programme had ended. Researchers have suggested that people better internalize the motives for their actions when the external inducement was small but effective.

Geller (2010) reviewed a variety of intervention tools that have been used to increase seat belt use and decrease DWI and they included vehicle reminder systems such as buzzers and chimes, buckle-up reminder stickers and flashcard cues, education and information programmes as well as television and movie depiction of seat belt use. Tools used to suppress DWI behaviour included feedback such as monitoring blood alcohol levels, modifying the drinking environment (for example "happy hour"), and server education. These seemed weak in comparison to those used for motivating greater seat belt use. Geller pointed out that behaviour analysis was better at encouraging desirable behaviors than discouraging undesirable ones. Russ et al. (1989) in Lonero *et. al,* (2007) reviewed a number of studies that suggested that giving drivers‟ feedback on their blood alcohol level may be counterproductive. A possible reason was that this feedback measures drinking performance rather than driver performance. These kinds of evaluations reminded us that powerful behavioural techniques do not automatically work. As with other approaches, they needed to be carefully designed, evaluated and refined. The survey of reinforcement initiatives for influencing road user behaviour suggested the following guidelines for future work in this field (Lonero *et. al,* 2007): behaviour-analysis techniques to be used in operational programmes to identify target behaviours and influence them; practical incentives and feedback programmes should be developed with appropriate evaluations to maintain their effectiveness; and road users should be encouraged to develop internal controls, such as a wellness approach to their entire lifestyle and social responsibility.

The effective performance of driving schools Education on road accidents

In the mid-1980s the Road Transport Research Programme of the Organization for Economic Cooperation and Development (OECD) of South Africa assessed the effectiveness of road safety education programmes (OECD, 2006). It concluded that road safety education programmes must be explicit about educational objectives, and that these should include intermediate measures as well as measures aimed at reducing collision losses. As pointed out by OECD, what a programme try to teach must relate directly to those tasks a road user needs to learn. However, as explained by OECD that presented a problem because there was a lack of empirical knowledge about what skills a road user should have. Programme objectives, the report said, must also take into account the skills and motives road users already have. In addition, the report addressed many other variables that have to be considered such as the content of programmes, where they are taught, how much is taught, how often, and cultural differences. Canberra (2012), believed that enforcement should not be relied upon as the sole means of reducing traffic accidents. Rather, enforcement, good roads and good road signs should be supported by high levels of public and driver education and programme evaluation. Canberra stressed that publicity and education were essential requirements to raise community awareness and improve the effectiveness of enforcement operations. He however said it was essential that road users actually observe the publicized increased level of enforcement activity; otherwise, behavioural changes may only be short-lived. Canberra also mentioned the incorporation of police education programmes to educate the police on road safety and cost benefits associated with enforcement operations and also, road safety to be made an integral component of driver training. Public education he believed also plays a big part in educating drivers on safety and getting them to obey traffic laws.

Education as a prevention approach was used in an attempt to reduce alcohol impaired driving by altering social norms, changing risky or dangerous behaviours and creating safer environments. Communication and education also provided information to the public about the dangers and the consequences of alcohol-impaired driving. While education and public information were necessary to improve public awareness and supporting enforcement policies, they needed to be part of a comprehensive strategy, and seemed to work best when linked with highly visible enforcement efforts. Many impaired driving offenders have alcohol dependency problems and without appropriate assessment and treatment, these offenders were likely to repeat their crime (United Nations Economic Commission for Europe, UNECE, 2010). UNECE believes that the education of drivers should start at an early age by parents, in elementary and secondary schools and finally in training and examinations for acquiring driving permits. The early steps in road training according to them will contribute substantially to safe behaviour in adolescence and later on in life. To ensure that children and adolescents receive road safety education, the Government provided road safety education programmes for them in school (Roads and Maritime Services, 2011). The rationale of the programmes was to produce behavioural change through programmes and campaigns and the programme was to act as advocate for children in road safety, provide appropriate resources for teachers and students and lobby for best practice. The programme was provided at the early childhood, primary school, secondary school and tertiary schools.

In view of UNECE (2010), the fact that the vast majority of road accidents were linked to inappropriate behaviour on the part of road users, effort should be made to change it and stop accidents from being a commonplace occurrence. One of the efforts mentioned to achieve this was making road users aware of the dangers of the road and the risks they

incur by not observing the rules through communication. Communication strategies and awareness campaigns they said kept drivers up to date and alert, they mobilized and motivated parents, schools and other social institutions. They also created the awareness of the general public that was a necessary basis for good road traffic safety. Communication was also carried through the press, radio and television, the use of which was indispensable for launching road safety campaigns. In order for these campaigns to be effective and achieve the goal they have been given, it was important to establish communication strategies. The Commission, however, noted that communication alone, used in isolation, does not permit modification of behaviour in principle. All campaign assessments showed that information obtains better results when it combines with other measures such as new regulations, upgrading of the road network, and reinforced police checks among others and in these cases, the measures were mutually reinforcing. In addition, the Commission noted that communication must never be an alibi or a pretext for not adopting other safety measures which could prove far more effective.

2.10 Causes of Road Accident

Many researchers have come out with the causes, effects and recommendations to vehicular accidents in Ghana and elsewhere. For instance, Ayeboo (2009), identified that the numerous accidents on our road networks have been linked to various causes which include over speeding, drink driving, wrong over taking, poor road network and the rickety vehicles which ply on our roads. Furthermore, the National Road Safety Commission (NRSC) has identified over twenty causes of road accidents in Ghana which include unnecessary speeding, lack of proper judgment of drivers, inadequate experience, carelessness, wrong overtaking, recklessness, intoxication, over loading, machine failure, dazzling and defective light, boredom, unwillingness to alight from motion objects (vehicles, motor cycles, human being

and uncontrolled animals), skid and road surface defect, level crossing and obstruction. Other factors are inadequate enforcement of road laws and traffic regulations, use of mobile phones when driving, failure to buckle the seat belt and corruption (National Road Safety Commission, 2009).

In spite of all these factors Ocansey (2011) observed that poor vision of drivers could also be a major contributory factor to road accidents. It was obvious that the actual factors which may be influencing the traffic crashes in Ghana have not been identified since most of the factors stated above have not yet been tested with any mathematical and statistical tool to ascertain the truth or otherwise of their contributions. Elsewhere, the causes of road accidents have also been linked to one or combination of the following four factors, equipment failure, road design, drivers" behavior and poor road maintenance. However, studies have shown that over 95% of all road crashes are caused by the behavior of the driver and the combination of one or more of the other three factors, (Driving guidelines, 2010).

According to the country report on Road Safety in Cambodia, road accident is caused by human factors (road users), road defects and vehicle defects. It was found in the report that road accident in Cambodia was increased by 50% in five years while the fatality rate was doubled. To help reduce the rate of road accident it was suggested that Road accidents Safety Committee was set up, accident data system was established, accident evaluation policy and driver training measures were to be put in place (Ung Chun, 2007). In spite of all these facts, some Ghanaians still associate some of the road accidents in Ghana to superstitions, witchcraft and evil forces are accidents caused by witches or irresponsible government policies? It is therefore believed that as a result of these spiritual activities, most people die in

road accidents so that more blood would be obtained by the witches, wizards and the evil forces for their spiritual activities (Okyere, 2006).

Some researchers have also attributed the escalating number of carnage on our roads especially in sub Saharan Africa to bribery and corruption. In a study conducted in Russia to find out the contribution of corruption to road toll, it was found out that people were paying as much as US800.00 to obtain driving license without going through any form of driving school ("Russia" Today, 2010). There is enough evidence in South Africa that the government uses over R500 million annually from the Road Safety Fund to fight fraud, bribery and corruption (Arrive Alive, n.d)

According to Chitere and Kibua (2004) the transport industry of Kenya is so much fragmented with the transport ministry, office of the president and other agencies playing conflicting roles which create bureaucracy, bribery and corruption in the industry since security personnel (police) fail to check and introduce transport laws. Also research by Khayesi (1997) and Lamba et al (1986) shows that most workers of public transports are employed on the bases of relational ties. This practice has not given room to qualify and competent people to work in the transport industry leading to rampant road accidents in Kenya. There is substantial evidence to prove that the higher the number of road accidents which occur in given time period, the higher the number of casualties who die in the accident.

