

# **Training Effectiveness and Organisational Development Through Technology: Simulator Based Driver Training and Road Safety**

*Prasad S.N.*

Associate Professor, SDMIMD, Mysore  
snprasad@sdmimd.ac.in

## **Abstract**

*India is home to over 1.2 billion people has a vast network of roads and railways. Public road transport system in India records one of the highest day to day distance usage among all countries of the world.*

*However, the road conditions, nature of road usage by people in India, the density of vehicles on the available roads, level of technology utilised in vehicles as well as poor traffic control etc makes it difficult and chaotic for any driver in India. Several factors contribute in making the road conditions chaotic including lack of formal training, education of drivers of public and hired transport vehicles.*

*Technology is playing a major role in all training processes including driver training. With the help of advanced training methods for driver training especially of bus and large transport vehicles, we can improve road safety as well as contribute to organisational development where these drivers are employed.*

*In this working paper, the author's endeavour is to bring out the following:-*

- *What differentiates Indian road conditions from that in the developed world?*
- *Traditional driver training methods in India and other developing countries.*
- *Why training of bus drivers is crucial to road safety in India*
- *How simulator based training program is different from traditional training methods?*
- *Training philosophy for operators and drivers of equipment*
- *An ideal driver training regime for Indian bus drivers.*
- *How advanced training methods contribute to high motivation levels and better work culture?*
- *Organisational Development through innovative training methods.*

**Keywords** : *Organizational Development, Training Effectiveness, IT in Organizational Development.*

*The author has referred to several journals and research papers related to the specific training regimes discussed in this paper. As regards to the objective, it is to achieve better road safety for the people of India by the use of technology in addition to achieving organisational development.*

## **Introduction**

A country of over 1.2 billion people, the largest rail network in the world, largest number of engineering graduates passing out every year, the much touted most youthful country of 2030 etc 205etc are very pleasant to read, know and feel proud about. In the world of skilled and semi skilled job sectors like masons, drivers, operators, technicians etc in all fields, there is a huge opportunity for today's youth to secure jobs. In the urban, rural, semi rural road and connectivity infrastructure alone, hundreds of billions of rupees worth of investment is going in and is estimated to be made further. That means, there will be a requirement of several millions of skilled and semi skilled workers in the coming decade and beyond. Several Industrial Training Institutes (ITI) and rural training institutes in both Govt and private sectors partly fulfil the demands of the society by providing training for the aspiring youth for such jobs. In the automobile sector, the variety of jobs include drivers, mechanics, operators, maintenance workers etc. In these jobs, all those who aspire for the job may not be going through any institute or formal vocational training to develop the skills. Many of them join automobile repair shops as apprentices due to domestic financial problems, lack of interest in education and several other reasons related to domestic issues and dynamics. After several years of manual work on the job, such people manage to obtain necessary licences to drive, operate and maintain the equipment or vehicle through any

available means. For example, due to the lax or non-existent standardisation of testing procedures and corruption in India, even without the abilities to read or write, a person may secure a driving licence to drive a school bus or operate a bulldozer. This leads to the obvious chaos which we see every day on the Indian roads. The bus driver has the skill to drive the bus but his knowledge of road sense, traffic rules, vehicle technology, interpersonal skills and documentation is only by imitation or practice. The result is, there are more road accidents, more violations of traffic rules, poor documentation and maintenance, more technical failure of vehicles and more middle of the road altercations and tiffs. Training of drivers traditionally was based on class room sessions for theory interspersed with practical training on cut away models. Actual driver training is On-The-Road by driving the vehicle/s provided by the training institute. In developed countries, in the last two decades, most of the vehicle driving training is based on driving simulators which in turn are computer platforms enabling the trainees to learn with imaginary situations, continuous feedback and instantaneous evaluation of performance. Driving simulators are just a part of the story, the technology has advanced to such an extent that even particular locations of the driver's area of operation can be virtually created with the existing or expected road and traffic situations such that the simulation itself becomes absolutely realistic.

