

# Virtual Reality in Social Work Teaching - Two Approaches to 360° Videos and Collaborative Working

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**Abstract:** The use of virtual reality and 360° videos has been little researched so far, especially in social work studies and teaching. The reasons for this are the low prevalence of VR headsets in social work courses and the fundamental technological deficit in social work, which means the lack of clear causal chains within it. Professionals must adapt their practical knowledge to the individual framework conditions and problem situations depending on the case situation and field of work. In contrast, in simulation-based approaches, as used in the teaching of many rather object-oriented courses of study, fixed sequences of action usually lead to success. At the same time, 360° videos, with suitable didactic framing, can be used to convey case studies in an immersive manner that can then be continued individually, methodically developed and reflected upon. In the "Teilprojekt XR", two approaches to the use of VR headsets were designed, the first enables remote collaboration, the second offers a chance for analysis and reflection using 360° videos. The first approach is Collaborative work using VR headsets, which is intended to be an addition to communication with existing video conferencing systems. It has the potential to counteract the previous challenges associated with zoom technology and create more proximity. The first few evaluation results (n=11) on the methodological implementation of collaborative work with VR headsets suggest that this approach can bring added value to students. However, getting started with VR headsets is challenging for students and only a few have taken up the offer so far. The integration of 360° videos in education has potential for social work, as the high degree of realism and immersion can improve the link between theory and practice. Students can thus obtain realistic insights into practical examples already during their studies and professionally reflect on their own perspective in the situations. The use of 360° videos using VR headsets has been tested and established in teaching in four seminars so far. The students experience the simulated case situations from the subjective perspective of the different protagonists and can thus more easily put themselves in their individual perspective. Didactically, these observations are professionally framed by teaching content taught in advance, group work in small numbers as well as a collaborative analysis and reflection within the seminar group. The results of the evaluation (n=60) of the integration of 360° videos into teaching are promising and show a clear potential for university didactics. A flow experience and an experience of presence were confirmed by the students when working with the 360° videos. Furthermore, the students reported that the methodological extension supported their comprehension of the course materials and validate the usefulness and advantages of using 360° videos during the seminars.

**Keywords:** Virtual reality, Social work, 360° videos, VR group work, Immersion, Theory-practice transfer

## 1. Introduction

This article deals with the relevance and implementation of virtual reality [VR] in social work teaching and presents two concrete approaches and findings of the use of VR headsets in this teaching. Specifically, based on existing applications, this article will show the extent to which both approaches provide added value for the teaching of social work. The first approach focusses on VR headsets as an alternative to video conferencing systems for collaborative group work. The second approach centres on the use of VR headsets to integrate 360° videos into lessons in order to strengthen the theory-practice transfer. In the course of the paper, 360° videos are understood as a spherical video format that combines conventional video technology with the characteristics and properties of virtual reality (Rosendahl and Wagner, 2023, p.3).

In part-time and online-supported study programmes, forms of remote collaboration are often used with the help of video conferencing systems and online learning platforms (Weinberger, et al., 2020, p.230). Due to software limitations, there are sometimes major differences between presence-based and online-based discussions (Hejna, et al., 2022, p.224). At this point, working in virtual reality can be an alternative and enrich discussion processes.

In social work as a practice-based profession and an academic discipline (IFSW 2014), theory-practice transfer is a fundamental challenge in teaching. So far, this challenge has been addressed using various forms of self-activation (for example case work as well as role playing and planning games), observation and exploration (for

example practice visits), practice phases of the students and reports by practitioners (guest lectures) (Matthies, 2020, p.59). These methods can be supplemented with the help of the possibilities of 360° videos and expanded with new methodological approaches. The first implementations of the second approach showed positive results in the presence and flow experience, and the students also reported that the 360° videos contributed to a better understanding of the teaching content and an active engagement with it.

The "Teilprojekt XR", which is part of the "H<sup>3</sup>-Projekt", addresses precisely these two challenges. Within the project, the use of VR headsets in social work teaching is being tested and evaluated, with the goal of expanding university didactics by means of new approaches and methods. By connecting with the part-time study programmes "BASA-online" and "maps", these can be tested directly within established online-supported study programmes.

