

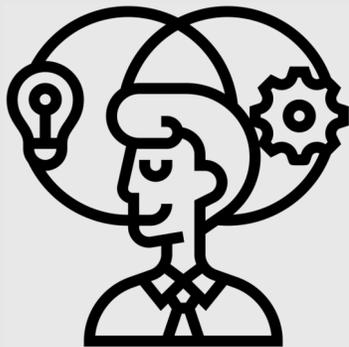
# Fostering Intercultural Competencies in Initial Teacher Education Implementation of Educational Design Prototypes Using a Social Virtual Reality Environment

Kristina <b>Förster</b>	CHAIR OF SCHOOL PEDAGOGY
Rebecca <b>Hein</b>	CHAIR OF HUMAN-COMPUTER INTERACTION
Silke <b>Grafe</b>	CHAIR OF SCHOOL PEDAGOGY
Marc Erich <b>Latoschik</b>	CHAIR OF HUMAN-COMPUTER INTERACTION
Carolin <b>Wienrich</b>	Human Technology Systems
	<b>UNIVERSITY OF WUERZBURG, GERMANY</b>



# Motivation

How can media-related intercultural competencies of lecturers be promoted in continuing education settings with social VR?



**HCI** | Technical and Psychological Foundational Research and Implementation

**School pedagogy** | Theory-guided development and empirical evaluation of concepts for pedagogical action

## Towards media-related educational intercultural competencies?



- Need to foster both competencies in a combined and integrated approach  
(Förster & Grafe 2021)
- Pedagogical approaches that link intercultural and media-related competence development have gained importance  
(Jager et al. 2021)
- (Teacher) Educators often do not have the media-related & intercultural competencies needed to support their students  
(Tondeur et al. 2016; Cushner & Mahon 2009)

# Literature Review

## Intercultural Competence



- SLR identified 300 sub-concepts and competency expressions  
(Spitzberg & Chagnon 2009)
- Complex multidisciplinary research field  
(Arasaratnam-Smith 2017; Leenen 2019; Rathje 2007)
- No differentiated and operationalized intercultural competence profile for teacher educators yet

# Literature Review

## Using VR to promote intercultural competence development



- Intercultural competence in combination with immersive media like VR is rarely investigated (Hein et al. 2021).
- VR can make an important contribution to the field of cognition. The strongest potentials lie primarily in the affective and behavioral context of inquiry (Hein et al. 2021; Wienrich et al. 2021).
- (Teacher) Educators were rarely identified as the target group. (Hein et al. 2021)

# Research Context and Goals



- First empirical investigation of a larger design-based research project (cf. Tulodziecki et al. 2014)
- Cyclical-iterative research process leading to new insights at each stage (Design Based Research Collective 2003; Bakker 2018)
- Design principles of the pedagogical concept are intended to make a theoretical and empirical contribution (cf. Tulodziecki et al. 2014)
- This exploratory study reports on a beta-testing of two prototypes (cf. Raatz 2016)

# Research Questions



**RQ1** | What factors promote or hinder the implementation of the pedagogical concept

**RQ2** | How do participants evaluate their learning experience in terms of intercultural media-related competency development?

# Pedagogical Concept



- Based on Tulodziecki's theory of „learning as action“ (1996)
- A complex group task as the core element of both prototypes (Tulodziecki et al. 2017)
- Active engagement with different approaches to modelling intercultural competence
- Collaborative design task by means of virtual object manipulation
- Flipped classroom design to let the learners acquire the knowledge base for solving the task (Handke et al. 2013; Tulodziecki et al. 2017)
- Comparison of reflection of learning experience (ibid.; Kammhuber 2010)

# Pedagogical Concept



**Parallel group IC-COG**

**Parallel group IC-AFF**



Two different reading assignments distributed among of each group

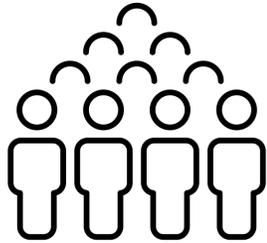


Collaboration & dialogue task



Intercultural simulation task

# Research Design



## Sample

- N=14 pre-service teachers
- PG-IC-COG: N=7 | PG-IC-AFF: N=7



## Data collection & analysis

- Evaluation of reflection reports using qualitative content analysis (Mayring & Fenzl 2019)
- Categories developed deductively using BehaveFIT (Wienrich et al. 2021)
- Explorative classroom observation