According to Afukaar *et. al,* (2014) in their report presented to the National Road Safety Commission, there was a total of 11320 road accident which killed 1779 people in Ghana in 2005. The number of road accidents increased to 12038 in 2007 and killed 2024 people. At the end of 2009, there were 12299 road accidents in the country and 2237 lives were lost.

However, the report did not fit any model which could be used to estimate the likely road accidents in subsequent years, vis-à-vis the number of casualties who are likely to lose their lives in such accidents. Interestingly, in a study conducted in South Delhi by Kumar *et. al,* (2008), it was found out that most fatal accidents occurred on Saturday but in a study at Nepal, the highest number of road accidents occurred on Sunday and the least number on Monday (Jha and Agrawal, 2004). Coincidentally, it was found in a study in South Africa that most people died through road accidents which occurred on Saturday (20.8%) followed by Sunday with 17.1%, (Injury Mortality Surveillance System, 2005) Kumar *et. al,* (2008) identified November as the month with the highest number of fatal accidents in Delhi. They observed that 11.04% of all fatal accidents in Delhi occurred in November. This finding contradicted the result obtained in Nepal by Jha and Agrawal (2004) who suggested that July was the month in which most fatal accidents occurred in Nepal. In a research conducted in Delhi by Mehta (1968) and Ghosh (1992) it was found that most people were killed in road accidents which occurred in January but National Crime Record Bureau (2005) reported higher incidence of road accidents with much victims in May and March in India. These varying results from various researchers in different countries indicate that it will be difficult to use what prevail in one country to estimate for another country since conditions associated with road accidents may vary from country to country.

2.11 Factors that contributes to Road Accident and death casualties

The cause of death of casualties has been associated with many factors such as secondary collision, failure of drivers and vehicle occupants to put on seat belt and riders failing to put on helmet (Afukaar *et. al,* 2014). Studies have shown that sleep related accidents tend to be more severe and as such most people are killed. This situation is as a result of the drivers' inability to prevent and stop certain actions such as applying the brakes before collision and

steering onto the main road if the vehicle veers off the road. The research identified that in order to reduce the risk of drowsy driving and its related crashes, drivers are advised to have sufficient sleep, drivers are to avoid drinking especially when feeling sleepy and reduce driving between midnight and 6 :00 am (Strohl *et. al,* 1998).

Homes and Reyner (1995) suggested that due to the inactive nature of the sleeping driver to control the vehicle prior to the accident, sleep related accidents have high risk of death as compared with the other forms of road accidents. Furthermore, in a research conducted in the North Carolina, sleep related accident was found to the most severe accidents among all other types of road accidents, Allan et al (1995). Also, Zomer (1990) identified that the number of casualties in sleep related road accidents is 50% higher than all accidents. It had three times fatalities and doubles the seriously injured as compared with non sleeping related road accidents. The sleep related accidents are normally more severe and kills a lot of people because there is no control on the part of those involved in the accident, particularly, the driver.

In this vain, there are certain circumstances which might have been avoided to reduce the number of casualties but due to the drivers' inability to control the vehicle the people suffer the consequences. The age of the vehicle involved in an accident cannot be ruled out of the contributors when one is assessing the cause of death of casualties in road accidents. Broughton (2007) identified that when two vehicles collide, the driver and occupants of the older vehicle are usually at more risk of being killed than those in the newer vehicle. In that study, it was estimated that the mean risk of death of drivers of vehicles which were registered in 2000 to 2003 was less than half of the risk for the drivers of vehicles which were registered in 1998 to 1999 (Broughton, 2007).

This phenomenon may be due to weaker nature of the various parts of the older vehicles and probably the improvement and modernization in the manufacturing of newer vehicles. However, casualty rate increases in collision with more modern cars on non-built-up roads where speeds are higher as compared with that of older cars. The size of a vehicle has also been found to contribute to the death of road users in traffic crashes. From the findings of Broughton (2007) in his study into road accidents data from 2001 to 2005, it was revealed that the driver casualty rate increases with the size of the other vehicle in collision. The question now is, for the past 30 years, the weight and size of vehicles have been improved by 30% yet the number of casualties deaths have not decreased in accordance with that. The fact still remains that people end up relying so much on the strength of their vehicles and take undue risk especially the youth (Broughton, 2007).

Studies have shown that young drivers and young passengers die more in road traffic crashes than their older counterparts (Broughton, 2005). In a research conducted in Britain and Wales to assess the death pattern of various age groups and their sexes within the period of 2000 to 2002, it was found out that 40% of males and 30% of female drivers who died in road accidents were in the age bracket of 16 and 19 years. This number had risen to 44% for males and 38% for females by the end of 2005 (Department of Transport, 2006).

However, it is interesting to note that this pattern changes with age, as the road users grow then the number of females who die through accidents become more than that of male. From 1994 to 2004, there were 13% deaths for men above 30 years and 30% for females in that same age group (Department of Transport, 2006). These sudden changes may be due to the fact that women tend to accommodate more fatigue than men as they grow. Further, women are known to travel more often than men at old age to visit their children and other relatives.

Also, Kumar *et. al,* (2008) found out in their research in South Delhi that with all the people who were killed in road accidents, 88.2% of them were males.

This result actually confirmed the studies by earlier researchers as Salgado and Colombaje (1998), Shadev (1994), and Henriksson (2001), all of whom proposed and substantiated that more males are killed in road accidents than females. Drink-driving is another factor which was identified by Clarke *et. al,* (2007) as a contributor to death of casualties in road accidents. The reason for this could be linked to the inability of the drunk driver to control the vehicle as a result of sleeping (Zomer *et. al,* 1990). Aside the drunk drivers, passengers and other road users who are drunk may even not be aware of what could be going on around them before, during and after the accident in order to take caution to avoid serious injuries and deaths in situation where they could have done so. In addition to this, when passengers are drunk, then it becomes extremely difficult for drivers to take their advice even if they are right. The end result is that drivers do their own things and end up causing accidents which kill people. There were 1106 car drivers who were killed in road traffic crashes in 2005 at Britain and Wales and a study into this data by Clarke *et. al,* (2007) showed that 40% of those who died wore no seat belts and most of them were people between the age 17and 29 years. It was further identified that the desire for buckling the seat belt increases as one grows beyond 30 years (Clarke *et. al,* (2007).

Broughton and Walter (2007) also found out that drivers and vehicle occupants tend to avoid the use of seat belt in the night and as a result casualties" death in road accidents is higher in the night. One of the commonest thing identified by researchers as the cause of death in road traffic crashes is anoxia-loss of oxygen supply –which cause a blockage in the air ways of the casualties and if immediate aid is not taken to avert the casualty, he/she dies after a short while due to inadequate supply of oxygen (British Red Cross, 1997).

Although, there are certain forms of accident which cannot be prevented, it is evidently true that pre-hospital death of road traffic crashes" victims can be prevented when timely and proper first aid measures are put in place, Redmond (1994). Hussein and Redmond (1994) in their study conducted in Staffordshire in pre-hospital deaths in road accidents, they came out with the result that 39% to 85% are preventable and these deaths are caused by airway obstruction. Studies have ascertained the medical assertion that for any accident, there is a„golden hour" which exists for casualties after the accident. Within this period, road accident victims have a greater chance of surviving else they lose their lives, British Red Cross (1997). It is therefore imperative that immediate first aid is provided to road accident victims before they are rushed to the hospital.