First, the second chapter outlines the growing state of research on the use of virtual reality and VR headsets in higher education and summarises findings on 360° videos in teaching and on collaborative work. In addition, central terminology is outlined. In the third chapter, the two approaches using virtual reality and VR headsets are presented in more detail. Finally, results of the implementation in the seminars are presented (Chapter 4). These provide information about the consequences and benefits of the project approaches (Chapters 4.1 and 4.2).

## **2. Definition of Terms and State of Research**

Due to the increasing digitalisation of both living and working environments, new competence profiles are required to participate actively in society. Social processes and the world of work increasingly become more interdisciplinary and collaborative in the future. As a result, future professionals must gain confidence in using digital media (Lermen, 2017, p.342). One aspect of these changing living and working environments may be virtual spaces in the future, which could play an increasing role in the lives of many people. In the area of teaching, these can represent a supplement and enrichment for established teaching formats (Zhang, et al., 2022, p.1).

In the following, definitions of the central terms used in this article will be given and a brief overview of the state of research will be presented.

### **Virtual Reality (VR)**

Virtual reality is a three-dimensional computer-generated environment that creates an immersive, multi-sensory and user-centred experience (Langer, 2020, p.20). Virtual reality is usually experienced through VR headsets, which are worn on the head and place displays directly in front of the user's eyes (Grimm, et al., 2019, p.170).

Immersion represents a state of perception created by the allocation of the user's attention to the medium and its content (Langer 2020, p.42). It is a phenomenon of experience and not a characteristic of a device, and the degree of immersion depends on the content of the media presented, the preparation and the fit (Kerres, Mulders and Buchner, 2022, p.314-315). Immersion creates a feeling of involvement and presence, so that the users get the feeling of being in the middle of the presented or mediated environment. Immersion shows parallels to the flow experience, which can also arise in VR applications and is closely linked to optimal challenges (Kerres, Mulders and Buchner, 2022, pp.317-318).

Virtual reality can create a great sense of illusion of place and presence, which might have a strong impact on emotional responses and empathy (Christofi, Hadjipanayi and Michael-Grigoriou, 2022, p.2). For example, many studies show that a strong sense of presence fosters realistic user behaviour (Diemer, et al., 2015; Parsons and Rizzo, 2008). This creates the opportunity to generate experiences within a safe framework and with few resources, which can nevertheless generate realistic cognitive and emotional reactions (Della Libera, et al., 2023, p.1). In principle, positive effects can be assumed in the interrelationship between the experience of presence and flow and the learning effects, since immersion creates a stronger experience of presence and this can have an effect on the experience of flow and the learning effects (Zinn and Ariali, 2020; Pirker and Dengel, 2021).

The state of research on virtual reality in educational contexts has been growing steadily over the last decade due to the increasing availability of software and hardware (Zhang, et al., 2022, p.1). Different trends can be identified depending on the subject area. In a survey of available applications (n=136) for higher education teaching from 2021, it was shown that the proportion of applications for more object-related courses (biology, astronomy and engineering) was highest there at 41% (Radianti, et al., 2021, p.128). The study cited did not include any applications targeting social work courses (Radianti, et al., 2021, p.128).

Currently, it can be used to create action sequences that can be practised, to analyse situations and to represent elements that are not visible in reality (for example radiation, magnetism). Virtual learning environments are often created in the form of simulations in which sequences of action can be reproduced and practised. This can save resources and provide safe testing grounds (Calandra, et al., 2022, pp.3-4).

### **Collaborative work**

Collaborative processes in social interactions are an essential building block for knowledge acquisition (Bandura, 1977; Lave, 1991), as is the acquisition of shared knowledge through feedback loops (Foelsing and Schmitz, 2021, p.114). Collaborative work is fundamentally characterised by the fact that the participants work together to acquire knowledge and thus anchor and deepen the acquired knowledge, for which social exchange and active participation are essential as success factors (Foelsing and Schmitz, 2021, p.114).