In India, presently, most of the state Govt run bus transport systems proclaim that they have driving simulator of some kind whether it is a plain mechanical model made out of a

discarded vehicle or an actual driving simulator purchased from a proprietary manufacturer of simulators. In practice, very few of the drivers hold verifiable records of simulator training which includes number of hours of training, training modes, evaluation outputs etc.

This paper addresses the issue of vehicle driver training which examines the present state of affairs and suggests remedial measures to address the concerns expressed. The objective of this paper is to enable the public transport and load carrier driver fraternity to achieve lower accident rates on the Indian roads. As we will see in the succeeding paragraphs, addressing the training problems of bus drivers, especially the Govt bus drivers may result in improved road accident statistics.

### **What Differentiates Indian Road Conditions from That in the Developed World?**

Apart from the poor state of the usable roads and poor quality of maintenance, there are several factors which characterise the Indian traffic conditions. They are,

- Presence of pedestrians on the motorable part of the road.
- Very high percentage share of two wheelers as part of all motor vehicles on the roads.
- Narrow roads even among those which have been built recently and those which are under planning. Poor civic planning to cater for future traffic.

- Complete non co-ordination between various civic agencies which have a stake in maintaining a good road. E.g., Sewerage board, City /town corporation/authority, Electricity board, cable laying authorities, repair/maintenance contractors, property owners/tenants, road transport authorities, traffic police.
- Rampant licencing of new vehicles without consideration to the road capacities and availability of space for usage and parking.
- Poor quality control of road maintenance and construction.
- Non segregation of vehicular traffic based on speed of movement leading to frequent traffic congestions and jams.
- Poor vehicle maintenance by Govt owned public transport vehicles and Govt departmental vehicles.
- Lack of designated space for embarkation and disembarkation of public transport passengers leading to frequent blockages in traffic.
- Presence of cattle and other animals on the road.
- Unregulated or illegal modifications made on load carrier vehicles leading to increased width /length/ height of the vehicle. Presence of rods and hooks etc protruding from vehicles.
- Lack of traffic policing at key locations.
- Presence of 3 or more passengers on two wheelers meant for 2 adults.

- Overloading of public transport and for-hire vehicles.
- Presence of a large number of drivers of all types of vehicles who are partly or fully unaware of traffic sense. In that, those who obtained their driving licence without any knowledge of traffic signs, etiquette, cause most of the problems.
- A very low ratio of the number of police personnel to the public leading to lack of control on the roads even in 'normal and calm' situations.
- Absence of discipline among the public leading to crowding on the road to look at an accident site or to witness an altercation between two groups of people etc.
- Permissions given to hold processions and marches on normal usable roads.
- Illegal construction of temporary or permanent structures on the road.

The above are a glimpse of the problems faced in India and are by no means exhaustive. In such conditions, the public transport drivers have to ply their vehicle and at the same time maintain the time schedule given to them. Driver of the public transport vehicle like a passenger coach, does not have control over any of the above problems but has to live with them and learn to operate the vehicle in such conditions. Discussions and analysis of the above problems will not be done in this paper as it is beyond the purview of the subject under consideration.

Hence, the focus will be on the driver training to drive in Indian road conditions and prevention and reduction of accidents by improving the training methods for the drivers.

### **Traditional Training Methods in India and Few Other Developing Countries**

Traditional training methods for bus driving involve a few theoretical classes about the vehicle structure and mechanisms as well as practical classes with actual vehicle driving. Since the trainees are normally literate and can speak in regional languages, the classes are conducted in regional languages and the instructions use translated technical terminologies which often are inadequate to explain the complexities if any in spares and assemblies of the vehicle. Further, many of the terminologies will be distorted words of the original English technical terms. This adds to the problems by confusing the trainees as the same words refer to different parts of similar nature located at different places on the vehicle. E.g., A valve is spoken as a valve, but different types of valves are present all over the vehicle.