2.12 Effects of Different Types of Road Safety Education

School-Based Road Safety Education Programmes

Safety education for younger children targeted the use of bicycles, helmets and seat belts, and skills such as road crossing. Teens were targeted for driver education and responsible use of alcohol. Researchers (Lonero et al., 2007) agreed that classroom instruction was inferior to most other methods. At best, knowledge may be improved, but that change does not produce safer behaviour. In a U.S. study Lonero et al. pointed out that there was a lack of systematic analysis of the skills pedestrians need and a lack of understanding about how children view the traffic environment. They also talked about a number of studies that have been done on programmes that used play and simulation techniques to teach children an adult concept of speed, safe pedestrian habits and how to use crosswalks and all these programmes showed positive lasting effects. School-based helmet promotion programmes in Australia and New Zealand were successful in significantly

increasing helmet wearing amongst children. The programmes incorporated road safety into the daily curriculum for two weeks. This was complemented with a bicycle inspection, discount vouchers for helmet purchase and spot prizes for helmet use. After several months the rate of use increased further and this may have been due to changes in the social acceptability of helmet-wearing. Traditionally, education programmes about seat belt use and child restraint have targeted parents. Bowman, Sanson-Fisher and Webb (1987) cited by Lonero et al. (2007) developed a pre-school programme aimed at children. It taught children to be conscious of wearing their restraints and to insist on wearing them while travelling in the car. It was successful in raising use rates from a baseline of 61 percent to 74 percent. High participation programmes aimed at raising belt use rates in slightly older children were also successful. The conclusion was that the potential for these kinds of programmes was significant and under-utilized.

2.13 Public Education and Information on Road Safety

Wilde (2011) produced an overview of the impact of mass media on health and safety behaviours. He started with the realization that changes in knowledge and attitude do not necessarily lead to changes in behaviour, and he concluded that, while the media influence what issues people think about, people's behaviour is more influenced by appropriate facts, in other words, the media should be more informative. Wilde also emphasized that the more broadly the media inform people on an issue the more likely they will make sensible decisions. Experiments with how newspapers handle collision stories have supported Wilde's theories. Training and education may not be able to produce safer road users on their own because training and education have difficulty changing attitudes and behaviour, but social marketing concepts may offer a solution. A social marketing concept hypothesized by Dussault (2003) offered a model that integrated

research Analysis, safety Products, Promotion, Legislation and Enforcement (APPLE). It stressed participation and involvement, with two-way communication between the target population and the intervention agent. One study to test this approach found that objective information on what drivers think about existing and future road safety measures should be made available to safety management on an ongoing basis.

Visual methods such as films and slides were found to have little impact on behaviour. But videos giving children feedback on their own behaviour had some positive effect. Preusser and Lund (2008) showed that a carefully targeted and intensively presented video feedback programme had positive effects on child pedestrians. Carefully designed educational materials, delivered through community channels, with enforcement as a prompt and a disincentive for non-compliance appeared to produce a moderately effective programme. Rothe and Cooper (1988) cited by Lonero et al. (2007) evaluated two public education campaigns on seat belt use carried out in British Columbia in 1983 and 1987. The first programme aimed at increasing seat belt use. Community organizations and institutions were targeted. Education, persuasion and enforcement efforts ranged from group presentations to a television campaign, distribution of printed materials, a pilot taxicab project and a traffic safety newsletter. The result was a 12 percent increase in seat belt use by all occupants and a 13 percent increase in use by drivers. Those with the lowest use rate increased the most. The second campaign in 1987 used media and promotion rather than community organizations and focused on the risks attached to non-use of belts. Starting at a baseline rate of 78 percent, the study found significant increases. There was evidence to indicate that the increase was related to the level of police charges. The conclusion was that large scale promotion campaigns should carefully consider costs and benefits.

2.14 Community Road Safety Education Programmes

Broad-based road safety approaches with positive reinforcement and incentives were recommended by Lonero *et. al,* (2007). However, they pointed out that the relative importance of skills, abilities, knowledge and motivation was controversial and there was a need to pin down questions about whom to educate, how to educate and to what end. A comprehensive community bicycle helmet programme in Seattle aimed to increase parents' awareness, promote use by children, and reduce financial barriers to helmet use. Television, radio and print were used to disseminate information. Pamphlets for physicians and health departments were distributed. A bicycle safety programme was implemented in elementary schools using posters, stickers and incentives, and discount coupons and donations helped reduce helmet cost. The campaign attempted to reach all income levels and the result was an increase in helmet use amongst school-age children.

2.15 Formal Driver Education Programme

The DeKalb Driver Education Project was the study of beginner driver education (DE). It was to provide improved training and well-controlled evaluation. It was viewed as an experiment to see whether or not driver education can reduce collisions. Students were assigned randomly to an improved curriculum, a minimum curriculum or no training at all. The improved curriculum was more intensive than standard DE programmes (Lonero et al. 2007). Those trained with the improved curriculum showed better on-road skills and lower collision rates per licensed driver during their first 6 months of driving. Collisions per driver were the same for the different groups after 6 months. Lund, Williams and Zador (2006) re-analyzed the data from the DeKalb study and compared the results for the total group, not just those who became licensed. Students who took the improved DE course were significantly more likely to get a driver's license, be in

collisions and have traffic violations than students who had not taken such a course. Students taking the minimal curriculum were also more likely to get their license but were not more likely to be in crashes or have violations. Lund et al. proposed that, until future research identifies more effective programmes, DE should be regarded as a method to teach basic driving skills only and not as a strategy to reduce collisions. Similar results were found in an evaluation of DE training programmes run by the Automobile Association in New Zealand. An evaluation using three different manuals and tests for new drivers, drivers renewing their licenses, and older drivers showed a reduction in collisions. There were also indications that programmes using peer influence were effective. Lonero et al. (2007) provided guidelines on developing road safety education programmes. They said road safety providers must: try to create more than short-term knowledge gains; make sure media expenses are cost effective; target children for complete road user skills; integrate education into broader-based programming that uses a variety of methods such as social action, support for legislation and enforcement, incentives and publicity campaigns; support community awareness of road safety and the development of local standards of behaviour; support the development of a more constructive role for the news media; redesign driver education to recognize the protracted process of learning to drive and the need to use Driver Education in conjunction with other motivational influences.

2.16 The Conceptual Framework of the Study

Vehicular accident in this country has become one of the growing concerns to most Ghanaians in recent times. This is as a result of the tremendous effect of road accidents on human lives, properties and the environment. Heidi (2006) reported that 1.2 million people in the world lose their lives through road accidents every year. This number has risen to 1.3 million people who lose their lives globally every year and between 20 and 50 million people

sustain various forms of injuries annually as a result of road accident. The most affected of these consequences of road accidents is the people in the age bracket of 15 and 29. Road accidents cost the world an amount of US$518 billion annually. It is estimated that if nothing is done globally to curtail the rampant nature of road accidents and most especially the causes of deaths of casualties before they are sent to hospitals then by the year 2020, 1.9 million people will be killed by road accidents in the world (World Health Organisation, 2011).

A research conducted by Salim and Salimah (2005) also indicated that road accident was the ninth major cause of death in low-middle income countries and predicted that road accident was going to be the third major cause of deaths in these countries by 2020 if the trend of vehicular accident was to be allowed to continue. Media reports reveal that there is a high road accident in Ghana, when compared with other developing countries. In 2001, Ghana was ranked as the second highest road accident-prone nation among six West African countries with 73 deaths per 1000 accidents (Akongbota, 2011). The Ghanaian Times news paper reported on the 16thday of November, 2011 that a total of 1,986 lives were lost in the country through road accidents from January to October, 2011 (The Ghanaian Times (16thNovember, 2011).

CHAPTER THREE

METHODOLOGY

In this chapter an attempt is made to look at the research design, target population, data sources, sampling procedures (size and technique), data collection instruments, fieldwork/ data collection and data analysis.

3.1 Profile of the Study Area

Sunyani Municipality is one of the twenty-two administrative districts in the Brong Ahafo Region of Ghana. It lies between Latitudes 7^0 2^0'N and 7^0 05'N and Longitudes 2^0 3^0'W and 2010'W and shares boundaries with Sunyani West District to the north, Dormaa East District to the west, Asutifi District to the south and Tano North District to the east. The Municipality has a total land area of 829.3 Square Kilometres (320.1square miles). One third of the total land area is not inhabited or cultivated which provides arable lands for future investment. The population of the Municipality stands at 147,301 at a growth rate of 3.8%. The population density of the municipality is 122 persons per square kilometre (MPCU Computation, 2010). According to a survey conducted by the Municipal Planning Coordinating Unit in 2010, the densely populated areas in the municipality include Zongo, New Dormaa and Area 2 in that order. Nkwabeng, Abesim and Nkrankrom constitute the medium densely populated areas. The low density areas are Estate, South Ridge, Airport Area, Atronie and Baakoniaba. The densely populated areas are mostly in the low income group whereas the less dense areas are mostly in the high and medium income groups. Of the population 11 years and above, 81,118 representing 85.9 percent are literate and 13,417 representing 14.1 percent are non-literate. Seven out of ten people (72.3 %) indicated they could read and write both English and Ghanaian languages. Of the population aged 3 years

and older, 53,269 is currently attending school whiles 46,559 have attended school in the past (Ghana statistical service, 2010).

