

Electronic Logging - Ensuring a Safer Youth on our Roads

Sabljak, G.¹ Markus, L.¹

E-log Systems Pty Ltd

Abstract

Vehicle crashes are most likely to occur in the first six months of driving when the new driver is least experienced. Crash risk in the first year of driving is several times greater than in subsequent years. Inexperience is the most significant factor contributing to young driver crashes. New drivers lack a number of critical traffic skills. These include the ability to observe and make sense of the road and traffic environment, to anticipate potential hazards and recognise danger, and to make accurate assessments and decisions quickly to avoid hazards.

Despite minimum requirements for learner drivers to complete a defined amount of practice hours there is overwhelming evidence that indicating that more than 60% percent of learners are not completing the required hours but instead are manipulating and misrepresenting hours recorded in manual log book.¹

LDR® (Learner Driver Recorder) was developed by e-Log Systems™ Pty Ltd as an accurate electronic method of logging learner driver hours which can't be manipulated or misrepresented.

LDR® is a smartphone application that enables the learners' driving hours to be easily tracked, evaluated, authorised and driving skills improved. The application has been in development over the last two years and is available for learner drivers to download and use as a replacement for the manual logbook.

Keywords: Learner Driver, Logbook, LDR, Electronic Logging

Introduction

New drivers often cannot cope with the high level of information to be processed, or with increases in the complexity of the driving task. They often do not judge, anticipate, and compensate for hazardous conditions and what other road users are doing. Learners with 120 hours supervised learner practice have a 30-35 per cent lower crash risk in the first two years of licensed driving than learners with around only 40 hours of supervised practice¹. New drivers who complete a shorter learner period are estimated to have less driving practice and an increased crash risk of up to 60 per cent¹.

Nearly one third of the road toll results from crashes involving 17-25 year old drivers – in 2012 280 died², almost 10,000 are seriously injured in these crashes each year. The cost to the community of these casualties is more than \$6.5 billion every year. Despite significant road toll reductions since 1990, young drivers between the ages of 17-25 years of age continue to have more casualty crashes than any other group of drivers on the road.

Parents are vital in the learner-supervisor partnership and can influence levels of driving practice. When educated about the safety limitations of their newly licensed children, parents have been found to play a key role in ensuring compliance with graduated licensing restrictions. There have been some improvements in young driver crashes since the introduction of the current licensing system, together with learner support programs promoting 120 hours supervised on-road practice.

Statistics show that driving a car is one of the most dangerous things a young person will ever do. A large amount of on-road driving experience is required before traffic skills improve and crash risk reduces. Experience reduces the mental effort needed to drive, improves judgement and anticipation, and reduces driving errors. Driving is a complex and mentally demanding activity. Safe driving skills develop with extensive on-road driving practice. Increasing experience, safe driving skills and driving competence is a key focus of measures identified in the learner and early probationary driving stage.

To better prepare new drivers for the demands of probationary driving, a number of measures are suggested in the learner driving stage to extend learning and increase supervised on-road learner practice. The learner driving stage needs to provide a solid foundation for the development of safe driving skills. These include a 12 month minimum learner period, a requirement to complete 120 hours supervised on-road driving practice. Experience reduces the mental effort needed to drive, improves judgement and anticipation, and reduces driving errors.

A large amount of on-road driving experience is required before traffic skills improve and crash risk reduces. Research shows that learners who practice more are safer as newly licensed drivers. Driving is a complex and dangerous activity. It takes time and experience to become a safe driver. New drivers make mistakes. These can have lethal consequences, as demonstrated by their very high involvement in fatal crashes.

Whereas there is overwhelming evidence that supports longer supervised hours will produce more experienced probationary drivers, many learner drivers are failing to complete the prescribed amount of practice hours and are likely to manipulate and/or misrepresent the amount of hours completed in the manual log books. More than 4000 SA students were surveyed on their driving habits during an RAA road safety awareness event in 2012 and 62 per cent said they completed less than the 75 hours practice prior to their final driving test³.

Using electronic logging as means of recording learner driver hours and driving sessions is simple and easy to maintain, record and verify. This is one such method that can be immediately adopted and have an immediate impact in the battle against road trauma. This method specifically targets the 17-25 year old demographic who are the most vulnerable after obtaining a probationary licence.

