Simulation: Proven Effective For Training Drivers

VDI

"Learning is by doing. If you can't do it before you do it, expect to learn it as you do it." *- Anonymous NASA employee*

History of Simulator-Based Training

Simulators have been used for several decades in aviation training, both commercial and military. Air Force, Marine Corps, the Army and Navy have trained their airmen, sailors and soldiers in the rules of engagement, judgment, combat, marksmanship and indirect fire on simulators. Before pilots fly the world's most advanced fighter jets, they fly first on simulators. Helicopter pilots benefit from simulator technology by improving their overall readiness at an earlier stage of their rotary wing training. Simulation provides for reduced costly flight hours and improved safety and training outcomes. Emergency vehicle operators use simulators to learn safe driving maneuvers in emergency response situations without endangering themselves or the public. Each is completely safe, because they can crash on a simulator, and live through it. Each is more technically proficient, safer and mission-ready.

Do Simulators Provide Effective Training for Drivers? Yes!

"Simulator training can prepare drivers to respond appropriately to hazardous conditions and thus avoid accidents." *- NTSB Chairman Jim Hall*

Recent research has investigated the training benefits that driving simulators provide. there is compelling evidence that simulator-based instruction provides a high transfer of learning rate on new and experienced drivers. Moreover, it has been proven that ***making mistakes*** is a key dimension to learning. Flach et al. (2008) stated: "This is likely to be one of the values of simulators – they offer an opportunity to learn from mistakes in a forgiving environment"[1].

[1] *Flach, J.M., Dekker, S., & Stappers, PJ (2008). Playing twenty questions with nature (the surprise version): Reflections on the dynamics of exprience. Theoretical Issues in Ergonomics Science. 9. 125-154*

Key Results of Driving Simulator Research & Studies: Fleet Driving Programs

Research Finding	Source/Study
"**AAA Foundation for Traffic Safety** has recently sponsored a research program on evaluating driver education programs Lonero and Clinton 2006). Although specifically aimed at commercial driving training enterprises, early data indicate that well designed CBI, including simulation, can improve student performance."	*Large-Scale Evaluation of Driver Education view of the Literature on Driver Education Evaluation 2010 Update*. Lawrence Lonero, Northport Associates, Dan Mayhew/Traffic Injury Research Foundation for the AAA Foundation for Traffic Safety.
"In these days of high-priced fuel, **simulators provide a cost-effective solution** to initial driver training. Besides financial benefits, simulators offer great opportunities for carrying out objective measurements on the user's actions in a safe and purpose-developed virtual environment (Vlakveld, 2005b)."	Dr. Ir. Joost C. F. de Winter, Department BioMechanical Engineering, Delft University of Technology, The Netherlands.
"Simulators are able to replace some of the hours spent in the actual vehicle. This can have a significant impact on training costs, as **simulator costs can run as low as $3 per hour per student vs. $40 per hour per student for in-vehicle training**. " "Schneider National in Green Bay, WI implemented a technology-based program for entry-level commercial drivers that included classroom, simulation BTW and computer based instruction. They reported that their 0-to-90 day **accident rate decreased** from 31% to 10% and that for each 1-day reduction in training time, saved $7,000,000 annually. " "The use of simulation **reduced training time** in one agency from 19 days to 17 days by replacing classroom bus training with simulator training. In another agency, using simulation reduced training time by 5 days."	*Effectiveness of commercial motor vehicle driver training curricula and ...* By John F. Brock, United States. Federal Motor Carrier Safety Administration. Brock, Jacob & McCauley 2001
"The California Commission on Peace Officer Standards and Training Driver Training Study found that driver training that utilizes a driving simulator result in nearly a **10% reduction of traffic collisions**."	*California Commission on Peace Officer Standards and Training Driver Training Study*
"Changing from classroom instruction to simulator-based training resulted in a **75% reduction in critical errors** (not to mention a safer environment on the track for the drivers and instructors!)."	*Analysis of Simulator-based Training Effectiveness through Driver Performance Measurement*. Darrell Turpin, Reginald Welles, Applied Simulation Technologies
"Another study reviewed the effectiveness of simulator based training. The Texas Association of Counties had goals of using a simulator to reduce auto liability and workers' compensation claims. After training 2,000 law enforcement, road and bridge truck drivers and other county drivers, they have **reduced auto liability claims** by 55%. Additionally, they reported an 18% reduction in occurrences for the 21-month period since using simulator-based training."	*Preliminary Results – Simulator Based Training to Reduce Costs*. Paul Hoff. May 2002.