3.2 Research Design

The research design includes an outline of what the researcher is writing on including their operational implications to the final analysis of the data. This study adopted the case study design. The researcher used the case study method because among the various research designs, case studies are frequently regarded as using both quantitative and qualitative research and a combination of both approaches (Bryman, 2004). The researcher used both primary and secondary data sources, which were considered to be more appropriate for this study. These types of research approach were used because they eventually enable the researcher to make judgement about the effectiveness, relevance or desirability of the variables. Research methods can be placed into two basic categories: quantitative or qualitative. Qualitative research gathers information that is not in numerical form. The researcher used open ended questions because they help the researcher to gather factual information from respondents. Qualitative data is typically descriptive data and as such is harder to analyze than quantitative data. Qualitative research is useful for studies at the individual level, and to find out, in depth, the ways in which people think or feel (e.g. case studies). The researcher used both qualitative and quantitative research approach for the study.

3.3 Population

The targeted population for the study was 381. The population of the study was made up of drivers, driving school students and tutors residents of the Sunyani municipality. The researcher chose the specific population for the study because he is a resident of the area.

3.4 Sampling Procedures and Sample Size

The ever increasing need for a representative statistical sample in empirical research has created the demand for an effective method of determining sample size. To address the existing gap, Krejcie & Morgan (1970) came up with a table for determining sample size for a given population for easy reference. According to the Krejcie & Morgan (1970), table of determining sample size, a population of 381 requires a sample size of 191. In view of this, a sample size of one hundred and ninety one (191) was chosen for the study. Purposive stratified sampling was adopted to select the student drivers since the intention was to gain an insight into the performance of driving schools and the causes of road accidents, the need to choose potential drivers who would ply the Sunyani highway were approached with a well-designed questionnaire.

3.5 Data Collection Instrument

The main instrument that was used to collect information for the study was questionnaire. The questionnaire was structured to consist of closed ended and open ended type of questions in order to elicit feedback from students. The questionnaires consisted of four sections. Section 1 contains the demographic information of the respondents, including the respondent's gender, age and highest qualifications. Section 2 assessed the effective performance of driving schools on road accidents. Section 3 identified the benefits likely to accrue from road safety education, especially in terms of skills and behaviours of drivers and section 4 evaluated some of the skills or behaviors targeted by road safety education in the Sunyani Municipality. These were the main concept around which data gathered from respondents were analyzed. Likert type scale was used as categories mainly ranging from strongly disagree, disagree, neutral, agree to strongly agree. Personal observations were also made throughout the data collection period. Care was taken in order not to be biased but to

come out with objective interpretations of what was questioned. The researcher used the likert type scale because the scale has variables that could help the respondents provide responses suitable for the study.

3.6 Pilot Testing

The researcher conducted a pilot study to assess the authenticity of the research instruments. The pilot questionnaires were given to 15 people to answer to correct errors like repetition of questions and typographical mistakes and the avoidance of double questions. The pilot testing took place at driving schools in the Sunyani Municipality. The results from the pilot testing became a clear evidence that the questionnaire and interview guide were accurate and grammatically good for distribution.

3.7 Data Collection Procedure

Primary data was collected through a field survey of student drivers from the Sunyani Municipality. Data was collected through the use of a designed questionnaire administered to participants in their schools and vehicles. Questionnaires were filled out by participants on the spot. This means that the questionnaires were filled out by participants and returned to the researcher the same day.

3.8 Data Analysis

Raw data obtained from a study is useless unless it is transformed into information for the purpose of decision making (Emery & Couper, 2003). The data analysis involved reducing the raw data into a manageable size, developing summaries and applying statistical inferences. Consequently, the following steps were taken to analyze the data for the study.

The data was edited to detect and correct, possible errors and omissions that were likely to occur, to ensure consistency across respondents.

The questionnaire data was then coded to enable the respondents to be grouped into limited number of categories. The SPSS version 16 would be used to analyse data. Data would be presented in tabular form, graphical and narrative forms.

CHAPTER FOUR

ANALYSIS OF DATA

4.1 Demographic Information of the Respondents

This section contains tables, frequencies and percentages that indicates the demographic information of the respondents, including the respondent's gender, age and educational qualification.

Table 4.1 shows that 51.3% of the respondents were males while 48.7% were females. This result actually confirmed the studies by earlier researchers as Salgado and Colombaje (1998), Shadev (1994), and Henriksson (2001), all of whom proposed and substantiated that more males are killed in road accidents than females.

Table 4.1: Gender of Respondents

Gender of Respondents	Frequency	Percent
Male	98	51.3
Female	93	48.7
Total	191	100.0

Source: Field work, 2016

Table 4.2 indicates that 49.7% of the respondents were between the age range 36-45 years, 18.3% were below 25 years, 17.8% were between the age range 26-35 years, 8.9% were between the age range 46-55 years, 4.2% were between the age range 56-65 years while 1% were above 66 years. There were several demographic factors that were related to crashes. Age was associated with crash involvement with younger drivers having a higher crash risk (McKenna, 2006). The vast majority of new drivers as explained by McKenna tend to be young which was particularly unfortunate because young drivers tend to choose faster speeds,

adopt closer following distances, have poor hazard perception skills and have higher proportion of their driving at night. Studies have shown that young drivers and young passengers die more in road traffic crashes than their older counterparts (Broughton, 2005). In a research conducted in Britain and Wales to assess the death pattern of various age groups and their sexes within the period of 2000 to 2002, it was found out that 40% of males and 30% of female drivers who died in road accidents were in the age bracket of 16 and 19 years. This number had risen to 44% for males and 38% for females by the end of 2005 (Department of Transport, 2006).

Table 4.2: Age range of the respondents

Age range of the respondents	Frequency	Percent
Below 25 years	35	18.3
26-35 years	34	17.8
36-45 years	95	49.7
46-55 years	17	8.9
56-65 years	8	4.2
Above 66 years	2	1.0
Total	191	100.0

Source: Field work, 2016

Table 4.3 shows that 34% of the respondents were possessing BECE/MSLC as their highest academic qualification, 19.4% of the respondents had never been to school, 16.8% of the respondents were possessing SSSCE/WASSCE certificates, 14.1% were possessing Diploma, 9.4% were possessing Bachelor's degree and 6.3% were holding Masters' degrees as their highest academic qualification.

Table 4.3: Highest educational qualification of the respondents

Highest educational qualification	Frequency	Percent
Never	37	19.4
BECE/MSLC	65	34.0
SSSCE/WASSCE	32	16.8
Diploma	27	14.1
Bachelor's degree	18	9.4
Masters' degree	12	6.3
Total	191	100.0

Source: Field work, 2016

4.2 The effective performance of driving schools on road accidents in the Sunyani Municipality.

Table 4.4 shows the respondent's views regarding the effective performance of driving schools on road accidents in the Sunyani Municipality.