Particularly, in the context of the corona pandemic years, the need for online communication has increased, along with the challenges of remote collaboration. Video conferencing systems are mostly used for this purpose, which, compared to face-to-face communication, make it more difficult to feel physically close and present. Verbal and partly non-verbal articulations of the counterpart can be perceived, but a deficit remains in the area of experiencing sociality (especially in group conversations). This deficit manifests itself in the absence of elements of turning towards and away from the other person and of eye contact, which are essential to the flow of a conversation and regulate it naturally (Kerres, Mulders and Buchner, 2022, p.319). This can have an impact on communication processes (Wei, Jin and Fan, 2022). Increased fatigue, known as zoom fatigue, can occur due to a lack of closeness to the other person and changes in non-verbal communication (Fauville, et al., 2021, p.11). Reasons for the development of increased fatigue include:

- Cognitive load due to the feeling of constant visual contact and the resulting perceived lack of social distance
- The perceived restriction of movement through the frame of the camera image
- Cognitive load due to constant analysis of non-verbal signals and permanent self-monitoring of one's own expression (Bailenson, 2021; Rumpf, Bühringer and Mühlig, 2021, cited in Hejna, et al., 2022).

Collaborative work within virtual reality allows a more immersive and natural environment than traditional video conferencing systems (Fromm, Mirbabaie and Stieglitz, 2020, p.11), which can lead to more considerate, empathetic, less aggressive behaviour and increased communication quality (Wei, Jin and Fan, 2022). According to Smith and Neff (2018), verbal and non-verbal communication behaviours in VR applications and face-to-face situations are quite similar when communication partners are embodied as avatars (Smith and Neff, 2018, p.10). The psychological relationship between users and avatars creates a sense of social presence (Della Libera, et al., 2023, p.12), which can have positive effects on collaborative work phases. These advantages over traditional video conferencing systems were confirmed in a qualitative study on the work of small groups with different living and working locations in brainstorming processes (Fromm, Mirbabaie and Stieglitz, 2020, p.13).

### **360° videos**

360° videos represent a video format that makes it possible to capture a situation or an environment in the full 360° visual spectrum. A three-dimensional effect is achieved by filming in stereoscopic shots, i.e. using at least two lenses placed at eye distance. Three-dimensional and preferably high-resolution images enhance the effects of immersion and the experience of presence in 360° videos (Stelzmann, Toth and Schieferdecker, 2022, p.198).

Research on 360° videos in teaching is still at an early phase, but is growing steadily (Ranieri, et al., 2022, p.1204). In a meta-study by Pirker and Dengel (2021), over half of the 64 included studies showed a positive effect of learning with 360° videos. In particular, factors such as an increased experience of presence, positive effects on perception, increased engagement, better conveyance of emotions and better conveyance of empathy were found (Pirker and Dengel, 2021, p.83). Improved knowledge acquisition, a comprehension-enhancing experience, increased motivation and improved performance were also found in some of the studies (Pirker and Dengel, 2021, p.83). With the help of 360° videos, immersive learning environments can be created that make it possible to directly experience the simulated case situations (Veber, Pesek and Abersek, 2023, p.3). In this context, studies have shown that 360° videos are able to generate emotional reactions (Della Libera et al. 2023, p.3). This opens up new ways and strategies to promote empathy in social work studies (Rambaree, et al., 2023, p.2).

The results show that 360° videos can play an important role in social work education. In order to be able to establish and widely use them in university teaching, it is necessary to develop and test suitable concepts and prepare teachers in the use of the new technologies (Wiesche, Schäfer and Sträter, 2023, p.22).

### **3. Two Approaches for Social Work Education**

When developing possible approaches for the use of virtual reality and VR headsets in social work studies, various points of contact arise.

The project is linked to online-supported and in-service study programmes, so that approaches to remote teaching seem to make sense, even independently of the corona pandemic. Due to the existing disadvantages of video conferencing systems, there is a great need for alternatives.