Method

Logging learner driver hours via an iPhone/android smart phone application which accurately records; dates, times, odometer readings, supervisor signatures of driving sessions and safely backs up all data to a secure website, where log book can be printed off and presented in an accurate and legible format. Printed format is identical to that of each state's log book.

E-Log Systems™ Pty Ltd has have developed, and patented⁴, the concept for a mobile phone application that will transform the way both new drivers and eventually government authorities, track the learners’ driving practice. The application is called LDR® - Learner Driver Recorder - a downloadable mobile phone application that enables the learners’ driving hours to be easily tracked, evaluated, authorised and driving skills improved.

LDR® ensures accurate recording of driver training hours, and provides an evaluative analysis in relation to areas for improvement, thus helping to reduce deaths and injuries caused by car accidents and the ongoing pain and suffering these accidents bring about in surviving victims, families and friends. LDR® makes logging time easy and quick, encouraging our Learner Drivers to actually use the solution which they identify with very easily as it is technology driven.

Key features of the solution are:

- Can be used in every Australian state.
- Records every minute of every drive, both current and cumulative.
- Records starting/finishing odometer.
- Records distance traveled, both current and cumulative.
- Automatically finds your starting and ending locations (suburb).
- Supervisor’s signature on the smartphone device is required for every driving session.
- Allows only 5 minutes for a session to be signed and submitted .
- Detailed log book input and layout in accordance with government regulations.
- Triple time “supervisor” calculations for QLD and NSW.
- Ability to load and use multiple supervisors.
- Ability to load and use multiple car registration numbers.
- Ability to share progress with Facebook friends.
- Stores multiple driving sessions on iPhone and all driving sessions on website.
- Stops recording after 10 minutes of non-movement inactivity.
- “My time” displays at a glance the time driven, the time remaining and number of trips taken.

In an effort to sure data and session cannot be misrepresented, LDR® has numerous anti-fraud features such as:

- Sessions cannot be submitted without supervisor’s signature.
- Once session is submitted and uploaded no further data alteration/manipulation is permitted.
- Five minute limit to submit session ensures supervisor signs of on session otherwise session is deleted.
- 10 minute non-movement warning, which means the application, stops recording after 15 minutes of non-movement activity.
- Google map tracking and display of all trips to ensure the trip was actually done.
- South Australia and Tasmania require both supervisor and learner’s signature to complete a driving session, which we has incorporated into the application as a compulsory requirement, but perhaps all states should adopt this measure as part of a way “to link the driver to the vehicle”

All driving sessions are submitted to the devices' database, and when the user is ready to upload to the website, all the driving sessions will be saved onto a secure web server that is backed up on a daily basis. Users needn't worry about losing a paper log book as all the uploaded driving sessions will be securely backed up onto the server, in effect also saving a user the cost of having to replace a lost paper log book.

All driving sessions can be individually view via the website. Driving sessions can be printed off when required in the exact the same format as the manual logbook for each state. Each driving session can be viewed in “Maps” and multiple driving sessions for a specified date period on a map overlay, allowing users to easily see where they have mostly driven and other areas they perhaps need more practice in.

The data capture, coupled with the mapping provides an invaluable in road statistical analysis, which can be, used to focus on and identify problem areas and assist learners to further enhance skills so as to gain as much experience as possible.

Results

The results have not yet been determined as LDR® has not yet formally been endorsed by the states' road authorities. There is however sufficient evidence to support that if all learner drivers complete their prescribed hours that in doing so will significantly contribute to more experienced drivers on our roads. Experience in turn shows that learner drivers are likely to decrease their chances of being involved in a road fatality or on serious road trauma by up to 30-35 percent.

Currently over 2000 learner drivers are using LDR® which can be easily monitored via download reports that are available. The rate of enquiry and request for support is less than one percent which indicates that the application has to date been well received and requires very little assistance with set up and use. Many of the inquiries are not support related but rather suggestions on how the application can be improved or questions relating to some of the features.

Discussion

Whereas LDR® has numerous benefits in combating the youth road toll, there are many cost benefits that are also worthy of consideration. Approximately 27 billion dollars is spent annually in Australia on road fatalities and serious accidents. There are an estimated 30,000 serious road accidents and well over 1,300 road fatalities in Australia each year⁵. Of great concern is that 17-25 year olds make up 25% of the road statistics and with a single cost of a fatality or serious accident being \$857,143 it is imperative that learner drivers take to the roads with as much experience as possible. If this is achieved, the long-term effect will also be reflected in reduced road statistics in the older demographics over time. In other words the experience and skill achieved early in a driver's life will continue to improve with age.

