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# Lecture Cast and Immersion

## Why 360°-Video is (not) a solution

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# Context

- Current technological developments in the field of audio-visual media **reduce the distance** between a recorded action and its reception.
- **Daily routines** of the younger generation is increasingly shaped by the reception of audio-visual media content and communication through such.
- In times of podcasts and MOOCs, the classical academic lecture celebrates its **renaissance** in a mediated communication form of a video *can*.

# 360° Video Technology

- The **live-situation** provides recipients with the experience of a feeling of „truly“ being in another place and time – a sense of **presence**.
- **Immersive** video formats such as 360° video offer new quality of communication, where recipients **dive** into complex **spaces** visually using a Head-Mounted Display (HMD) which **insulates** the outer world.

# Immersion & Presence

- “Immersion refers to what is, in principle, a quantifiable description of a technology. It includes the extent to which the computer displays are extensive, surrounding, inclusive, vivid and matching.”

(Slater et al. 1996, S. 3)

- The **more physical senses** are addressed the **higher the degree** of immersion.

# Individual Perspective

- 360°-video technology allows for an **individual acquirement** of the space. A unique immersive potential is provided by the user's **self-determined image** section.
- **New didactical options** appear due to the fact that the user explores and interprets the space through the self-chosen image section, based on his or her own **experience** and **interests**.
- The individual perspective, the very own assessment and **interpretation** of the situation provoke the **insight exchange** with others and the personal **knowledge construction**.

# Implications in Learning

- Highly immersive conditions linked to **positive emotions**, according to Olmos-Raya et al. (2018), can be helpful in **long term retaining** of the acquired knowledge.
- The combination of the traditional knowledge assets (**formal**) in open and unstructured digital spaces (**informal**) offers a possibility of encouraging the students to **experiment** and to **explore** the body of knowledge. That way more new and continuative learning goals can unfold (Jahnke et al., 2014).
- Over handling a subject of learning within an **authentic setting without pressure to act**, it is highly likely that one's own knowledge is being explicated and also expanded (Reinmann & Vohle 2012, p. 3)

# Research Questions & Hypotheses

- **Q:** Does the approach of a live-situation of a lecture recreated on 360° video via HMD impact the learning outcome and, if so, how?
- **H:** The sense of presence in a lecture provided by the immersive medium increases the learning efficiency.
  
- **Q:** Does the target group use video technology in the academic context and if so how?
- **H:** Various forms and functions of video technology play a supporting role in daily academic life of students, tying in their known media usage behavior.

# Study Design

- In the **countrywide** study with **freshmen students** of the **Media Management** major in all **5 locations of Macromedia** University. The examination was carried out on the example of the mandatory lecture of **Basics of Business Administration**.
- For the investigation, **videotaped lecture** content in the form of **360°-recording** on a **HMD** as well as the **classical Fix-Frame-Format (16:9)** on a plain **monitor** was shown to students, currently enrolled in the course, who normally experience this particular lecture attending the class personally on a weekly basis.
- Both the monitor-group and the HMD-group were **self-selected**.