The technology deficit based on the reality of working with people in their very individual problem and life situations. This causes the lack of causal chains, i.e. simple cause-effect relationships, so that social workers have to constantly adapt and individualise their own methodological implementation (Hörster, 2021, p.119). This means that simulation-based applications cannot be used well. Students should therefore not memorise concrete sequences of action, but rather develop a feeling for how they can encounter clients in practice. At the same time, the theory-practice transfer in social work studies - as described - is a general challenge that has so far been met by means of various methods, such as role-playing. At this point, the potentials of higher immersion, emotion transfer and representation of inaccessible work and situation contexts can be used for teaching.

Based on these considerations, two project approaches were developed: firstly, collaborative work using VR headsets and secondly, improving theory-practice transfer with the help of 360° videos for teaching.

In the context of the project, Meta Quest 2 headsets are used, which are advantageous for collaborative work due to broadly based, free software solutions. In addition, they can be used as so-called standalone headsets without additional hardware. This means they can be lent out at a low threshold and at the same time are characterised by a justifiable price-performance ratio. In order to ensure data protection as comprehensively as possible for the students, project-related accounts are used on the headsets. This prevents the requirement to provide personal information during the account creation process.

#### **3.1 Collaborative Work**

In the design of online-supported and part-time study programmes, remote group work phases cannot be avoided, as the students usually do not live close enough to meet in person. In some cases, they have to work in small groups on common tasks over periods of one to several semesters. At this point working in virtual rooms can be an alternative.

The students receive VR headsets and the necessary accessories for use in the home environment. For this purpose, an extensive pool of instructional videos was created to help students familiarise themselves with the VR headsets. In addition to the instruction videos, a separate course room is available on the learning platform (OpenOlat) so that informal exchange and mutual support possibilities are guaranteed. After an initial introduction to the VR headsets (approx. one hour) and possible workspaces (the application "Horizon Workrooms" is recommended), the students can borrow the VR headsets and work with them in the virtual spaces. Initially, fewer headsets were lent out than expected and even headsets that had already been lent out were little used. Likewise, few students participated in the evaluation of the offer. Feedback from the students indicated that this was mainly due to a lack of confidence in using the hardware and software independently. For a more in-depth introduction to Virtual Reality and VR headsets, students can now take part in an introductory course over two days of 2.5 hours each.

Within the introductory course, the following topics are worked on with the students:

- Social work and basics and developments of virtual reality
- Comparison of the advantages and disadvantages of digital and virtual collaboration
- Testing and organising cooperation in small VR groups
- Exploring and testing social VR applications
- Application and development of methods within the virtual space
- Practical transfer of the acquired knowledge to social work

To ensure low-threshold access to virtual reality and the associated hardware and software, the introductory event is characterised by playful and explorative learning (Figure 1: Testing within an introductory event). Participants should primarily be able to pursue their own interests in a self-directed manner, but always with professional guidance, and thus open up to VR technology. Accordingly, the students can build up the necessary confidence for independent use and try out various software offers (Figure 2: Testing of Horizon Workrooms by students).



**Figure 1: Testing within an introductory event**



**Figure 2: Testing of Horizon Workrooms by students**

The stock of VR headsets for student rental consists of 20 VR headsets and is supplemented by additional accessories, for example different head mounts to increase comfort, spacers for wearers of glasses and special keyboards that can also be used in virtual reality. The group work tasks are determined by the respective teacher. Students are free to combine working with the VR headsets with other methods of remote collaboration, for example using the headsets only for brainstorming and discussion phases.

### 3.2 360° videos for Teaching

For the theory-practice transfer, internships, role plays, reflection and case analyses, among others, are used in social work studies (Matthies, 2020, p.59). The use of 360° videos represents a new approach to creating authentic learning situations in which action can be tested in realistic case constellations (Davidsen, et al., 2022, pp.2-3). Existing seminars are supplemented with 360° videos, whereby the planning and design of the case studies, the script and the didactic implementation take place in close cooperation with the teachers. Figure 3: Creation of 360° videos and didactic implementation illustrates the process:



**Figure 3: Creation of 360° videos and didactic implementation**



This process makes it possible to create 360° videos specially designed for the respective seminar so that the teaching content is presented in a suitable didactic framework. With the 360° videos created, two purposes from the literature are taken up: on the one hand, the observation and presentation of learning content and, on the other hand, immersive videos to support theory-practice transfer (Rosendahl and Wagner, 2023, p.26; Barnidge, et al., 2022; Ros, et al., 2021; Theelen, van den Beemt and den Brok, 2020).