The basic problem is the lack of knowledge of English language and the inadequacy of the translators to effectively use the available words in the vernacular to convey the meaning of the technical terms. As it normally goes, these driver training modules end with an examination where in the candidates are evaluated based on their ability to answer questions in writing as well as in a viva voce.

Practical training involves around 20-30 sessions of driving on regular road under supervision normally on un-modified buses without dual control for the instructor and the trainee.

### **Why Training of Bus Drivers is Crucial to Road Safety in India?**

If we analyse the statistics of road accidents in India, buses constitute nearly 30-35% of all the vehicles involved in road accidents. Within that, Govt buses constitute over 50% of those buses because of the sheer number of Govt buses present on Indian roads. On an average, Govt owned or contracted buses carry 45 million passengers every day and one can imagine the amount of driver kilometres made in a single day in India.

Road conditions being the same for all vehicles on the Indian roads, buses among all the heavy vehicles, stand out as the most vulnerable of the vehicles prone to road accidents in India for the following reasons:-

- Due to the size of the vehicle, buses occupy more road space in a congested road within a city or outside the city limits.
- The bus drivers are always in a hurry as they have to stick to the time schedules set by the organisation, hence they tend to drive faster wherever possible.
- Unlike the load carrying trucks, buses cannot avoid traversing busy roads and intersections because the very existence of bus service is based around densely populated areas.

- Over loaded buses cause the driver to lose rear field of view on the left (far) side and it is common practice in India to overtake from the left (wrong) side, especially the two wheelers.
- High number of two wheelers in India render bus driving more and more difficult for the drivers.
- Two wheelers pose the maximum problems for the bus driver as he/she cannot see the two wheeler on the far (left) side due to the covered body of the bus and the low silhouette of the two wheeler.
- Narrow roads make it very difficult for the bus driver to manoeuvre.
- Being present in higher density on city roads and populated areas than load carrying trucks, higher number of buses at any given time make them subject to higher number of road accidents.
- Larger the vehicle size, higher will be the damage on the road if for any reason, the driver loses control over the vehicle. Buses are large vehicles and they tend to cause more damage if the driver loses control while driving.
- Poor management in carrying out preventive maintenance activities tend to cause technical failures in buses especially so among Govt buses.
- Most of the newly manufactured buses have full forward control, that is, the driver sits ahead of the front wheels where in the overhang in front of the front

wheels is nearly 1.5 metres. This renders driving very difficult on Indian roads especially in negotiating corners.

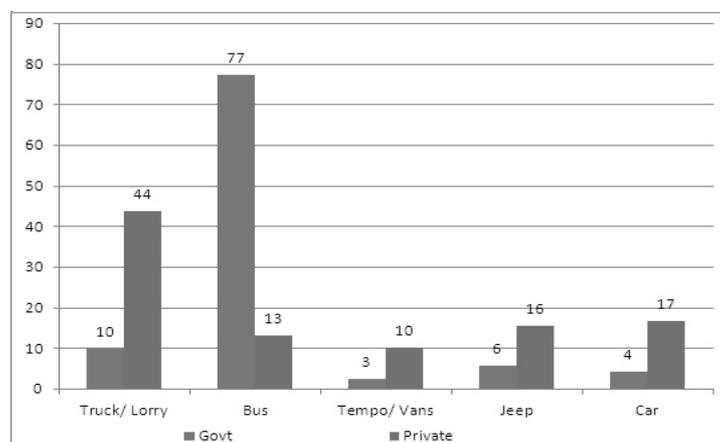
Presently, the average length of passenger buses in India range from 11metres to 14 metres. Some of the multi axle models introduced are now of 14 metres in length. Whether the bus is 11 or 14 metres, it is characterised by the following as regards to road safety and usage:-

- Any accident or incident involving a bus may result in injury or death to more number of people as compared to other vehicles. Buses are people carriers.
- Buses ply on intercity roads, express ways and city roads as a routine.
- Number of buses plying on the city roads form a large percentage of the heavy vehicles.
- Due to the requirement of maintaining time schedule in arrivals and departures, bus drivers of school buses, transport buses, city shuttles are always under pressure to speed up, which may lead to accidents and incidents.
- Proximity to passengers including children sitting or standing in the bus and their speaking to the driver or making noise may distract the driver and can cause accidents and this normally does not happen in the case of load carriers. It is important to address the need for training the drivers in appropriate human interactions as well.