Table 4.4: The effective performance of driving schools on road accidents

The effective performance of driving schools on road accidents	1 Freq. (%)	2 Freq. (%)	3 Freq. (%)	4 Freq. (%)	5 Freq. (%)	Total Freq. (%)
Publicity and education are essential requirements to raise community awareness and improve the effectiveness of enforcement operations.	107 (56%)	63 (33%)	13 (6.8%)	6 (3.1%)	2 (1%)	191 (100%)
Road safety is an integral component of driver training.	59 (30.9%)	106 (55.5%)	18 (9.4%)	7 (3.7%)	1 (0.5%)	191 (100%)
Public education played a big part in educating drivers on safety and getting them to obey traffic laws.	13 (6.8%)	154 (80.7%)	15 (7.9%)	6 (3.1%)	3 (1.6%)	191 (100%)
Driver Education reduces alcohol impaired driving by altering social norms, changing risky or dangerous behaviours and creating safer environments.	81 (42.4%)	103 (53.9%)	4 (2.1%)	3 (1.6%)	-	191 (100%)
Communication and education also provided information to the public about the dangers and the consequences of alcohol-impaired driving.	61 (31.9%)	122 (63.9%)	7 (3.7%)	1 (0.5%)	-	191 (100%)
Driver education creates road users aware of the dangers of the road and the risks they incur by not observing the rules through communication.	106 (55.5%)	72 (37.7%)	11 (5.8%)	2 (1%)	-	191 (100%)
Effective driver education creates the awareness of the general public that accident free driving is necessary basis for good road traffic safety.	27 (14.1%)	159 (83.2%)	5 (2.6%)	-	-	191 (100%)

1- Strongly agree, 2- Agree, 3- Neutral, 4- Disagree, 5- Strongly disagree

Source: Field work, 2016

4.2.1 Publicity and education are essential requirements to raise community awareness and improve the effectiveness of enforcement operations.

Table 4.4 shows that 89% of the respondents agreed that publicity and education are essential requirements to raise community awareness and improve the effectiveness of enforcement operations, 6.8% were neutral while 4.1% of the respondents disagreed. The study concluded that publicity and education are essential requirements to raise community awareness and improve the effectiveness of enforcement operation (Canberra, 2012), believed that enforcement should not be relied upon as the sole means of reducing traffic accidents. Rather, enforcement, good roads and good road signs should be supported by high levels of public and driver education and programme evaluation.

4.2.2 Road safety is an integral component of driver training.

The study depicts that 86.4% of the respondents agreed that Road safety is an integral component of driver training, 9.4% of the respondents were neutral while 4.2% of the respondents disagreed. The study concluded that road safety is an integral component of driver training.

4.2.3 Public education played a big part in educating drivers on safety and getting them to obey traffic laws.

The study shows that 87.4% of the respondents agreed that Public education played a big part in educating drivers on safety and getting them to obey traffic laws, 7.9% were neutral while 4.7% of the respondents disagreed. The study results indicates that public education played a big part in educating drivers on safety and getting them to obey traffic laws.

4.2.4 Driver Education reduces alcohol impaired driving by altering social norms, changing risky or dangerous behaviours and creating safer environments.

The study shows that 96.3% of the respondents agreed that Driver Education reduces alcohol impaired driving by altering social norms, changing risky or dangerous behaviours and creating safer environments, 2.1% of the respondents were neutral while 1.6% disagreed. This revealed that driver education reduced alcohol impaired driving by altering social norms, changing risky or dangerous behaviours and creating safer environments. In addition to this, when passengers are drunk, then it becomes extremely difficult for drivers to take their advice even if they are right. The end result is that drivers do their own things and end up causing accidents which kill people.

4.2.5 Communication and education also provided information to the public about the dangers and the consequences of alcohol-impaired driving.

The study results indicates that 95.8% of the respondents agreed that Communication and education also provided information to the public about the dangers and the consequences of alcohol-impaired driving, 3.7% of the respondents were neutral while 0.5% disagreed. The study finding holds that communication and education also provided information to the public about the dangers and the consequences of alcohol-impaired driving. Education as a prevention approach was used in an attempt to reduce alcohol impaired driving by altering social norms, changing risky or dangerous behaviours and creating safer environments.

4.2.6 Driver education creates road users awareness of the dangers of the road and the risks they incur by not observing the rules through communication.

The study hold that 93.2% of the respondents agreed that driver education creates road users awareness of the dangers of the road and the risks they incur by not observing the rules through communication, 5.8% of the respondents were neutral while 1% disagreed. This means that driver education creates road users awareness of the dangers of the road and the risks they incur by not observing the rules through communication.

4.2.7 Effective driver education creates the awareness of the general public that accident free driving is necessary basis for good road traffic safety.

The study results indicates that 97.3% of the respondents agreed that effective driver education creates the awareness of the general public that accident free driving is necessary basis for good road traffic safety while 2.6% of the respondents were neutral. This clearly shows that effective driver education creates the awareness of the general public that accident free driving is necessary basis for good road traffic safety. The rationale of the programmes was to produce behavioural change through programmes and campaigns and the programme was to act as advocate for children in road safety, provide appropriate resources for teachers and students and lobby for best practice.

4.3 The benefits likely to accrue from road safety education, especially in terms of skills and behaviours of driver.

Table 4.5 indicates the benefits likely to accrue from road safety education, especially in terms of skills and behaviours of driver.

Table 4.5: The benefits likely to accrue from road safety education

The benefits likely to accrue from road safety education	1 Freq. (%)	2 Freq. (%)	3 Freq. (%)	4	5	Total Freq. (%)
Effective road safety education would minimize drunk driving	36 (18.8%)	153 (80.2%)	2 (1%)	-	-	191 (100%)
Effective road safety education would minimize unnecessary over taking, over speeding and overloading	73 (38.2%)	115 (60.2%)	3 (1.6%)	-	-	191 (100%)
Students would learn proper driving and reduce accidents on our roads	113 (59.2%)	73 (38.2%)	5 (2.6%)	-	-	191 (100%)
Drivers would desist from driving and using the mobile phones simultaneously	69 (36.1%)	115 (60.2%)	7 (3.7%)	-	-	191 (100%)
The buckling of the seat belt would be taken seriously	81 (42.4%)	101 (52.9%)	9 (4.7%)	-	-	191 (100%)

1- **Strongly agree, 2- Agree, 3- Neutral, 4- Disagree, 5- Strongly disagree**

Source: Field work, 2016

The study indicates that 98.4% of the respondents agreed that effective road safety education would minimize unnecessary over-taking, over-speeding and overloading while 1.6% were neutral. The study concluded that effective road safety education would minimize unnecessary over taking, over speeding and overloading. Table 4.5 shows that 99% of the respondents agreed that effective road safety education would minimize drunk driving while 1% was neutral. This indicates that effective road safety education would minimize drunk driving. Table 4.5 revealed that 97.4% of the respondents agreed that students would learn proper driving and reduce accidents on our roads while 2.6% were neutral. The study concluded that students would learn proper driving and reduce accidents on our roads. The study depicts that 96.3% of the respondents agreed that drivers would desist from driving and

using the mobile phones simultaneously while 3.7% were neutral. This means that driving school education would help drivers to desist from driving and using the mobile phones simultaneously. The study indicates that 95.3% of the respondents agreed that the buckling of the seat belt would be taken seriously while 4.7% were neutral. Many researchers have come out with the causes, effects and recommendations to vehicular accidents in Ghana and elsewhere. For instance, Ayeboo (2009), identifies that the numerous accidents on our road networks have been linked to various causes which include over-speeding, drink driving, wrong over-taking, poor road network and the rickety vehicles which ply on our roads.

4.4 Skills or behaviours targeted by road safety education in the Sunyani Municipality.

Table 4.6 shows the skills or behaviours targeted by road safety education in the Sunyani Municipality.

Table 4.6: Skills or behaviours targeted by road safety education

Skills or behaviours targeted by road safety education in the Sunyani Municipality.	Frequency	Percent %
Inculcating competency based driving skills that can improve responsible driving and enhance road safety.	46	24.1
The acquisition of effective driving education that can eradicate irresponsible and risky behaviours like drunk driving, making and receiving calls whiles driving, over speeding and overloading.	101	52.9
To educate drivers on the dangers associated with careless driving and road accident.	21	11.0
To instil discipline in drivers that can minimise road accidents on the Sunyani highway.	23	12.0
Total	**191**	**100.0**

Source: Field work, 2016

The study shows that 52.9% of the respondents affirmed that Skills or behaviours targeted by road safety education in the Sunyani Municipality are the provide effective driving education that can eradicate irresponsible and risky behaviours like drunk driving, making and receiving calls whiles driving, over-speeding and overloading, 24.1% said that inculcating competency based driving skills that can improve responsible driving and enhance road safety, 12% said that instil discipline in drivers that can minimise road accidents on the Sunyani highway while 11% said that to educate drivers on the dangers associated with careless driving and road accident. According to the study conducted by Lonero et al. (2007), the improved curriculum was more intensive than standard Driver Education programmes. Those trained with the improved curriculum showed better on-road skills and lower collision rates per licensed driver during their first 6 months of driving.