The developed 360° videos and the didactic framework make it possible to create individual learning processes, as there is no predefined image section, but all directions of view are possible due to the 360° all-round view (Rosendahl and Wagner, 2023, p.32). In order to make it easier for the students to take on roles and perspectives later on and to promote immersion, the situations are usually filmed from the different perspectives of the protagonists. In this way, students "experience" the communication situation of the case study from the perspective of their role (Figure 4: Small group work - viewing of 360° case studies). The adoption of perspective might have a high explanatory value in the context of learning from the model, as it places a strong emphasis on feelings and a reference to the affective personality structure (Kron, 1993, p.264).



**Figure 4: Small group work - viewing of 360° case studies**

So far, the videos have been used in four different seminars within the Bachelor's and Master's degree programmes. The following depiction is an example of the didactic implementation in the seminar "Crises and Critical Conversations". In this seminar of the Bachelor's programme, the videos are used to introduce situations from supervision.

- Plenary introduction
- Small group work - viewing of 360° case studies
- Collegial consultation on the respective roles & case studies
- Small group work - analysis & methodical extension of the case studies
- Group presentations in plenary - Case analysis/methodical continuation (Figure 5: Case analysis in plenary)
- Final reflection & evaluation



**Figure 5: Case analysis in plenary**

This process requires at least four hours of time, so that the viewing and processing phases are not calculated too tightly. Two half days or a full seminar day have proven to be an optimal framework. In this instance, an in-depth case reflection can be conducted by transferring the case studies into a plenary discussion and systematically examining them through a methodical analysis of one's personal viewpoint. For the case work with the 360° videos, handouts with information on the background and the roles of the actors are available in each case, so that the contents of the videos can be placed in context (Figure 6: Handout).


### Handout case study three

**"Reaching into the cash box" - Theft from the group cash box**


Background knowledge about the case:

Supervision with the team of an inpatient facility for adults with a mental impairment already includes several sessions. Supervision is obligatory in the organisation and takes place once a month. The topics of the supervision are how to deal with the residents and how to improve the cooperation in relation to the residents. Tensions between individual team members can be observed from time to time, but so far they have been dealt with satisfactorily.


Actors in the case study:




Team leader Tim Grück




Supervisor Frau Gelecht




employee Justus




employee Elisa



employee Isabell



employee Matthias



employee Henning

Notes:

Figure 6: Handout

## 4. Evaluation

The evaluation of the project is process-oriented and is carried out internally (Merchel, 2019). Different questionnaires were developed for the evaluation of the two approaches, whereby on the one hand validated existing survey instruments were taken up and on the other hand own items were added.

### 4.1 Collaborative Work

The questionnaire for the approach of collaborative work was created in order to specifically capture the students' insights, needs, problems and challenges and to be able to make adjustments during the course of the project. On this occasion, the framework conditions were surveyed with five items (for example: "The online materials were well comprehensible in terms of content"), the work phases with eight items (for example: "Would you like to use VR headsets for remote group work again in the future?"), the influencing factors with 14 items (for example: "Did you feel very tired after the VR group work?") and additional positive and negative comments were evaluated through four open questions. The items were developed specifically for the agile evaluation of the approach and are thus not based on valid questionnaires. The questionnaire can be accessed via the following link: <https://fh-muenster.sciebo.de/s/wqTMX2Pgk0VNNWU>.

The evaluation of collaborative work in small groups is limited so far, as only eleven complete responses are available. Despite the small database, which does not allow any general conclusions to be drawn, initial results should be presented here.

