Fast and effective learning of assembly tasks. Implications for work instructions

Gu van Rhijn, Michiel De Looze

TNO, Department of Work and Employment, Hoofddorp, The Netherlands

Abstract

A variable market demand, a large product variety, a short product life cycle fast developments in production technology as well as an ageing workforce consisting of considerable amounts of temporary workers, form today's context in which manufacturing companies perform. Companies that are able to deal with these challenges are a step ahead of their competitors. This requires a flexible organization, in which the ability to quickly learn new tasks and the stability of performance after learning is of high concern.

We studied the learning of assembly skills in a mock-up experiment, where a common assembling task (i.e., build an object out of 6 components) was performed by young and older adults, following two methods of instructions invoking more or less explicit/conscious processes. The stability of the resulting learning was tested against the introduction of a modification in the task and its persistence was tested on a separate day (consolidation).

Main results were (1) lower performance of older adults compared to younger persons after a fixed period of learning, (2) the more explicit method of introduction give better results for the older people (within the younger group both methods lead to equal results), and (3) a short task modification leads to a loss in quality, particularly in the older group.

The main conclusion is that younger and older people are able to learn. Older people would benefit more from technology support in the workplace, in particular individually adjusted types and amounts of instructions.