CHAPTER FIVE

DISCUSSION OF RESULTS

5.1 The effective performance of driving schools on road accidents in the Sunyani Municipality.

The study shows that 89% of the respondents agreed that publicity and education are essential requirements to raise community awareness and improve the effectiveness of enforcement operations, 6.8% were neutral while 4.1% of the respondents disagreed. The study concluded that Publicity and education are essential requirements to raise community awareness and improve the effectiveness of enforcement operations. Canberra (2012), believed that enforcement should not be relied upon as the sole means of reducing traffic accidents. Rather, enforcement, good roads and good road signs should be supported by high levels of public and driver education and programme evaluation. Canberra (2012), stressed that publicity and education were essential requirements to raise community awareness and improve the effectiveness of enforcement operations. He however said it was essential that road users actually observe the publicized increased level of enforcement activity; otherwise, behavioural changes may only be short-lived.

The study depicts that 86.4% of the respondents agreed that Road safety is an integral component of driver training, 9.4% of the respondents were neutral while 4.2% of the respondents disagreed. The study concluded that road safety is an integral component of driver training. Canberra (2012), also mentioned the incorporation of police education programmes to educate the police on road safety and cost benefits associated with enforcement operations and also, road safety to be made an integral component of driver training. Public education he believed also plays a big part in educating drivers on safety and getting them to obey traffic laws.

The study shows that 87.4% of the respondents agreed that Public education played a big part in educating drivers on safety and getting them to obey traffic laws, 7.9% were neutral while 4.7% of the respondents disagreed. The study results indicates that Public education played a big part in educating drivers on safety and getting them to obey traffic laws. In the mid-1980s the Road Transport Research Programme of the Organization for Economic Cooperation and Development (OECD) assessed the effectiveness of road safety education programmes (OECD, 2006). It concluded that road safety education programmes must be explicit about educational objectives, and that these should include intermediate measures as well as measures aimed at reducing collision losses. As pointed out by OECD, what a programme try to teach must relate directly to those tasks a road user needs to learn.

The study shows that 96.3% of the respondents agreed that Driver Education reduces alcohol impaired driving by altering social norms, changing risky or dangerous behaviours and creating safer environments, 2.1% of the respondents were neutral while 1.6% disagreed. This revealed that driver education reduced alcohol impaired driving by altering social norms, changing risky or dangerous behaviours and creating safer environments. Drink-driving is another factor which was identified by Clarke et al (2007) as a contributor to death of casualties in road accidents. The reason for this could be link to the inability of the drunk driver to control the vehicle as a result of sleeping (Zomer et al, 1990). Aside the drunk drivers, passengers and other road users who are drunk may even not be aware of what could be going on around them before, during and after the accident in order to take caution to avoid serious injuries and deaths in situation where they could have done so. In addition to this, when passengers are drunk, then it becomes extremely difficult for drivers to take their advice even if they are right. The end result is that drivers do their own things and end up causing accidents which kill people.

In-depth analysis of incidents on the road network showed that an accident was the consequence of one or more faults in a complex system involving drivers, vehicles, the road and its surroundings. However, the principal factor in road accidents was human error, so that any effort to increase the level of road safety has to be primarily aimed at the prevention of this type of error as well as at ways to reduce the consequences without, however, ignoring other factors linked to the infrastructure and to vehicles (United Nations Economic Commission for Europe, 2010). According to accident data studied by the United Nations Economic Commission for Europe, the vast majority of traffic accidents were attributable to problems in road user behaviour. Such behaviour was often related to a failure to observe regulations relating in particular to speed, alcohol, seatbelts, or to a poor understanding of specific traffic conditions that require heightened caution, such as night-driving.

The study results indicate that 95.8% of the respondents agreed that Communication and education also provided information to the public about the dangers and the consequences of alcohol-impaired driving, 3.7% of the respondents were neutral while 0.5% disagreed. The study finding holds that Communication and education also provided information to the public about the dangers and the consequences of alcohol-impaired driving. Education as a prevention approach was used in an attempt to reduce alcohol impaired driving by altering social norms, changing risky or dangerous behaviours and creating safer environments. Communication and education also provided information to the public about the dangers and the consequences of alcohol-impaired driving. While education and public information were necessary to improve public awareness and supporting enforcement policies, they needed to be part of a comprehensive strategy, and seemed to work best when linked with highly visible enforcement efforts. Many impaired driving offenders have alcohol dependency problems and without appropriate assessment and

treatment, these offenders were likely to repeat their crime (United Nations Economic Commission for Europe, UNECE, 2010).

The study holds that 93.2% of the respondents agreed that driver education creates road users awareness of the dangers of the road and the risks they incur by not observing the rules through communication, 5.8% of the respondents were neutral while 1% disagreed. This means that driver education creates road users' awareness of the dangers of the road and the risks they incur by not observing the rules through communication. In view of UNECE (2010), the fact that the vast majority of road accidents were linked to inappropriate behaviour on the part of road users, effort should be made to change it and stop accidents from being a commonplace occurrence. One of the efforts mentioned to achieve this was making road users aware of the dangers of the road and the risks they incur by not observing the rules through communication. Communication strategies and awareness campaigns they said kept drivers up to date and alert, they mobilized and motivated parents, schools and other social institutions. They also created the awareness of the general public that was a necessary basis for good road traffic safety. Communication was also carried through the press, radio and television, the use of which was indispensable for launching road safety campaigns. In order for these campaigns to be effective and achieve the goal they have been given, it was important to establish communication strategies. The Commission, however, noted that communication alone, used in isolation, does not permit modification of behaviour in principle. All campaign assessments showed that information obtains better results when it combines with other measures such as new regulations, upgrading of the road network, and reinforced police checks among others and in these cases, the measures were mutually reinforcing. In addition, the Commission noted that communication must never be an alibi or a pretext for not adopting other safety measures which could prove far more effective.

The study results indicates that 97.3% of the respondents agreed that effective driver education creates the awareness of the general public that accident free driving is necessary basis for good road traffic safety while 2.6% of the respondents were neutral. This clearly shows that effective driver education creates the awareness of the general public that accident free driving is necessary basis for good road traffic safety. UNECE believes that the education of drivers should start at an early age by parents, in elementary and secondary schools and finally in training and examinations for acquiring driving permits. The early steps in road training according to them will contribute substantially to safe behaviour in adolescence and later on in life. To ensure that children and adolescents receive road safety education, the NSW Government provided road safety education programmes for them in school (Roads and Maritime Services, 2011). The rationale of the programmes was to produce behavioural change through programmes and campaigns and the programme was to act as advocate for children in road safety, provide appropriate resources for teachers and students and lobby for best practice. The programme was provided at the early childhood, primary school, secondary school and tertiary schools. Safety education for younger children targeted the use of bicycles, helmets and seat belts, and skills such as road crossing. Teens were targeted for driver education and responsible use of alcohol. Researchers (Lonero et al., 2007) agreed that classroom instruction was inferior to most other methods. At best, knowledge may be improved, but that change does not produce safer behaviour. In a U.S. study Lonero et al. (2007) pointed out that there was a lack of systematic analysis of the skills pedestrians need and a lack of understanding about how children view the traffic environment. They also talked about a number of studies that have been done on programmes that used play and simulation techniques to teach children an adult concept of speed, safe pedestrian habits and how to use crosswalks and all these programmes showed positive lasting effects.