The framework conditions were rated positively on a scale of 1 (not at all true) to 6 (completely true) overall (n=9) with M=5.78 (SD=0.44), with the hardware provided (n=11 M=4.91 SD=0.94) and the prepared online materials for explanation (n=9 M=5.22 SD=1.39) being rated particularly positively and also the embedding in the seminar essentially positively (n=10 M=5.30 SD=1.57). The work phases were evaluated overall as followed (n=11 M=3.73 SD=1.75), which represents a rather mixed evaluation and is also reflected in the verbal feedback when the VR headsets were returned. The most positive evaluation was given to the contact within the group work (n=11 M=5.73 SD=0.47) and the general satisfaction according to the interaction and communication with the help of the VR headsets (n=11 M=4.64 SD=1.75). Whether the VR headsets improved collaboration within the group was rated negatively (n=11 M=2.82 SD=1.25), as well as whether the VR headsets facilitated communication with the group (n=11 M=3.00 SD=1.61). Among the influencing factors, the focus on the virtual world was rated clearly positively (n=10 M=5.30 SD=0.95) and the user-friendliness positively (n=11 M=4.09 SD=1.76). Negative factors such as feeling unwell (nausea, dizziness) during use (n=11 M=2.18 SD=1.17), exhaustion after VR group work (n=10 M=3.60 SD=1.17) and irritation of the eyes after VR group work (n=10 M=2.40 SD=1.17) occurred to some extent among the students, although the feedback here is more in the area of "tends not to apply".

The evaluation results of the collaborative work can be classified to the extent that they depend on the conceptual integration of the VR headsets into the teaching context (Hejna, et al., 2023, p.316). In the context of the integration applied here, the students were able to use them without instructions and direct support from the teachers to accompany the seminars. Accordingly, the conceptual integration in the teaching context was completely absent, which can explain the negative results. In the small group work, which was conducted using VR headsets, the teachers did not participate in the work phases in the VR environment, which could be a negative influencing factor as well (Speidel, et al., 2023, p.9). When deciding whether to use VR headsets within group work, students find it advantageous to be able to concentrate well in the VR environment.

The evaluation results of the collaborative work enable conclusions to be drawn for the further conceptual development of the approach. Better dovetailing with the respective seminars, acceptance by the teachers and their support can have a positive impact on VR group work.

#### **4.2 360° Videos for Teaching**

The questionnaire for the 360° videos is constructed upon validated questionnaires (Schwinger, Kärchner and Gehle, 2021; Vorderer, et al., 2004; Rheinberg, Vollmeyer and Engeser, 2003) and is based on a 7-point Likert scale (1=Does not apply at all; 7=Applies completely). Within the questionnaire, the flow experience as a whole is surveyed, taking into account aspects such as the occurrence of apprehension and the fit of the experience with a total of 16 items (Rheinberg, Vollmeyer and Engeser, 2003). The experience of presence is recorded more comprehensively, so that statements can be made about the students' immersion; the following topic blocks are asked with six items each (Vorderer, et al., 2004):

- Attention (ATT)
- Spatial Situation Model (SSM)
- Spatial Presence - Self Location (SPSL)
- Spatial Presence - Possible Actions (SPPA)
- Involvement (INV)
- Suspension of Disbelief (SoD)
- Domain Specific Interest (DSI)
- Visual-Spatial Imagery (VSI)

For this purpose, the quality of the 360° videos created is surveyed with the help of eleven items (Schwinger, Kärchner and Gehle, 2021), the user-friendliness of the VR headsets and the software used with four items, the embedding in the course with two items, possible nausea (motion sickness) with two items and the overall assessment of the use in the course with three items. At the conclusion of the questionnaire, students are able to answer four open questions for additional positive and negative feedback, as well as suggestions for improvement. The questionnaire can be accessed via the following link: <https://fh-muenster.sciebo.de/s/wqTMX2PgkOVNNWU>.

The evaluation results of four implementations in different seminars provide initial insights into the added value of using 360° videos in education. The evaluation focuses particularly on the two phenomena of presence and flow experience, as these are presented in the literature as the main aspects in the context of immersion and added value compared to conventional media. A total of 60 students (n=60) fully participated in the evaluation.