# Study Design - Cardboard

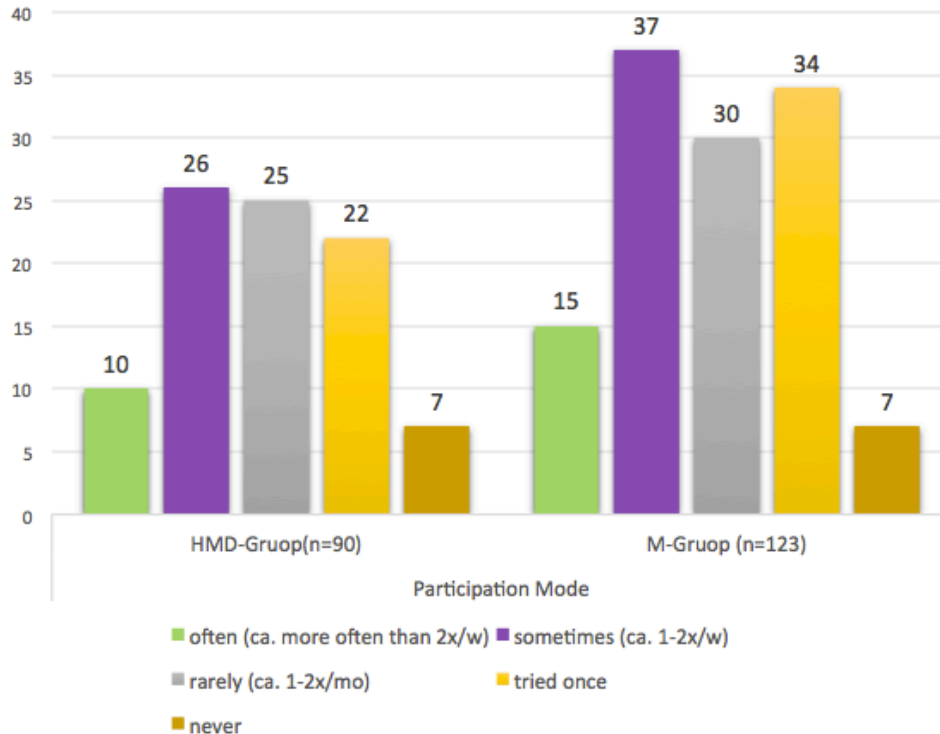


# Study Design

- Focus on the use of video in learning processes (media usage behavior)
- Depending on the study group
  - either as classical **Fix-Frame-Video** format (16:9) via a **monitor**
  - or as a **360°-video** via **Cardboard** (+ own mobile phone)
- Precise **self-assessment**: the subject of the Basics of Business Administration
  - Examination of learning performance using a **multiple-choice test**
  - A **subjective assessment** of participants' **learning performances** and their **learning situation** as well as indication of their **preferred** (video-) **learning environments**

# Media Usage: Video for Education

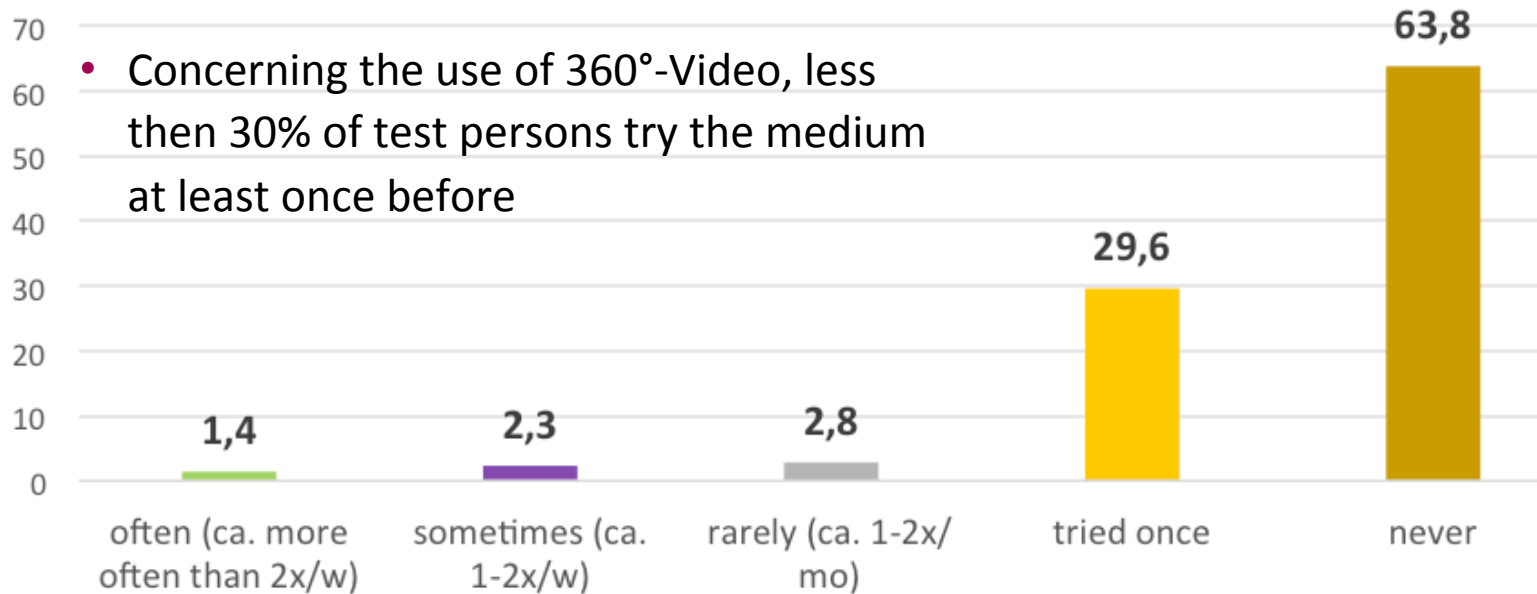
Participation mode of hitherto Usage of Video as a Learning Aid (Frequency)



- Compared to private use of video, tutorials (such as sports training, tools or repairing, now or during the past education period, especially school), still play a secondary role.