# Implementation of the study

## Self-study & preparation phase prior to the intervention

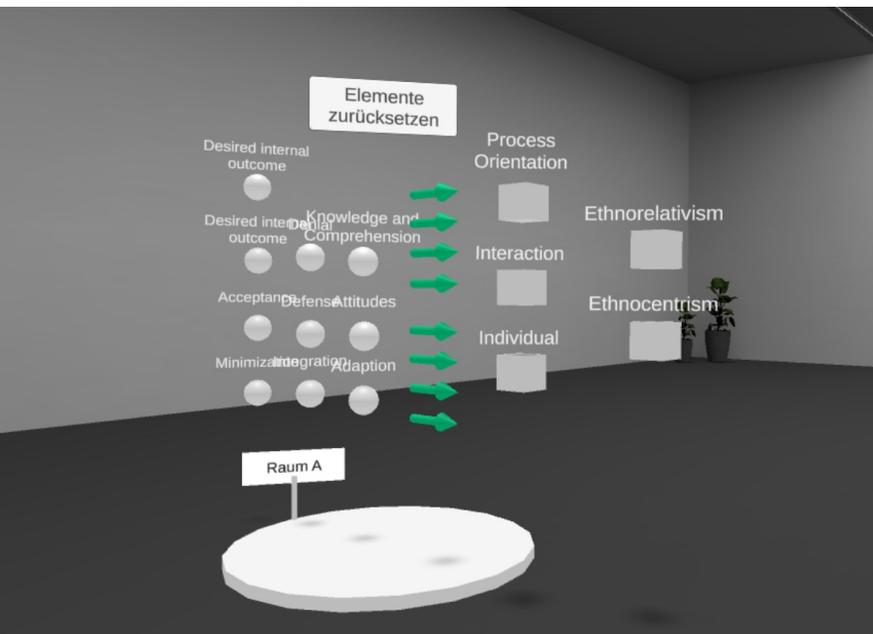


- Learners were provided with HMDs & notebook in advance
- Written instructions & video tutorials
- Learners received an article on the Developmental Model of Intercultural Sensitivity (Bennet 1986) or on Deardorff's process and pyramid model of intercultural competence (2006)
- Prompts for preparation

# Implementation of the study

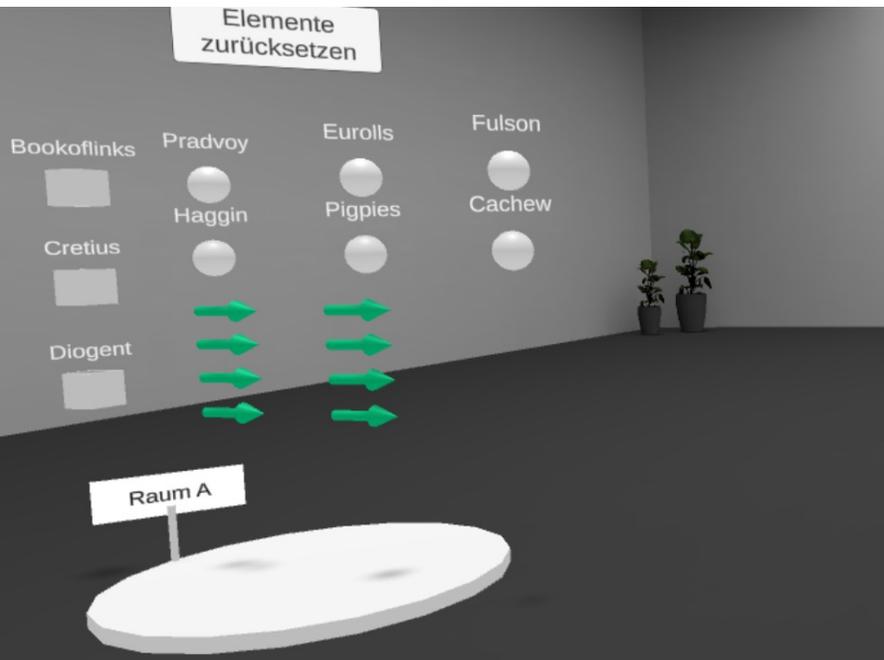
## Complex group task for PG-IC-COG

- Instructor's welcome to the ViLeArn environment
- Ice-breaker / Brainstorming
- Group phase 1: peer teaching- and learning phase
- Comparison & reflection phase
- Group phase 2: teams design their own competence model
- Comparison & reflection phase



# Implementation of the study

## Complex group task for PG-IC-AFF

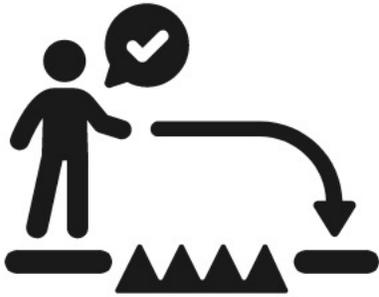


- Instructor's welcome to the ViLeArn environment
- Ice-breaker / Brainstorming
- Group phase 1: Socialisation phase
- Brief reassignment phase
- Group phase 2: Simulation phase
- Comparison & reflection phase

# Implementation of the study



**What factors promoted or hindered the implementation of the pedagogical concept?**



### **Aspects related to technology**

Setting up systems and accessing (cf. Salmon 2013)

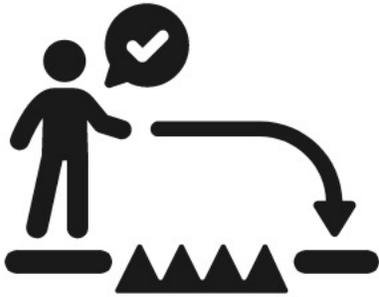
*„Various technical problems have been experienced by all participants.“*

(IC-COG-2, reflection report, own translation)

*„The use of technology went without major technical difficulties in my group.“*

(IC-AFF-3, reflection report, own translation)

What factors promoted  
or hindered the  
implementation of the  
pedagogical concept?