The students evaluate the flow experience immediately after the application in the seminar with a mean value of 5.11 (SD=0.81), so that it can be assumed that the integration of the 360° videos has a positive influence on this. This positive influence is reinforced by the challenge fit scale (1= low, 4= just right, 7= high) in the questionnaire of flow experience, according to which the fit in the "just right" range is 3.93 out of 7 (SD=0.59). The experience of presence is rated as strongly present overall with M=4.82 (SD=0.52), detailed in the respective sub-areas:

• Attention (ATT)	M=5.73 (SD=0.86)
• Spatial Situation Model (SSM)	M=5.93 (SD=0.65)
• Spatial Presence - Self Location (SPSL)	M=4.94 (SD=0.99)
• Spatial Presence - Possible Actions (SPPA)	M=3.47 (SD=1.19)
• Involvement (INV)	M=5.28 (SD=0.85)
• Suspension of Disbelief (SoD)	M=5.10 (SD=0.64)
• Domain Specific Interest (DSI)	M=3.62 (SD=1.36)
• Visual-Spatial Imagery (VSI)	M=4.46 (SD=1.35)

It is noticeable that the values for the spatial situation model (SPSL) and the attention allocation (ATT) are the highest. This indicates a pronounced focus of attention on the content, as well as a clear presentation of the spatial environment and case situation, so that it is perceived as comprehensible.

Two areas, the interactivity of the videos (SPPA) and the area-specific interest (DSI), are rated rather negatively. In particular the aspect of interactivity is understandable in the negative evaluation, since there is no possibility of interaction within the videos, apart from the possibility of pausing or fast-forwarding and rewinding. In the area-specific interest, it becomes clear that the students only partially have previous points of reference and interests in the new technology of VR headsets. Nevertheless, it can be confirmed that the 360° videos create an overall sense of immersion and, in some aspects, that this experience is very pronounced. The degree of immersion of the playback medium can have a significant impact on learning motivation and success (Rosendahl and Wagner, 2023, p.28).

The students' overall assessment of the statements on integration into teaching (M=6.0, SD=0.96), stimulation to engage with the content (M=6.13 SD=0.87), embedding in the course (M=6.07 SD=1.04), promotion of understanding (M=6.18 SD=0.87) and the closeness to reality of the environment (M=6.10 SD=0.83) was extremely positive and encouraging for further implementation. However, a total of six students also felt physical discomfort to be "rather true" to "completely true", which corresponds to the occurrence of the motion sickness phenomenon in about one tenth of the students.

Based on the evaluation results, it can be concluded that 360° videos and viewing them through VR headsets is an added value to social work education. By embedding the 360° videos, students can, among other things, expand their empathic and emotional skills (Rambaree, et al., 2023, p.14) and experience a direct connection between theory and practical examples.

## 5. Discussion

Within the contribution, two approaches were presented with which, through the use of virtual reality and 360° videos, the teaching of social work can be enhanced and expanded. The findings on collaborative work using virtual reality are still very limited and only provide small exploratory insights into the hurdles and opportunities of this approach for online-based study programmes. At this point, an implementation in regular teaching could be an opportunity to enrich and support a whole seminar with the help of virtual reality. Since this is associated with an increased effort on the part of the teachers and has not yet been implemented, it is not yet possible to present any in-depth findings. Only the self-learning and work phases of groups could be supplemented so far and were accepted partly well and partly rather cautiously.

In contrast, there are more comprehensive evaluation results for the 360° videos, which, with a sample size of 60 participants, show initial advantages in the area of immersion, learning motivation and theory-practice transfer. The advantage of the realistic depiction of case studies in 360° videos also became clear, which was also considered by Della Libera, et al. (2023, p.12) and Gazzelloni, et al. (2023, p.124).