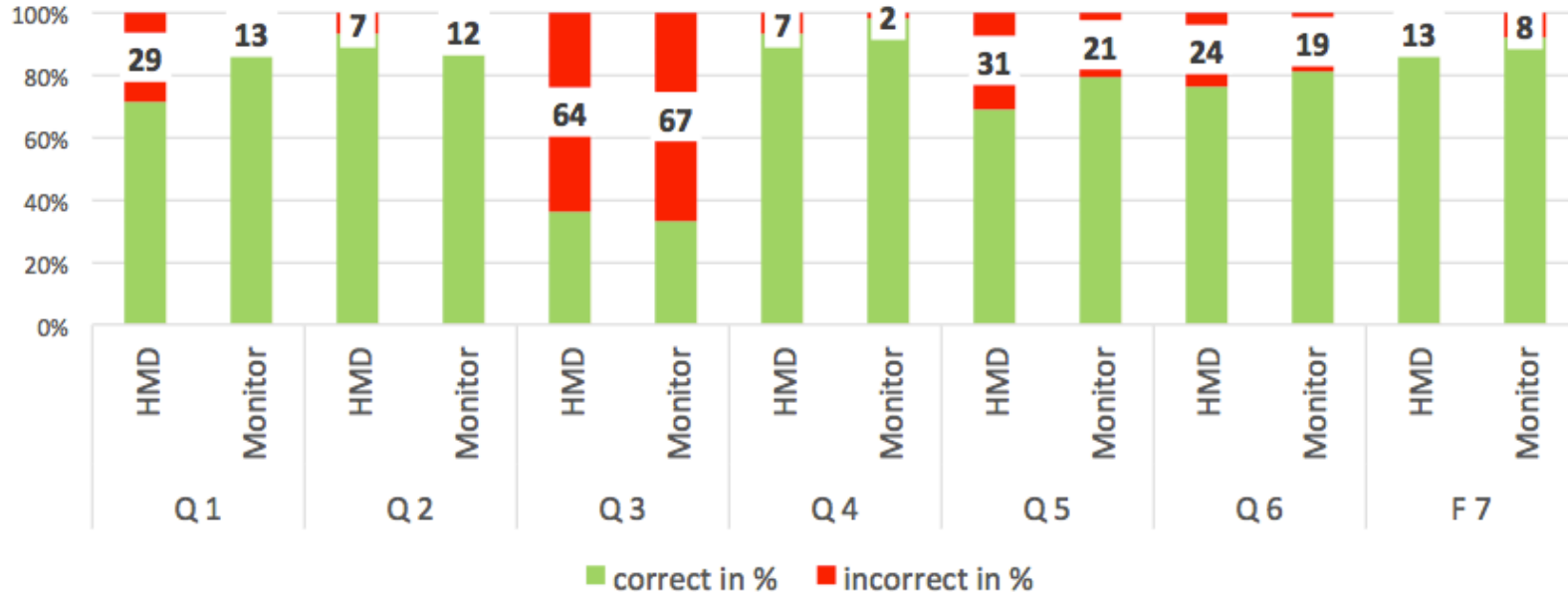
# Media Usage: Immersive Media

Data of hitherto usage of 360° video or VR HMD in %  
for the total group (n=213)



# Learning Efficiency

Data of correct answering in Percentage  
360°: n= 45 and Monitor: n= 89  
Participation Mode



# Learning Efficiency

1. No significant differences between both groups except for Q1\*
2. In answering the first question that referred to content communicated in the **beginning** of the recorded lectures, can be attributed to the **novelty appeal** of the medium.