- Buses normally travel faster than load carrier vehicles and other heavy vehicles.
- Buses as a rule in India are overused and under maintained. Many of the long route buses travel continuously for 20 hours or more, sometimes on very badly maintained roads. This leads to lack of time for maintenance and upkeep which in the long run causes accidents and incidents.
- Long route buses are normally allocated with two drivers who switch places after every few hours of driving or the second driver relieves the first driver mid way. However, in India, these requirements are routinely flouted and drivers are always overworked and fatigued.

An analysis of the number of road accidents and the percentage of accidents involving buses is shown below. It is evident that buses cause or get involved in more number of road accidents as a pro-rata share than any other type of vehicle. It is also seen that the number of privately owned buses involved in accidents is much more than the number of Govt owned buses. This may be because of the numbers of the privately owned vehicles being more as well as non adherence to safety regulations as laid down by the Transport Authority or sheer absence of the resources and manpower with the private bus owners. As mentioned above, bus accident means more injury or death. This leads to heavier loads on the hospital and insurance organisations as well.

Another reason for more number of accidents involving private buses is the lack of standard salary structure for bus drivers. They normally earn much less than the Govt bus drivers and thus tend to work more number of hours. Many of them may even be former truck drivers who are not specifically trained to drive a bus but have experience of driving heavy vehicles.



(Data Courtesy: Govt of India, Ministry of Information and Publicity)

If we address the issue of bus driver training as a specific case, it will go a long way in reducing the number of road accidents effectively.

### **How Simulator Based Training Program is Different from Traditional Training Methods?**

Simulators are computer based equipments with a screen or a view finder worn on the eyes of the trainee with programmed contents to test the situation reaction of the

operator. Traditional driver training methods involve making the trainee drive on actual roads subjecting other road users to possibility of injury or harm. During the training program, the trainee may or may not face a particularly difficult traffic situation. This leads to a disparity in training difficulty level among the trainees of the same class. In the case of a simulator based training more and more imaginary situations can be created with increasing difficulty levels and the trainees of the same class are subjected equally to all levels of difficulty. That is, the driving capability evaluation is more normalised in case of a simulator based training program.

Another aspect of simulator based training is that it lets the trainee compete with himself in each progressive session. Every session ends with an evaluation and awarding of marks without any human intervention. This makes the trainee develop confidence as he progresses with the training. Any kind of bias, human error or favouritism in awarding marks etc do not exist in the case of simulator based training.

Simulator based training can be followed with On the Job Training in actual operational atmosphere, that is the public roads. A trainee who has spent several sessions on the simulator may find more at home in tackling actual road conditions than that of a trainee who comes on the road for the first time in a nervous mental state. Thus the simulator based driver training avoids subjecting road user to the unevaluated skill levels of a trainee driver.

## **Training Philosophy for Operators and Drivers of Equipment**

Vocational training involves the method of knowing and doing. That is, to impart theoretical aspects as in a class room and then make the trainees to do the practical aspects with their own hands. The practical training or On the Job Training reinforces the learning of the trainee by making him/her register the doing part duly supported by the theoretical knowledge. However, this being the basic premise of vocational training, several new methods have developed over the last hundred years moving with the technological developments taking place around us.

Driving simulators are the main training aid in all driver training programs across the world. Most of the driving simulators made are of western origin and come with the pre loaded driving conditions of the country of manufacture unless it is custom made on order by the buyer.