The main limitation of 360° videos is the lack of interactivity, as the students are purely observers of the situation (Tarantini, 2023, p.217) and the didactic design must therefore be based on this aspect, for example by following up the videos with role plays. However, the role of the viewer can be quite different from watching regular 2D videos due to the panoramic view, which provides various perspectives and views of the scenario (Ferdig, Kosko

and Gandolfi, 2023, p.4; Rosendahl, Müller and Wagner, 2023, p.795; Roche, Rolland and Cunningham, 2023, pp.44).

The 360° videos provide a learning experience in which the students are able to improve their empathic competences. By adopting the first-person perspective of the actors, students can better empathise with them (Chao, et al., 2021, p.15). The high motivation potential as well as interest and commitment of the learners attributed to the 360° videos (Rosendahl and Wagner, 2023, pp.29-30) could be confirmed in the evaluation. In further research, learning-based outcomes could be collected in a control group design to complement the previous findings. This could provide further insights into the added value of the approach.

The pedagogical and didactic potential of creating 360° videos has not yet been fully exhausted, as the production of these is carried out entirely by the project and the teachers. Besides, the students have not yet been involved in video conception processes. Here, the learners could become more involved by independently conceptualising or creating the 360° videos in group work, which can lead also to the generation of knowledge through social interaction (Funk and Schmidt, 2023, p.308). The creation of the 360° videos becomes possible and practical for the seminar context through the availability of, meanwhile, cheaper cameras and VR headsets (Ionescu, et al., 2021, p.17).

## **6. Conclusion**

The two approaches presented for the implementation of virtual reality and VR headsets in social work teaching can be formulated as a recommendation for action for pedagogical study programmes, taking into account the findings of the evaluation.

For a transfer of the approach to remote collaborative working, the previous findings can be summarised in five points:

- A comprehensive instruction pool is recommended, as the instructions freely available online are not always tailored to the needs of the students.
- In addition to VR headsets, special keyboards and different head mounts should also be offered so that comfort during the work phases is as high as possible.
- The VR headsets should be a voluntary offer, as their use may cause discomfort for a few students, which should not lead to exclusion.
- A detailed introductory session enables the students to help themselves after a short time and to have internalised the operation and the technical possibilities for the most part.
- Collaborative work with VR headsets should only be a supplement to existing video conferencing systems.

The evaluation results on 360° videos for teaching confirm the already suspected added values of teaching content in the subject areas of methodological analysis, reflection on communication processes, perspective taking and the application of methods based on 360° videos as a starting example. Six recommendations for action for transfer can also be formulated here:

- Cooperation with the teachers of the seminars is essential for a didactically meaningful implementation of 360° videos.
- A high technical quality of the media created enhances the immersion and thus the experience of presence in the 360° videos.
- The duration of the 360° videos should not exceed the limit of three minutes per sequence, as this can increase waiting times during the execution and reduce attention.
- One supervisor for five VR headsets is optimal.
- To minimize waiting times, it is recommended that there be one set of VR headsets for every two students.
- If the VR headsets are used several times in the seminar, the supervision effort decreases over time, as the students quickly learn to use them independently.

The project's findings demonstrate that the implementation of virtual reality and VR headsets in teaching, especially in social work, is still in early stages, but it's worth experimenting with new methods in this area. Especially in the area of theory-practice transfer, these can create added value for the teaching of pedagogical professions.

Within the framework of the project, a new perspective for the creation and use of 360° videos has emerged. In cooperation with the software prototype "Paneo-VR" by "Mixality", a new series of 360° videos should be produced that are interdependent and should offer different scenarios based on a decision tree. For this purpose, the 360° videos are equipped with interaction elements (for example dialogue field), so that one can select different reactions and continuations of the situations. This new approach is intended to enable teachers and students to use VR headsets with self-learning resources, which, compared to conventional seminar implementations, can provide more flexibility, self-organisation and decision-making opportunities. The independent choice of interactions can enable students to gain individual experiences in the scenarios and thus enrich the discussions and analyses based on them (Langer, 2020, p.111). As a conclusion, the developed approaches will be transferred to higher education institutions as part of the "BASA-online" higher education network, so that they can be tested and, if necessary, anchored in higher education institutions.

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