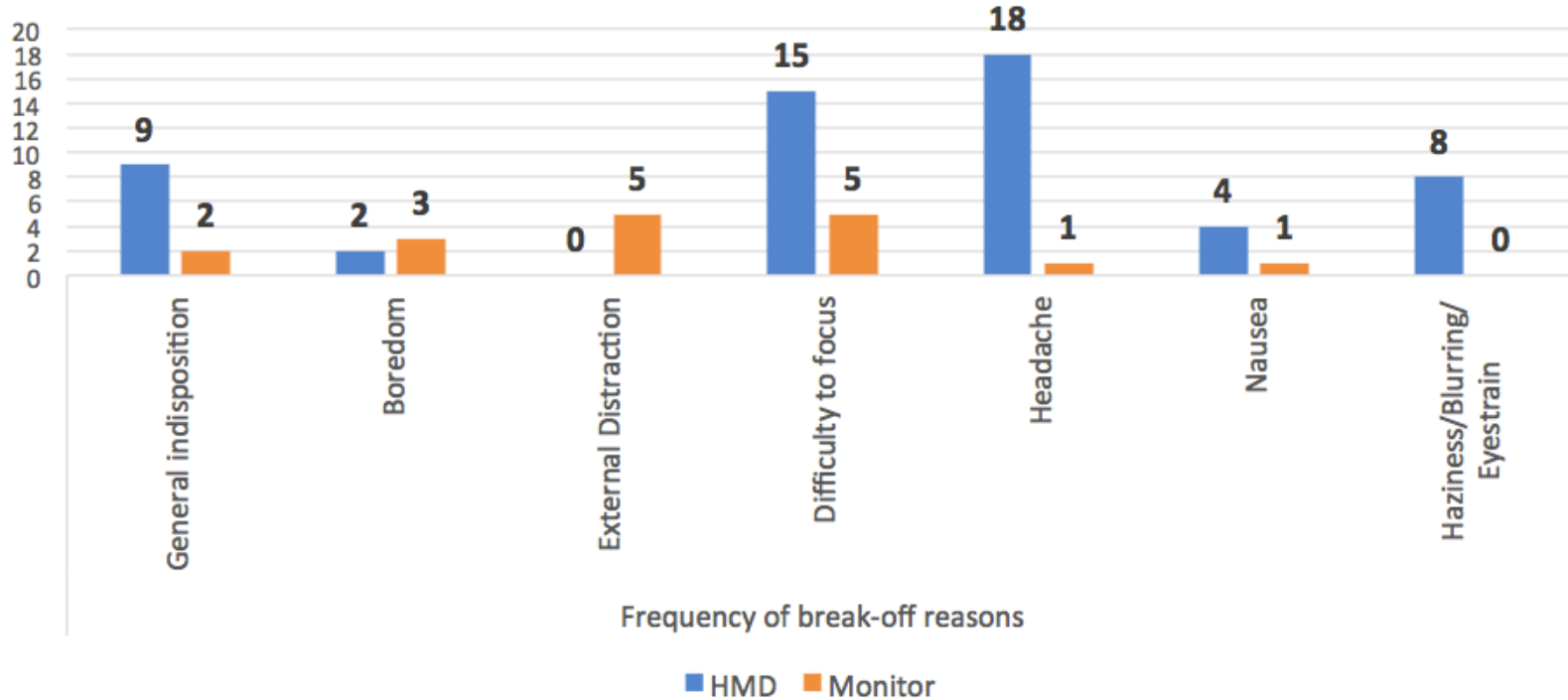
The **self-assessment** of respondents demonstrates highly significant differences:

1. test persons of the **Fix-Frame**-group provide a **higher estimation** of their learning performance, than the respondents of the 360°-group.
2. participants of the **360°-group** rather report **distractions** and concentration problems

\* in % for better visual comparability, although n<100

# Break-Off Reasons

Frequency of break-off reasons



# Benefit from the Results

- Media usage: Students use video tutorials in diverse context, but not for their academic studies
  - Further systematic examinations are required to elicit the reasons
- Among the break-off reasons students also named “headaches” and “nausea”
  - To avoid the effect the video should be of certain quality standards and have a high resolution
- Among the break-off reasons students named “general indisposition” and “difficulty to focus”
  - The video duration of about 40 min on a cardboard without any fixation limits the usability



# Benefit from the Results

- Most students were confronted with a medium they've **never used before**
  - An appropriate period of **time** should be given to familiarize themselves with the technology (360° and HMD)
- Learning efficiency: No difference between the use of an immersive medium and the use of classical video for a lecture cast video content was determined
  - Was the multiple choice questionnaire the **right method**?
  - Usability of a Cardboard
- 360° video medium is not suited to represent every possible learning setting
  - Didactically wise **use of space: process oriented** or **situational learning**, which are common for e.g. projects on **sustainability**

# Students' Crowd Research

- The SCoRe (Students' Crowd Research) is a 3,5 years joint research project funded by the German Federal Ministry of Education and Research (funding code 16DHB2120) and is currently in its first year.
- The aim is to scrutinize **video based** and **research oriented learning of sustainability** under the condition of **a crowd**.
- Our goal is to reform the e-learning platform of **Virtual Academy of Sustainability (VAN)** to make it more attractive and effective for very large groups of students to enable collaboration in research projects on sustainability nationwide and interdisciplinarily using innovative video.

# Collaboration in ScoRe

5 members are involved into the SCoRe:

- **University of Bremen** (lead, Sustainability, Virtual Academy of Sustainability - VAN)
- **University of Hamburg** (Research Oriented Learning, DBR)
- **University of Kiel** (Crowd Research)
- **Ghostthinker LLC** (Software Developing Partner)
- **Macromedia University of Applied Sciences Hamburg** (Video Oriented Learning)

# ScoRe – Current Perspectives

- Our current focus is a **conceptual work** on the first prototype and a design of mechanisms of **the operative process** in particular.
- Digital environments offer diverse opportunities to enable and **support** students' **research** for **augmenting traditional** research practices.
- By making video, video annotation and the specific types of 360° video, we aim for a **new learners' experience**, **deeper learning**, and a **multiplicity of perspectives** on **sustainability**.

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