A Web-Based Multi-Screen 360-Degree Video Player For Pre-Service Teacher Training

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ABSTRACT

This demonstration will showcase a new and innovative eLearning platform for pre-service teacher training. The core element of this platform is a multi-screen 360-degree video player with additional features for 360-degree video analysis. By using the videos in combination with a head-mounted display (HMD) we create a video-based virtual classroom, where the pre-service teachers "become part of the situation". This offers students an immersive experience to get a first impression of realistic school praxis.

Author Keywords

360-degree video; VR; virtual reality; eLearning; pre-service teacher training; multi-screen

ACM Classification Keywords

H.5.1. Multimedia Information System: Video; Artificial, augmented and virtual realities; H.5.2. User Interfaces: Training, help, and documentation

INTRODUCTION

Numerous studies showed that novices are likely to suffer from a "practice shock" [6] when starting their professional career as teachers. Apparently, novices experience difficulties in transferring theoretical knowledge into school practice. Regarding the pre-service teacher training at universities there is an immanent abyss between knowledge and action. Thus, the current situation of the pre-service teacher training at universities is critical. In this project we try to solve this problem by providing immersive video-based learning scenarios. Using videos is a very useful method to train pre-service teachers with educational content [5]. Until today, video is often used in teacher preparation programs. By working with videos students can get initial practicable access, substantiate theoretical and accumulate practical knowledge [2, 3]. These possibilities indicate a flexible and continuous commitment, as well as practice-related access [1].

Nevertheless, the use of "classic video" does not seem entirely perfect. Because information for analyzing teaching processes are often missing (e.g. they are outside of the camera perspective), an objective observation for a detailed analysis and evaluation of a situation can be very problematic. In addition, the person holding the camera has a major influence because the focus of the filmed situation depends on the selection of the videographer (framing). Thus, the users are locked to the angle where the camera was pointing to and can't decide independently where they want to look. Especially for training of analytical skills this can be extremely counterproductive.

So far, the common practice for university students is to observe in schools directly. However, this is becoming more and more difficult due to the increasing number of students. In order to not disturb the pupils in the classroom, only a small number of university students can observe in class at the same time. The analysis and evaluation in groups is therefore almost impossible.

VIDEOLEB

To solve this problem, we developed VideoLeB[1]. VideoLeB is a responsive video-based online eLearning platform, framed and complemented by corresponding theoretical knowledge and learning tasks for pre-service teacher trainings. It can be used for evolving and enhancing competences of observation, analysis and reflection. The core of VideoLeB is the use of 360-degree videos to show pre-service teachers realistic classroom practice. Because 360-degree video allows the viewer to pan all over the video we are able to deliver an even richer and larger quantity of information than before [4]. We expect that this immersive experience prepares students better for working in realistic learning environments.

THE 360-DEGREE VIDEO PLAYER

For watching and analyzing the video content we developed a synchronized multi-screen 360-degree video player with some additional features for video analysis (e.g. timestamp, annotation marker, etc. – see Figure 1). The 360-degree video player can display up to three videos synchronously. The arrangement can be changed independently by the user and each video can be viewed in full screen mode.
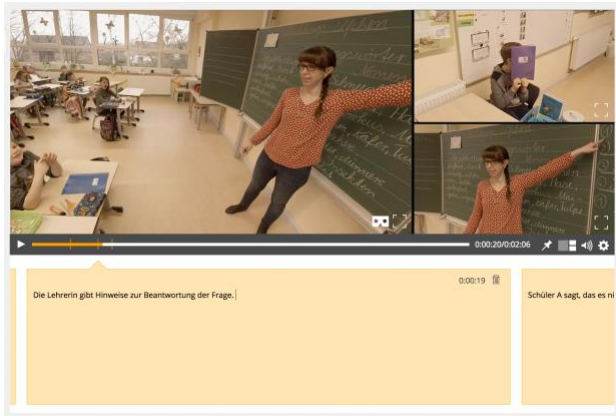
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[1] http://videoleb.uni-erfurt.de/

Figure 1. The VideoLeB multi-screen 360-degree video player with annotation window

The platform can be used on a computer or laptop. With the help of the VR-function it is also possible to watch the 360-degree videos on a smartphone or HMD. To use that feature the user simply clicks on the VR-button (bottom left in the 360-degree video) and scans the respected QR-code with a smartphone (Figure 2). The video will open on the smartphone automatically. In combination with a HMD the users have the opportunity to get into the scenario virtually (Figure 3).

Figure 3. A VideoLeB 360-degree Video for HMD-use

In order to make some personalized notes, we integrated a time-based annotation function. By clicking on the annotations marker (Figure 4), a timestamp arises on the video timeline and an annotation window appears (Figure 1). Moreover, it is also possible to integrate an Etherpad[2] for group discussions.

Figure 4. The tool bar (time code, annotation marker, display arrangement, volume control and quality control)

DEMONSTRATION

In this demonstration, we exhibit the concept, workflow and functions of VideoLeB and we will provide the opportunity to work and learn with the platform. We present the application on multiple devices (e.g. Laptop, Tablet, Smartphone, HMD) to show different possibilities of using VideoLeB in university courses. We will explain the functionality of our multi-screen 360-degree video player and will invite everybody to come back to school with us.
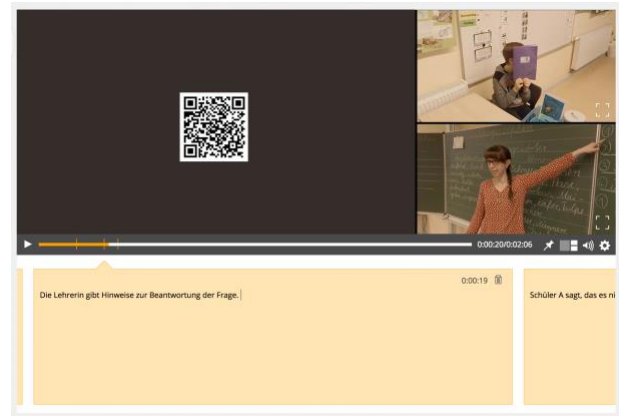
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[2] http://etherpad.org/

Figure 2. Video player with displayed QR-code

FUTURE WORK

VideoLeB was successfully used in various courses at the University of Erfurt. In a next step we will implement voice control for the VR function and we are working on annotation markers that allow the user to pin additional notes directly into the 360-degree video.

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