A basic driving simulator will have a wide video screen streaming typical traffic scene in a dynamic mode. That is, the driver starts the vehicle, drives on the road, stops and shuts the engine. The effectiveness of a simulator training depends solely on how realistic the passing scenery or the dynamism of the setup. Higher the complication, higher the nearness to the real scene, more will be the effectiveness. A typical stream of video captures a road scene as done by the manufacturer and the same is repeated over and over again for the trainee to practice on.

Normally, the controls and the operation will be similar to a regular bus and the trainee driver sees that his actions result in the bus behaving the way he intends it to behave. Whenever the driver displays poor skills in his driving ability, the system warns him by audio or by a warning light indicating wrong usage. Some of the advanced systems even evaluate the drivers and give a score. This will be more useful in evaluating at the end of a training program.

However, regular use of driving simulators to train public transport bus drivers even now is an exception. Among the drivers on road of the state Govt run transport organisations, over 70 % of the drivers are those who were not trained on a simulator. Of the 30% who were trained could use the simulator nominally for one or two sessions.

Several private organisations of transporters as well as bus manufacturers offer driver training as a package to bus buying organisations. Volvo Ltd, located near Bangalore is one of them. Volvo offers a week long driver training program custom made to the location of use of their buses and this training is very sought after among the driver community. It is evident from the fact that the number of road accidents in which Volvo buses are involved as a percentage of all the bus related road accidents is less than 7% when calculated pro rata.

### **How Simulator Based Driver Training is Becoming More Common in Developed Countries**

As argued by Wendy Lewitt on Fleet Owner.Com(2010), road vehicle control technology is advancing rapidly in the use of computer assisted navigation, trouble shooting and

assistance. On board video monitors provide position data, safety data including whether the passengers have secured their seat belts, whether the doors are closed within the vehicle and the nature of turns in the next kilometre, vehicles coming in the opposite direction, speed and position of the vehicles immediately ahead and behind etc. That is, if the driver is not conversant with the use of such controls, he will definitely be a hazard for others and himself on the future roads.

India, as a fast growing developing Nation with 1.2 billion population is in the cusp of a high growth path in line with the demands of the huge market for goods and services. As per the 11<sup>th</sup> and the 12<sup>th</sup> Five Year Plans published by the Govt of India, the envisaged investments for infrastructure including road infrastructure is over US\$ 240 billion, which now seems very conservative. While the new highways are built, new buses from Volvo, Mercedes Benz and M.A.N. are in competition to woo the state Govts to buy their products for public transport. All these buses as per the European Union Standards are equipped with the GPS, Driver Tracker, Safety Net, Accident Prevention Radars etc. However, such equipment will become utterly useless if the road infrastructure is not equipped with the sensors, warning beacons and most importantly if the drivers are not trained to use these equipment. One may argue whether we need these 'expensive' equipments for the Indian roads? It is reiterated that we do need these equipment more than ever on the Indian roads because our driving conditions are far more complex and uncertain than the European roads leading to large number of accidents.

In a 2011 report on 'Simulator Based Training for Bus Drivers – Current Developments in Europe' prepared by the Leonardo Da Vinci Partnership, Dortmund, Germany by Ulrich Gruneberg, Gerd Helmchen, Britta Lang and Antonius Schroder, they have emphasised on the updation of the simulator constantly and the feedback of the trainees as well as the user organisation on the performance of the drivers. European Union countries have already formulated standards and stipulations for Driver Training as per EU Directive 2003/59/EC and the Simulator Training Process under Directive 2003/59/EU.

Though, in India, the infrastructure, societal mindset and literacy levels limit the rate of technological advancement as regards to the stringency of road safety applications, while we are on the move to build infrastructure, it is better to adapt to the best of the systems available in the world. European Union boasts of the best managed and most complex road network in the world connecting the 11 original EU countries and 6 other surrounding countries. All these countries are benefiting by having established and commonly accepted standards of driver training and evaluation system.

