

EVALUATION OF A CASHIER TRAINER

THIS KTP EVALUATES THE PRINCIPLES AND METHODOLOGIES CONCERNING MEASUREMENT AND OPTIMIZATION OF TRANSFER OF GAMING BY VALIDATION OF A CASHIER TRAINER WITH AN ELABORATE STRUCTURED CHECKLIST AND BY EXPERIMENTAL COMPARISON OF TRANSFER WITH AND WITHOUT THIS CASHIER TRAINER.



SUMMARY

Potential users of serious gaming products (e.g. in education and companies) require useful and evidence-based games that are not only attractive and motivating, but also combine didactical surplus-value with cost-effectiveness. Knowledge on the combination of these major elements is still scarce, especially validation methods and measurement instruments to provide evidence for this surplus value. It is expected that the present practical translation of our GATE knowledge with regard to validation tools and best practices may result in more effectively designed games such as the Cashier Trainer developed by Jutten Simulation. These games include all major aspects of serious gaming such as didactics, motivation and cost-effectiveness and have high training potential.

In WP 4.4. of the GATE Scientific Program, design and validation principles for instructional games have been developed. This included, for instance, a stepwise reference framework, a taxonomy for predicting transfer, and a structured checklist for the design and evaluation of serious games from a didactical and cost-effectiveness point-of-view. However, there is still a need for a sound practical evaluation and practical elaboration of this methodological knowledge on usability, added value, best practices, etcetera. Therefore, in the present KTP we verify and improve the applicability of this knowledge with a practical test-case. In addition, we aim for hard evidence of high transfer of training of serious gaming.

CONTACT

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Dr Esther Oprins is also research scientist at the same TNO Department. Her main expertise is training design (simulators, serious gaming), assessment (PhD thesis), performance measurement and validation.

As a test-case we have chosen the Cashier Trainer, developed by Jutten Simulation. We expect this to be a well suited case that may deliver high transfer because of its sane instructional features. The Cashier trainer is representative for a broad range of didactical serious games, since a complete range of competences are trained in a synthetic 3D PC-based environment including interaction with virtual characters, instructional tutorials and intelligent feedback.

EVALUATION OF EFFECTIVENESS AND EFFICIENCY

More in specific, the Cashier Trainer is intended to simulate the entire cashier task, which includes operating the checkout system, communicating with (animated) customers, dealing with specific payment methods, logistics etcetera. A sophisticated Intelligent Tutoring System supports the trainees with learning the procedures independently of a human coach. With that, the cashier training is a good example of a serious game in which all kinds of skills from simple to complex can be practiced in an environment that is realistic and motivating. This trainer combines a simulation of a complete task and job environment including virtual characters with didactical principles in an attractive and accessible way. The trainer is intended to be used by retail organizations in The Netherlands. The game is internet-based and runs on the trainee's home PC. The aim of this complete game-based training for cashiers is to deliver better cashiers (i.e. effectiveness), while saving on-the-job training time and costs (i.e. efficiency).

The present project enhances and verifies the principles and methodologies concerning measurement and optimization of transfer by evaluation of the effectiveness of the Cashier Trainer in two ways: a) checklist-based expert evaluation of the Cashier Trainer, b) objective performance measurement comparing two training conditions, i.e.: game-based training using the Cashier Trainer and conventional on-the job training at the workplace (supermarket). In addition, the effectiveness of this instructional game is evaluated in terms of costs and time compared to conventional training.

COMPREHENSIVE 200-ITEM CHECKLIST

At present, we have evaluated a comprehensive checklist that has been developed to quickly evaluate the didactic, gaming, and technical features of instructional games. The checklist consists of about 200 items that have been defined

on the basis of the literature on training simulation and serious gaming. This includes all design-, didactical, game play-, and fidelity- features of the game.

Examples of clusters of items are: comprehensiveness of the specification and design process, training program, scenario management, instruction and feedback, intelligent tutoring, game mechanics, user interface, models, visual image and content & sound.

The checklist showed outstanding usability. The data that was collected indicated that the Cashier Trainer comprised excellent didactical and instructional features with good physical fidelity and minor technical problems. Major points of possible improvement concerned game play features.

OBJECTIVE PERFORMANCE MEASUREMENT

For the second part of the evaluation we collected objective performance data on the first working day after the (on the job or with the cashier trainer) training program, such as: duration of practice, cost of practice, number and types of errors as a cashier, performance speed. Also subjective experiences and personal data are collected from the trainees on which competences they already have acquired and which not yet (self-assessment of performance), the amount of practice, the adequacy of instructions and feedback, presence, immersiveness, difficulty of the different subtasks, other relevant competences, and computer experience.

The results of the objective performance measurements and cost effectiveness are not completely available yet. At present, we have collected all data concerning the effectiveness and efficiency of on the job training, but the data concerning the training results of the cashier trainer still have to be collected.

For developers of serious gaming this research project offers various means of support to improve, and substantiate the quality and effectiveness of their serious games. •

