E-Learning of Router Applications to Drivers in Order to Reduce Collisions and Road Accidents with Wild Animals

Hamid Reza Sodagar[1]*, PhD; ⓘ Mousareza Es'hagh-Pour Rezaee[2], BA; Reza Shekarian[3], PhD; Taqi Rahmati[4], MA

[1]Department of Educational Management, Gorgan Branch, Islamic Azad University, Gorgan, Iran
[2]Department of English, Bojnourd University, Bojnourd, Iran
[3]Department of Agricultural Sciences (Watershed Management), University of Agricultural Sciences and Natural Resources, Gorgan, Iran
[4]Department of Crisis Management, Tehran Branch of Science and Research, Islamic Azad University, Tehran, Iran

ABSTRACT

Road collisions are the most important cause of wildlife mortality, and almost all countries are involved in some way. Researchers believe that changing the behavior of drivers through e-learning can help reduce road collisions by informing and raising awareness about the negative consequences of animal deaths on the road; installing warning signs, markings and speed bumps, increasing road lighting, and reducing traffic speeds physically or mentally, by creating speed bumps or increasing obstacles and road curves in high-risk areas can also help. Placing wildlife trails or approaching wildlife crossings in navigation programs like Balad and Neshan that are more popular with drivers can help guide traffic and reduce wildlife crashes. People should be taught how to use the software above to find areas where animals are likely to be on the roads. This will help people avoid accidents with animals on the roads and save them both money and time.

*Corresponding author:
Hamid Reza Sodagar, PhD;
Department of Educational Management, Gorgan Branch, Islamic Azad University, Gorgan
Tel: +98 9151575838
Email: hamidreza.sodagar@ yahoo.com

Introduction

The rapid growth of e-learning through new technologies has raised the level of awareness and literacy of general people. Every day, we see new tools and methods to convey new information to people. These technologies include user navigation tools and e-learning (1). Given that routing is one of the first steps in designing a route, the most basic parameter is finding the shortest way to minimize the negative environmental effects such as air pollution, noise, and changes in the appearance of the area and reduce road accidents (2).

Also, with the advancement of modern technologies, routing to find the optimal traffic route followed by reduction of transportation costs, environmental pollutants and urban traffic time has been made and the need for this issue feels more urgent than ever (3). Habitat degradation is currently one of the most important threats to biodiversity in the world, and roads are currently one of the causes of wildlife habitat degradation. Disruption is one of the side effects of agriculture and forestry, which has many adverse effects on animal populations. In addition to land use

change, increasing road network, which is an important feature of development and urbanization, is a serious threat to biodiversity and animal populations. Currently, roads and other linear infrastructure are a major cause of habitat destruction in most parts of the world (4).

Various methods have been implemented in the world to reduce road collisions:

Deer-related vehicle collisions are on the rise in the United States. Many methods have been used to try to reduce deer road collisions, often with little scientific basis and limited evaluation. The only widely accepted method is well-designed fencing with underpasses or overpasses (5). Also in the United States, transportation planners are increasingly combining road design features to reduce highway impacts on wildlife and increase driver safety. Using cameras and tracking surveys to assess the use of wildlife before and after the construction of underpasses on highways shows that deer have increased 6.7 times more than underpasses to cross the highway, and 58% of fatalities have been reduced (6).

An automatic animal detection and warning system can help drivers reduce the number of collisions between an animal and a vehicle on roads and highways. In this method, various photos and videos of animals are stored in the camera memory. When the car approaches the animals, the camera installed on the car warns the device, and the driver notices and brakes. After proper training and testing, the method can be used with other animals. (7).

These methods require a large budget for construction and production, as well as training to change the behavior of animals by relocating water and food sources or changing the space of roads so that they look unsafe for animals. Preventing animals from crossing the road (at least when passing cars) by creating ultrasonic waves, installing reflectors and fencing, creating overpasses and underpasses for animals are more difficult than training drivers to maintain safety issues while driving, so the use of training methods and placement of wildlife crossings in Balad

and Neshan software is recommended to drivers to reduce road collisions with wild animals. Because this software has already been produced to reduce urban and road traffic, only the entry of information on wildlife trafficking areas on the road is done in coordination with the producers of this software. In this method, the Environmental Protection Organization identifies all the busy routes of wild animals in each province, and after this, the software is installed and virtual training is provided by the Road Transport Organization to the drivers. By installing the camera experimentally in some places, one can see the feedback of using the software to reduce road collisions with wild animals.

Conclusion

Using Internet technology, e-learning has been able to connect individuals like a bridge. People can determine their routes in the shortest possible time by using mobile phones and installing router software and its virtual training. These routers can also help the Environmental Protection Agency reduces wildlife accidents. To take effective actions, we should do virtual training of router software to vehicle drivers and placement of wildlife crossing paths with green colors and images of the animals of the area, and train the software alarm when approaching the wildlife crossing to drivers to slow down their speed and reduce road accidents.

Conflict of Interest

The authors declare that there is no conflict of interest in this study.

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