### **What Needs to be done to Initiate a Modern Bus Driver Training Program in India?**

At the outset, there are some basic requirements which need to be fulfilled. Some of them are listed as per the following:-

- Educational qualification to become eligible for selection as a bus driver trainee must not be less than Intermediate or 12<sup>th</sup> Standard. A vehicle driver today works with more technologically oriented atmosphere. There is more electronics and computer related gadgets involved than ever before. Drivers need to develop aptitude for technical learning before entering the driver training programmes.
- Need of having Driver Manuals made by the bus manufacturer in the language they understand. India is home to over 800 languages and are in use actively. Bus drivers come from all parts of India and speak, write and listen differently. Buses being technical equipments, the manufacturers tend to design their manuals and necessary instructions in English or Hindi as they deem fit. In many instances, the drivers learn the contents of the manual by rote to pass examination and then that knowledge fades away. Manufacturers need to become sensitive to vernacular languages and make driver manuals in local languages.
- Bus drivers need specific training in ensuring disciplined way of living as a professional. For example, they stipulate in the field of Civil Aviation that there should be a gap of 8 hours between the bottle to throttle. That is, if the pilot consumes liquor, he will not be allowed to fly the aircraft for 8 hours after drinking liquor. As a society, we must accord similar importance to vehicle drivers as we give to aircraft pilots. Any mishap causes loss of life in both cases.

- Today, everyone uses mobile phones, some of use advanced mobile phones with more applications. Even bus drivers use mobile phones. The technology used in these mobile phones is similar if not more advanced than that of a driving simulator. However, it is seen among the driving community in India that simulator training is viewed with scepticism as something beyond their capability. Transport authorities across India must sensitise the general public about the effective use of simulators for driver training.
- Before embarking on the driver training programmes, State Govts must interact and standardise the traffic rules and training requirements for bus drivers. To make the issue far reaching, school syllabus must include data on traffic rules and road safety.
- Before entering into contracts to purchase buses, the buying organisations must make it a part of the deal to train the drivers through the manufacturer with simulators encoded with data of that particular model of vehicle under consideration.

Once we have a conducive environment for driver training as mentioned above, the training regime for bus drivers may be taken up with the following aims:-

- The objective of the bus driver training will be to make him able to operate, manoeuvre the bus safely in the prevalent traffic conditions without difficulty keeping the passengers, the vehicle and himself safe.

- The driver should be able to address minor technical problems at his level if the situation demands.
- The driver should be able to communicate to the concerned personnel to address the problem if it is beyond his level.
- The driver should be comfortable in interacting with people normally without being perturbed by noise or paying attention to his driving task simultaneously even if someone is speaking to him.
- The driver should be able to give first aid if there is a need.
- The driver should be able to assist civil authorities if there is a road accident not involving his own vehicle and his assistance is demanded.
- The driver should be able to understand, operate and use all modern gadgets present in the bus to enable driving, communication, minor troubleshooting and preventive maintenance schedules.
- The spirit of training lies in the trainee being convinced of its use in day to day application. The simulator must not become an ornamental device to be seen only during the initial training. Simulators must have training modules for refresher training after breaks for the driver.

### **How Modern Training Programs Contribute to Employee Motivation, Better Work Culture and Overall Organisational Development?**

Firstly, training by itself is a primary step in organisational development. In addition to the enhancement of Knowledge, Skills and Abilities of employees, training provides them the opportunity to interact with each other, compare their skills and knowledge with their peers within the organisation. Such a platform for interaction always results in networking, camaraderie and a feeling of belongingness to the organisation. For example: Even the most senior level employees remember and reminisce their training days and keep in touch their colleagues and friends during the training period. This kind of network builds mutual trust within the organisation of having gone through the same training regime and having become qualified.