5.2 The benefits likely to accrue from road safety education, especially in terms of skills and behaviours of driver.

The study indicates that 98.4% of the respondents agreed that effective road safety education would minimize unnecessary over-taking, over-speeding and overloading while 1.6% were neutral. The study concluded that effective road safety education would minimize unnecessary over taking, over speeding and overloading. Table 4.5 shows that 99% of the respondents agreed that effective road safety education would minimize drunk driving while 1% was neutral. This indicates that Effective road safety education would minimize drunk driving. Table 4.5 revealed that 97.4% of the respondents agreed that Students would learn proper driving and reduce accidents on our roads while 2.6% were neutral. The study concluded that Students would learn proper driving and reduce accidents on our roads. The study depicts that 96.3% of the respondents agreed that drivers would desist from driving and using the mobile phones simultaneously while 3.7% were neutral. This means that driving school education would help drivers to desist from driving and using the mobile phones simultaneously. The study indicates that 95.3% of the respondents agreed that the buckling of the seat belt would be taken seriously while 4.7% were neutral. Broughton and Walter (2007) also found out that drivers and vehicle occupants tend to avoid the use of seat belt in the night and as a result casualties′ death in road accidents is higher in the night. One of the commonest thing identified by researchers as the cause of death in road traffic crashes is anoxia-loss of oxygen supply –which cause a blockage in the air ways of the casualties and if immediate aid is not taken to avert the casualty, he/she dies after a short while due to inadequate supply of oxygen (British Red Cross, 1997).

Many researchers have come out with the causes, effects and recommendations to vehicular accidents in Ghana and elsewhere. For instance, Ayeboo (2009), identified that the numerous accidents on our road networks have been linked to various causes which include

over speeding, drink driving, wrong over-taking, poor road network and the rickety vehicles which ply on our roads. Furthermore, the National Road Safety Commission (NRSC) has identified over twenty causes of road accidents in Ghana which include unnecessary speeding, lack of proper judgment of drivers, inadequate experience, carelessness, wrong overtaking, recklessness, intoxication, over loading, machine failure, dazzling and defective light, boredom, unwillingness to alight from motion objects (vehicles, motor cycles, human being and uncontrolled animals), skid and road surface defect, level crossing and obstruction. Other factors are inadequate enforcement of road laws and traffic regulations, use of mobile phones when driving, failure to buckle the seat belt and corruption (National Road Safety Commission, 2009).

In spite of all these factors Ocansey (2011) observed that poor vision of drivers could also be a major contributory factor to road accidents. It was obvious that the actual factors which may be influencing the traffic crashes in Ghana have not been identified since most of the factors stated above have not yet been tested with any mathematical and statistical tool to ascertain the truth or otherwise of their contributions. Elsewhere, the causes of road accidents have also been linked to one or combination of the following four factors, equipment failure, road design, drivers" behaviour and poor road maintenance. However, studies have shown that over 95% of all road crashes are caused by the behavior of the driver and the combination of one or more of the other three factors (Driving guidelines, 2010).

According to the country report on Road Safety in Cambodia, road accident is caused by human factors (road users), road defects and vehicle defects. It was found in the report that road accident in Cambodia was increased by 50% in five years while the fatality rate was doubled. To help reduce the rate of road accident it was suggested that Road accidents Safety Committee was set up, accident data system was established, accident evaluation policy and driver training measures were to be put in place (Ung Chun, 2007). In spite of all these facts,

some Ghanaians still associate some of the road accidents in Ghana to superstitions, witchcraft and evil forces, are accidents caused by witches or irresponsible government policies? It is therefore believed that as a result of these spiritual activities, most people die in road accidents so that more blood would be obtained by the witches, wizards and the evil forces for their spiritual activities (Okyere, 2006).

Some researchers have also attributed the escalating number of carnage on our roads especially in sub Saharan Africa to bribery and corruption. In a study conducted in Russia to find out the contribution of corruption to road toll, it was found out that people were paying as much as US800.00 to obtain driving license without going through any form of driving school ("Russia" Today, 2010). There is enough evidence in South Africa that the government uses over R500 million annually from the Road Safety Fund to fight fraud, bribery and corruption (Arrive Alive, n.d)

5.3 Skills or behaviours targeted by road safety education in the Sunyani Municipality.

The study shows that 52.9% of the respondents affirmed that Skills or behaviours targeted by road safety education in the Sunyani Municipality are effective in driving education that can eradicate irresponsible and risky behaviours like drunk driving, making and receiving calls whiles driving, over speeding and overloading. It was observed that the respondents said that inculcating competency based driving skills that can improve responsible driving and enhance road safety, 12% said that instilling discipline in drivers can minimise road accidents on the Sunyani highway while 11% said that to educate drivers on the dangers associated with careless driving and road accident can eradicate road accidents. Vehicular accident in this country has become one of the growing concerns to most Ghanaians in recent times. This is as a result of the tremendous effect of road accidents on human lives, properties and the environment. Heidi (2006) reported that 1.2 million people in

the world lose their lives through road accidents every year. This number has rising to 1.3 million people who lose their lives globally every year and between 20 and 50 million people sustain various forms of injuries annually as a result of road accident. The most affected of these consequences of road accidents is the people in the age bracket of 15 and 29. Road accidents cost the world an amount of US$518 billion annually. It is estimated that if nothing is done globally to curtail the rampant nature of road accidents and most especially the causes of deaths of casualties before they are sent to hospitals then by the year 2020, 1.9 million people will be killed by road accidents in the world, (World Health Organisation, 2011).

A research conducted by Salim and Salimah (2005) also indicated that road accident was the ninth major cause of death in low-middle income countries and predicted that road accident was going to be the third major cause of deaths in these countries by 2020 if the trend of vehicular accident was to be allowed to continue. Media reports reveal that there is a high road accident in Ghana, when compared with other developing countries. In 2001, Ghana was ranked as the second highest road accident-prone nation among six West African countries with 73 deaths per 1000 accidents (Akongbota, 2011). The Ghanaian Times news paper reported on the 16thday of November, 2011 that a total of 1,986 lives were lost in the country through road accidents from January to October, 2011 (The Ghanaian Times (16thNovember, 2011).

The DeKalb Driver Education Project was the study of beginner driver education (DE). It was to provide improved training and well-controlled evaluation. It was viewed as an experiment to see whether or not driver education can reduce collisions. Students were assigned randomly to an improved curriculum, a minimum curriculum or no training at all. The improved curriculum was more intensive than standard DE programmes (Lonero et al. 2007). Those trained with the improved curriculum showed better on-road skills and lower collision rates per licensed driver during their first 6 months of driving.

Collisions per driver were the same for the different groups after 6 months. Lund, Williams, and Zador (2006) re-analyzed the data from the DeKalb study and compared the results for the total group, not just those who became licensed. Students who took the improved DE course were significantly more likely to get a driver's license, be in collisions and have traffic violations than students who had not taken such a course. Students taking the minimal curriculum were also more likely to get their license but were not more likely to be in crashes or have violations. Lund et al. proposed that, until future research identifies more effective programmes, DE should be regarded as a method to teach basic driving skills only and not as a strategy to reduce collisions. Similar results were found in an evaluation of DE training programmes run by the Automobile Association in New Zealand. An evaluation using three different manuals and tests for new drivers, drivers renewing their licenses, and older drivers showed a reduction in collisions. There were also indications that programmes using peer influence were effective. Lonero et al. (2007) provided guidelines on developing road safety education programmes. They said road safety providers must: try to create more than short-term knowledge gains; make sure media expenses are cost effective; target children for complete road user skills; integrate education into broader-based programming that uses a variety of methods such as social action, support for legislation and enforcement, incentives and publicity campaigns; support community awareness of road safety and the development of local standards of behaviour; support the development of a more constructive role for the news media; redesign driver education to recognize the protracted process of learning to drive and the need to use Driver Education in conjunction with other motivational influences.

CHAPTER SIX

SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

6.1 Summary

The main purpose of the study was to assess the effective performance of driving schools in Sunyani Municipality in the Brong Ahafo Region. This study adopted the case study design. The researcher used both primary and secondary data sources, which were considered to be more appropriate for this study. The researcher used quantitative research approach for the study. The targeted population for the study was 381. The population of the study was made up of drivers, driving school students and tutors residents of the Sunyani municipality. A sample size of one hundred and ninety one (191) was chosen for the study using purposive and random sampling methods. The main instrument that was used to collect information for the study was questionnaire. Primary data was collected through a field survey of student drivers from the Sunyani Municipality. The data was edited to detect and correct, possible errors and omissions that were likely to occur, to ensure consistency across respondents. The questionnaire data was then coded to enable the respondents to be grouped into limited number of categories. The SPSS version 16 would be used to analyse data. Data would be presented in tabular form, graphical and narrative forms.