**Motivational aspects** (Deci & Ryan 1993)

- In 8 of 10 reflections, utterances that fall into this subcategory can be found
- Linked to the novelty of the experience, a general interest in technology or the perceived value for future pedagogic practice

How do participants  
evaluate their learning  
experience?



**Collaboration through manipulation of Virtual Objects** (Wienrich et al. 2021)

*„Then there is agency, which is the control over the environment, a certain self-efficacy that you can experience in virtual reality. You can just move objects, and the others see that too, and so it’s a much more intense experience than, for example, in ZOOM-sessions.“*

(IC-AFF-6, reflection video, own translation)

How do participants  
evaluate their learning  
experience?



**Social Presence** (Wienrich et al. 2021)

*„You hear the course participants through the speakers of the VR set as if they were in the same room. You can see the other participants’ avatars moving or gesturing with their hands which also helps improve the communication in general.“*

(IC-COG-2, reflection, own translation)

How do participants evaluate their learning experience?



## Self-representation and representation of others

(Wienrich et al. 2021)

*„When you see other people in person, maybe you’re already making assumptions, and internally you’re already building up prejudices. And on that level, you don’t perceive others [in VR] at all.“*

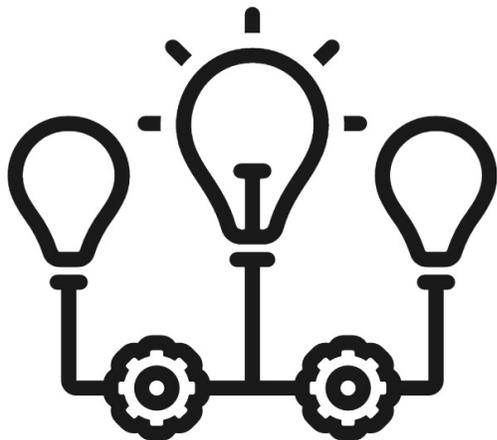
(IC-AFF-1, reflection, own translation)

“Comprehending other people’s experiences simply by being able to create avatars in different ways, and thus develop empathy and a change of perspective, that was [an] important learning experience.“

(IC-AFF-6, reflection video, own translation)

# Discussion

## Implications for facilitating intercultural learning with VR



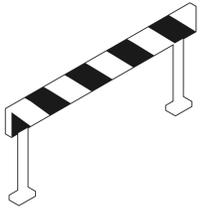
- The participants' most significant observation was the experience of **social presence**
- Participants linked the experience of social presence to a sense of **safe space**
- Generic avatars that don't reveal learners social cues, could **counter positive or negative stereotyping**
- Embodiment through avatars that differ in appearance from the participant, could initiate **empathy development & perspective taking processes**

### Implications for facilitating intercultural learning with VR



- Results related to the [manipulation of virtual objects](#) indicate that participants feel a sense of [individual and collaborative agency](#)
- Virtual objects that are charged with multiple meanings, could facilitate deep intercultural meaning-making processes ([Hein et al. 2021](#))
- Applying the principles of action-oriented media pedagogy was helpful to initiate collaborative intercultural inquiry processes ([Tulodziecki et al. 2017](#))

## Limitations & Outlook



- Convenience sample that is not identical to the professional development concept to be designed
- Study wasn't implemented on a transnational scale
- No generalizability possible due to small sample



- Findings will lead to research on the transferability of our pedagogical concept to a professional development setting for teacher educators

## Questions or comments?

We are looking forward to your feedback.  
Please contact us via AcademicExperts or at:



**KRISTINA FÖRSTER**

Chair of School Pedagogy  
JMU Würzburg, Germany  
kristina.forester@uni-wuerzburg.de



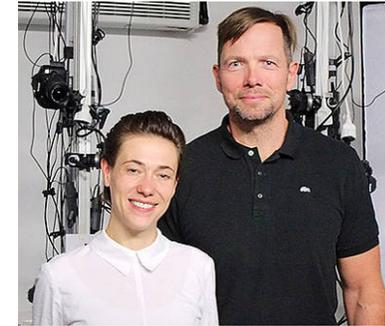
**REBECCA HEIN**

Chair of Human-Computer-  
Interaction  
JMU Würzburg, Germany  
rebecca.Hein@uni-wuerzburg.de



**SILKE GRAFE**

Chair of School Pedagogy  
JMU Würzburg, Germany  
silke.grafe@uni-wuerzburg.de



**CAROLIN WIENRICH /  
MARC ERICH LATOSCHIK**

Human-Technology-Systems /  
Chair of Human-Computer-  
Interaction  
JMU Würzburg, Germany  
carolin.wienrich@uni-wuerzburg.de  
marc.latoschik@uni-wuerzburg.de

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