

D. Struve. Process oriented worked examples for training older adults to use interactive systems. Gerontechnology 2008; 7(2):216. As inexperienced users, older adults often meet difficulties while trying to interact with new technologies that often lead to a reduced usage and acceptance. Beside the approach of designing special products for the elderly, training programmes can be provided to close the gap of technical knowledge and competence. In the following study, a training programme was developed to train older adults to use a ticket vending machine. It consists of instructional videos and a simulation of the technical device. Special needs of the older learners were taken into account. Following the Cognitive Load Theory (CLT), instructions should be designed in consideration of the limited capacity of working memory¹. This is notably important, as capacities of working memory decline with age and will be even more limited. Moreover, CLT suggests, that instructional materials should reduce extraneous, ineffective load, which is imposed by the design of the learning environment itself and should enhance effective, germane load². One principle in designing instructions to enhance learning for novices is the application of process oriented worked examples³. Worked examples in general consist of a problem formulation, solution steps and the solution itself⁴. In process oriented worked examples, additional explanations of principled 'how' (strategic knowledge used by an expert in selecting operators) and 'why' (rationale behind the selection and application of operators) information is provided by an expert. It is suggested that instructional design which is based on process oriented worked examples may enhance learning for older adults to use interactive systems, because it provides an additional help to understand interactive processes. **Methods** Research is conducted in a one-factorial design, where the independent variable 'training method', consists of two treatments (with and without worked examples). 40 Participants between 60-74 years were evenly matched to both training methods regarding participant's age, gender and prior experience with ticket vending machines. Learning gains were measured with a multiple choice test, screen comparisons where erroneous features had to be recognized and tasks where important functions had to be placed in printed screens before and after the training. For performance measurement, time, keystrokes and error rate was logged during task operation in each of the six lessons. Perceived Cognitive load was measured after each lesson by the modified NASA-TLX that was used already in other studies⁵. **Results and discussion** Analysis of the training phase showed no significant differences for the dependent variables number of errors, time and additional keystrokes for accomplishing tasks. Moreover, learners improved significantly from pre to post test in both conditions. A significant main effect for the training version was only found for tasks with screen comparisons, which were used to measure the existence of an appropriate mental model $F(1, 38) = 5.09, p < .05, r = .35$. Finally, subjects in both groups estimated cognitive load of all lessons equal, no significant differences occurred for measures of intrinsic, germane and extraneous load. First results of the study showed that training programs can support older adults in using ticket vending machines, but additional information provided by process oriented worked examples may have only limited effects on training performance and success.

References

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