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Employee qualification by digital learning games

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Abstract

Global competition and individual customer requirements generate challenges for manufacturing companies. To cope with these challenges, companies require an increased level of flexibility. In the first place, this flexibility has to be provided by the employees, as they are one of the key success factors for mastering change. An essential prerequisite for this is a high level of employee qualification across all areas of the company.

The learning factories approach has garnered particular attention in recent years as a playful and efficient way of learning the principles and methods of processes improvement. The drawbacks of this method include the limited, non-holistic perspective of each trainee as well as the non-recurring knowledge transfer. Moreover, this kind of qualification requires the trainees to be in the same place at the same time.

These downsides can be successfully countered by supplementing learning factories with a digital learning component depicting the learning environment, as digital learning will enable individual learning routes for all trainees and is accessible at all times and all places.

This paper serves to outline the idea of serious learning by using digital learning games along with the attendant benefits. Over and beyond this, it also presents a digital learning game for teaching specific lean production methods.

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1. Introduction

Growing globalization and the attendant global competition are causing an ever more intensive market and technology dynamic where manufacturing companies are faced with new challenges in ever-shorter cycles [1]. If they

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want to keep up with this dynamic, companies need to respond to variable customer requirements flexibly and efficiently. A greater variant flexibility and production in ever-lower batch sizes down to merely one are examples of the challenges that the companies' production structures and organizations need to be adapted to. However, adaptations such as these also call for employees who are suitably qualified and versatile for the transformation of production processes. This accords a key role to the in-service personnel development, and hence the continuous further training of employees on all the organizational levels of a company [1]. The conventional methods of providing employees with in-service training are meanwhile limited in their efficiency and achievable learning success, so that the need for new teaching and learning methods is great [2]. This paper will place a particular focus on the qualification of direct employees with regard to the lean production philosophy.

2. Options for the continuous and further training of employees

There is great variety of proposals for the further training of employees. They largely differ in the design of their contents and methods. While the content is mostly oriented towards the intended objective of the in-service training, the methodical approach is defined by the quiddity of the teaching concept and based on an underlying theory of learning [3].

2.1. Categorization of teaching concepts

The aim of the teaching concept is to initiate and support the learning itself, as well as to secure the learning results [4]. According to MYRACH and MONTANDON, teaching concepts are categorized by the way of the learner's commitment to a time and place. Therefore, a differentiation is made between classroom teaching and distance learning in the in-service training (Figure 1) [5].

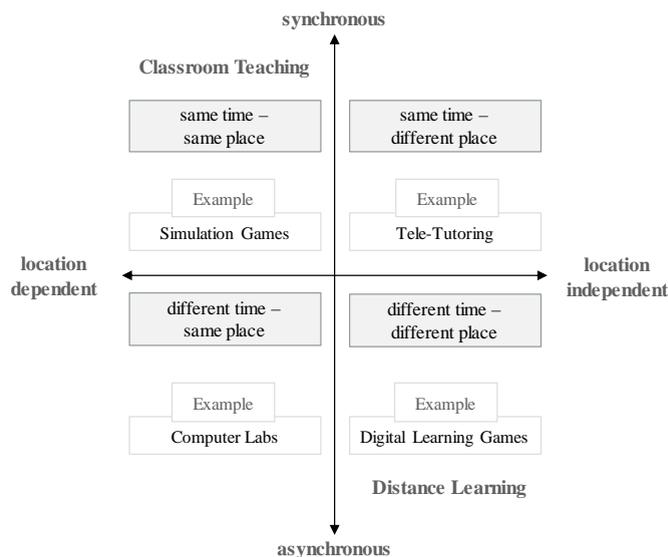


Figure 1: Categorization of teaching concepts [5], [6]

As subcategories of the teaching concepts, classroom teaching and distance learning are both subject to typical restrictions that can have a negative impact on the learning success. An overview of the strength and weaknesses of these concepts is provided in Figure 2.

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