Considering the figures on a national scale, it is simple to work out that if we accomplish just a one percent improvement in learner drivers experience and skills by ensuring they complete their required hours, the cost benefit of \$67,500,000 per annum is achieved in the 17-25 year old demographic. *(further cost benefits and statistics are set out in tables 1-3)*

Table1. National Annual Road toll Statistics⁵

Total Number of fatalities per annum			1,500
Total Number of serious accidents per annum			30,000
			31,500
Cost of a single Fatality / Serious accident per person			\$857,143
Portion of Fatalities / Serious accidents pertaining to 17-25 year olds			25%
Total number of Fatalities / Serious accidents pertaining to 17-25 y/olds			7,875
National Cost of Fatalities / Serious accidents pertaining to 17-25 year olds			\$6,750,000,000

Table 2. Cost benefit of implementing LDR & reducing road statistics in 17-25 year old demographic

Reduction in road statistics =	1%	cost benefit =	\$67,500,000
Reduction in road statistics =	2%	cost benefit =	\$135,000,000
Reduction in road statistics =	3%	cost benefit =	\$202,500,000
Reduction in road statistics =	5%	cost benefit =	\$337,500,000
Reduction in road statistics =	10%	cost benefit =	\$675,000,000

Table 3. State by State apportioned cost of fatalities and trauma in the 17-25 year old demographic

Average number of learners per state			Apportioned Cost per State
NSW	250,000	38%	\$2,556,818,181.82
VIC	150,000	23%	\$1,534,090,909.09
QLD	120,000	18%	\$1,227,272,727.27
WA	70,000	11%	\$715,909,090.91
SA	40,000	6%	\$409,090,909.09
TAS	29,000	4%	\$296,590,909.09
NT/ACT	1,000	0%	\$10,227,272.73
TOTAL	660,000	100%	\$6,750,000,000.00

Conclusion

For almost two years e-log Systems™ has been committed to developing a learner driver smart-phone application for electronic logging of driving sessions. By ensuring that learner drivers complete the required supervised practice hours, we believe this will have a positive impact on reducing the road toll for drivers in the 17 to 25 years of age category.

The LDR® application with all of its built in safety and anti-fraud features is the most advanced application of its sort currently available, and with further enhancements and anti-fraud features planned this will only further reinforce the need to log hours wherever possible via a smart-phone device and ensure that young drivers will be better equipped when they take to the roads. E-log Systems™ recognises the importance of dealing with a target audience of 15-18 year olds. Using LDR® will ensure that learning to drive remains both an important yet enjoyable process as well, and using technology which speaks their language will no doubt guarantee this outcome.

Acknowledgements

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References

1. Gregersen, N.P. (1997). Evaluation of 16-years age limit for driver training. First report No. 418A. Linkoping, Sweden: VTI (Swedish National Road & Transport Research Institute).
 2. statistics.infrastructure.gov.au/
 3. <http://www.adelaidenow.com.au/ipad/extend-learner-training-says-raa/story-fn6bqpju-1226351364589> (May 9th 2012)
 4. Granted Australian Innovation Patent No. 2011100185.
 5. Source- ATC 2010 – Australian Transport Council and ANZPAA 2012 – Australia New Zealand Policy Advisory Agency
- Sagberg, F. (2002). Driver education from the age of 16: Potential of an extended learning period and increased driving experience to reduce the crash of novice drivers. Experiences in Norway. In: BAST (ed.), Zweite internationale Konferenz “Junge Fahrer und Fahrerinnen. Berichte der Bundesanstalt für Straßenwesen. Mensch und Sicherheit. Heft M 143, Bremerhaven: Wirtschaftsverlag.
- Sagberg, F. (2002). Summary: Driver training, driving experience, and crash risk (English summary of report in Norwegian), *Oslo: Institute for Transport Economics*.
- VicRoads August 2005 *Young Driver Safety and Graduated Licensing* - discussion paper
- Willmes-Lenz, G., Prucher, F. & Grosman. H. (2010). Evaluation of the novice driver training models “*Accompanied driving from 17*” and “*Voluntary further training seminars for holders of probationary driving licences*”.