Secondly, identifying oneself with the modern equipment, a high technology machine is natural for any operator, driver, technician or an engineer. For example, a fighter pilot proudly associates himself with the abilities and power of his fighter jet, a crane operator associates himself with the abilities of his machine to lift very heavy loads effortlessly. The bond between the man behind the machine and the machine is as old as the known history of mankind.

Thirdly, modern training methods involve the trainees to learn new, sought after skills by which they can operate, drive and analyse the working of hi tech machines. Training provides a platform for the trainees to identify themselves

with the technological developments in their work related environment. Training builds confidence in a professional and a confident employee is an asset to the organisation.

Lastly, motivation is a result of several factors. When the employee finds himself being chosen for training for which the organisation invests money and resources, he realises that it is due to his potential to deliver and contribute to the organisation in future. This realisation motivates the employee in addition to his being comfortable in terms of salary, work culture and career.

The above factors contribute immensely to the organisation development and modern methods of training add value to the image of the organisation as a progressive employer.

### **Organisational Development Through Innovation in Training Methods**

It is evident from history that those organisations which adapt to new technology and innovate surge ahead in terms of growth and profitability. Employee training is one of the basic functions which lead to organisational development. Once the organisation realises the positive effects of the new training regime, in terms of reduced road accidents involving its vehicles, better skilled work force and much reduced cost of vehicle maintenance etc, the processes of training can be standardised and consolidated.

Following this standardisation of training methods, the organisation will be in a position to obtain relevant certifications from ISO systems and other quality standards

organisations. This will lead to an enhanced position for the organisation as a practitioner of quality training methods and progressive management style. This will lead to long term dividends in terms of customer confidence and satisfaction, ability to attract investment and employee satisfaction.

### **Conclusion**

This paper is a working paper in the path to develop a suitable and advanced training regime for bus drivers in India. Befriending the technology and becoming part of the technological processes which result in saving of human lives and comfort are common aims of all societies. Due to developmental lags, Indian transport system and road system have lagged behind the developed countries causing more accidents and damage. Adapting to new systems of driver training may result in lesser road accidents and more safety to pedestrians as well as vehicle users.

If we compare the educational level of bus drivers in the developed world and ours, there is not much of a difference. The difference is in attitude and the language in use. As regards to the attitude, due to the lack of strict control and implementation of existing road safety and vehicle operating rules in India traditionally, what today's drivers have seen since their childhood as normalcy in India is the chaotic situation of traffic. The driver will never consider a minor flouting of traffic rules as a serious issue unless a mishap happens in front of his eyes.

As regards to the skill levels, Indian drivers if trained in the language they understand, are equal if not better in adapting to new traffic situations as compared to the drivers from developed countries. Since the operating instructions, manuals and maintenance schedules are printed in English by the manufacturer, our bus drivers tend to ignore or even hesitate in following the written instructions. A drive must be initiated by the Govt of India to translate the relevant literature into all local languages such that the drivers understand them completely.

In this age of cyber revolution, it is not difficult to design simulator based driver training programs in local languages as well. Training in all vocations including that for drivers, especially for the public bus driver may be made as a part of the infrastructure development issue by the Govt.

### **References**

Report on 'Simulator Based Training for Bus Drivers- Current Developments in Europe-2011 by Ulrich Gruneberg, Gerd Helmchen, Britta Lang and Antonius Schroder of Leonardo Da Vinci Partnership, Dortmund, Germany

Training of Commercial Motor Vehicle Drivers by Loren Staplin, Kathy H Lococo, Lawrence E Decina, Gene Bergoffen of Transanalytics, Kuppsville, PA- Transportation Research Board, Washington DC, 2004

Driver Training and Endorsement Strategy- Discussion Paper by CFA, Transportation Research Board, 2009

Information from Govt of India, Ministry of Information  
and Broadcasting, 2011

21<sup>st</sup> Century Driver Training- Article by Wendy  
Lewitt- Editorial Director of 'Fleet Owner, January 2006.