6.2 Key findings of the Study

6.2.1 The effective performance of driving schools on road accidents in the Sunyani Municipality.

The study shows that 89% of the respondents agreed that publicity and education are essential requirements to raise community awareness and improve the effectiveness of enforcement operations. Moreover, 86.4% of the respondents agreed that Road safety is an

integral component of driver training. The study shows that 87.4% of the respondents agreed that Public education played a big part in educating drivers on safety and getting them to obey traffic laws. Furthermore, 96.3% of the respondents agreed that driver education reduces alcohol impaired driving by altering social norms, changing risky or dangerous behaviours and creating safer environments. The study results indicates that 95.8% of the respondents agreed that Communication and education also provided information to the public about the dangers and the consequences of alcohol-impaired driving. The study hold that 93.2% of the respondents agreed that driver education creates road users awareness of the dangers of the road and the risks they incur by not observing the rules through communication. Also, 97.3% of the respondents agreed that effective driver education creates the awareness of the general public that accident free driving is necessary basis for good road traffic safety.

6.2.3 The benefits likely to accrue from road safety education, especially in terms of skills and behaviours of driver.

The study indicates that 98.4% of the respondents agreed that effective road safety education would minimize unnecessary over-taking, over-speeding and overloading. Moreover, 99% of the respondents agreed that effective road safety education would minimize drunk driving. The study revealed that 97.4% of the respondents agreed that Students would learn proper driving and reduce accidents on our roads. The study depicts that 96.3% of the respondents agreed that drivers would desist from driving and using the mobile phones simultaneously. The study indicates that 95.3% of the respondents agreed that the buckling of the seat belt would be taken seriously.

6.2.4 Skills or behaviours targeted by road safety education in the Sunyani Municipality.

The study shows that 52.9% of the respondents affirmed that Skills or behaviours targeted by road safety education in the Sunyani Municipality provide effective driving education that can eradicate irresponsible and risky behaviours like drunk driving, making and receiving calls whiles driving, over-speeding and overloading, 24.1% said that inculcating competency based driving skills that can improve responsible driving and enhance road safety, 12% said that instil discipline in drivers that can minimise road accidents on the Sunyani highway while 11% said that to educate drivers on the dangers associated with careless driving and road accident.

6.3 Conclusions

The study concluded that publicity and education were essential requirements that raised community awareness and improved the effectiveness of enforcement operations. Also, road safety is an integral component of driver training. Moreover, public education played a big part in educating drivers on safety and getting them to obey traffic laws. Furthermore, driver education reduced alcohol impaired driving by altering social norms, changing risky or dangerous behaviours and created safer environments. To add more, communication and education also provided information to the public about the dangers and the consequences of alcohol-impaired driving. The study hold that driver education created road users awareness of the dangers of the road and the risks they incur by not observing the rules through communication. Also, effective driver education created the awareness of the general public that accident free driving is necessary basis for good road traffic safety. The benefits accrued from road safety education, especially in terms of skills and behaviours of

driver were reduction in unnecessary over-taking, over-speeding and overloading, effective road safety education minimized drunk driving, students learnt proper driving and reduced accidents on our roads, drivers desisted from driving and using the mobile phones simultaneously and the buckling of the seat belt was taken seriously. The study shows that the skills or behaviours targeted by road safety education in the Sunyani Municipality are to provide effective driving education that can eradicate irresponsible and risky behaviours like drunk driving, making and receiving calls whiles driving, over speeding and overloading, inculcating competency based driving skills that improved responsible driving and enhance road safety, instilled discipline in drivers that minimised road accidents on the Sunyani highway and educate drivers on the dangers associated with careless driving and road accident.

6.4 Recommendations

Based on the conclusion remarks of the study, the following recommendations were highlighted,

1. The National Road Safety Commission (NRSC) and the Ministry of the Education should review the curriculum of driving schools to ensure that they are inculcating driving knowledge into drivers which could eventually raise community awareness and improve the effectiveness of enforcement operations.
2- Driving schools in the Sunyani Municipality should continue to make road safety an integral component of driver training.
3- Students of the driving schools should be taught to obey traffic laws and desist from alcohol, drugs, overloading, over speeding, making calls while driving and change risky or dangerous behaviours and create safer environments.

4- There is the need to inculcate competency based driving skills that improve responsible driving and enhance road safety, instil discipline in drivers that minimise road accidents on the Sunyani highway and educate drivers on the dangers associated with careless driving and road accident.

6.5 Suggestions for Further Research

According to the recommendations made, the researcher suggested that a similar study should be conducted to investigate the impact of the NRSC in ensuring road safety in the Sunyani Municipality.

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QUESTIONNAIRE FOR THE RESPONDENTS

The researcher is a product of UEW, Kumasi Campus conducting a piece of research to assess the effective performance of driving schools in Sunyani Municipality in the Brong Ahafo Region. I respectively request that you form part of this research by completing the attached questionnaire. You do not need to necessarily write your name so that you will not be traced or identified. Anonymity and non-traceability are assured. It is my fervent hope that you participate in the study. May I thank you for your valuable cooperation.

SECTION A: DEMOGRAPHIC DATA

1. Gender: Male [ ] Female [ ]

2. Age of respondent

Below 25 [ii] 26-35 years [iii] 36-45 years [iv] 46-55 years [v] 56-65 years [vi] Above 66 years

3. What is the highest level of literacy you attained?

Never [ ] BECE/MSLC [ ]] SSSCE/WASSCE [ ] Diploma [ ] Bachelor's degree [ ] Master's degree [ ]

SECTION B: The effective performance of driving schools on road accidents in the Sunyani Municipality.

Please use the following likert scale to assess the effective performance of driving schools on road accidents in the Sunyani Municipality.

1-Strongly agree, 2- Agree, 3- Neutral, 4- Disagree, 5- Strongly disagree

The effective performance of driving schools on road accidents	1	2	3	4	5
4. Publicity and education are essential requirements to raise community awareness and improve the effectiveness of enforcement operations.					
5. Road safety is an integral component of driver training.					
6. Public education played a big part in educating drivers on safety and getting them to obey traffic laws.					
7. Driver Education reduces alcohol impaired driving by altering social norms, changing risky or dangerous behaviours and creating safer environments.					
8. Communication and education also provided information to the public about the dangers and the consequences of alcohol-impaired driving.					

9. Driver education creates road users aware of the dangers of the road and the risks they incur by not observing the rules through communication.

10. Effective driver education creates the awareness of the general public that accident free driving is necessary basis for good road traffic safety.

Section C: The benefits likely to accrue from road safety education, especially in terms of skills and behaviours of driver.

Please use the following likert scale to evaluate the benefits likely to accrue from road safety education, especially in terms of skills and behaviours of driver.

1-**Strongly agree, 2- Agree, 3- Neutral, 4- Disagree, 5- Strongly disagree**

The benefits likely to accrue from road safety education	1	2	3	4	5
11. Effective road safety education would minimize drunk driving					
12. Effective road safety education would minimize unnecessary over taking, over speeding and overloading					
13. Students would learn proper driving and reduce accidents on our roads					
14. Drivers would desist from driving and using the					

mobile phones simultaneously

15. The buckling of the seat belt would be taken seriously

Section D: Skills or behaviors targeted by road safety education in the Sunyani Municipality.

16. What are the skills or behaviours targeted by road safety education in the Sunyani Municipality?

Inculcating competency based driving skills that can improve responsible driving and enhance road safety.

The acquisition of effective driving education that can eradicate irresponsible and risky behaviours like drunk driving, making and receiving calls whiles driving, overspeeding and overloading.

To educate drivers on the dangers associated with careless driving and road accident.

To instil discipline in drivers that can minimise road accidents on the Sunyani highway.

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