

Evaluating the effectiveness of a human factors training –Focus on situation awareness

*Nicki Marquardt, Swantje Robelski, Gwen Jenkins, & Rainer Höger
Leuphana University of Lüneburg
Lüneburg, Germany*

Abstract

This paper presents the evaluation of a human factors training specifically designed for employees in manufacturing within the automotive industry. The central objective of this training program was to increase the workers situational awareness about potential errors that can occur during the production process. According to Endsley (1995) situation awareness encompasses three levels: the *perception* of elements in the environment, the *comprehension* of their meaning for the current situation and the *projection* of current states into the future. Various tools were used to improve the workers three levels of situation awareness. Specifically, a flicker paradigm and a structure formation technique were adjusted and used to train the perception, comprehension and projection of errors at various stages within the production process. Seventy employees, all of which were working in a production unit for gearbox manufacturing, participated in the training program of this study. All workers and their direct supervisors had to answer general questionnaires and take task-specific tests for measuring the workers degree of situational awareness one month prior to and after, as well as six months after the training session. The results showed a significant increase of the workers situational awareness after the training. At the end of this paper recommendations for future research in the field of human factors training are made.

Introduction

Today, industrial workplaces are often very dynamic and the electronic and automation systems are highly complex. Such workplaces impose a considerable burden on workers because mistakes on their part could have severe consequences. Endsley (1995) developed a model of situation awareness that explains which requirements and conditions have to be given for humans to attain a state of awareness that would lead to making appropriate decisions and actions in a given situation. According to Endsley “Situation Awareness is the perception of the elements in the environment within a volume of time and space, the comprehension of their meaning, and the projection of their status in the near future” (1995, p 36). Due to not being bound to a specific field of work, the theory of Situation Awareness is applicable to various industries including production and manufacturing.

In D. de Waard, J. Godthelp, F.L. Kooi, and K.A. Brookhuis (Eds.) (2009). *Human Factors, Security and Safety* (pp. 101 - 110). Maastricht, the Netherlands: Shaker Publishing.