



Review

Dialogue with Avatars in Simulation-Based Social Work Education: A Scoping Review

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Abstract: Virtual reality provides students with the opportunity to have simulated experiences in a safe setting and is mostly used to teach direct practice skills. One of the most advanced ways of using virtual simulation in social work education is to interact with avatars. Aim: The overall aim of this scoping review was to find out what is known about the use of dialogue with avatars in virtual reality in simulation-based social work education. Materials: Using Arksey and O'Malley's scoping review framework, 11 articles were included in this review. Results: The skills taught with the avatars varied, as did the ways of preparing students for the sessions. The training was assessed as meaningful learning in a safe and comfortable environment, offering an opportunity to train in practical skills. According to the pre- and post-tests, in several studies the students' skills seemed to have improved after the training. The qualitative data also pointed to skill developments. Conclusion: Training with avatars seems to be a useful way of preparing students for their future profession and seems to hold great potential in preparing students for demanding situations that cannot be easily trained for in a classroom. The results also point to technical elements that would benefit from development.

Keywords: social work education; skills training; avatar; virtual reality



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1. Introduction

Research has shown that newly graduated social workers often comment that they would have liked to have had more communication training during their education (Tham and Lynch 2014, 2019; Björktomta and Tham Forthcoming). As there are many learning goals to fulfil in social work education and because it might be difficult to obtain enough space for this training, new technology such as avatars in virtual reality (VR) may be part of the solution.

Huttar and BrintzenhofeSzoc (2020), who were among the first to explore the question of using VR in social work education, studied the use and effectiveness of VR and computer simulation technology in educating social workers. Their review included seven articles published between 2000 and 2016. Two articles focused on programme development while five included an empirical research component. Their analysis showed that VR and computer simulation technology was used mostly in undergraduate education and for teaching practice skills. The opportunity for students to learn from mistakes when training in a safe environment was identified in all the articles.

Two more recent reviews, by Baker and Jenney (2023) and Ruiz-Ortega et al. (2023), focused on virtual simulations in social work. Ruiz-Ortega et al. explored the impact of using VR in social work training and included 22 studies. Their analysis identified three areas where one may potentially benefit from using VR: training in practical skills, familiarisation with contexts that are rare and difficult to access, and acquisition and management of essential professional skills (Ruiz-Ortega et al. 2023, pp. 8–10). Baker and Jenney (2023) focused on virtual simulations in social work in their scoping review, examining 31 articles,

of which 6 were reviews. Six types of virtual simulations were found, which ranged from the most basic to the most advanced: (1) computer-assisted instructional/interactive video disk programs, (2) video diaries, (3) virtual learning environments, (4) family simulations, (5) interaction with virtual humans, and (6) virtual worlds (p. 11). The knowledge and skills the virtual simulations were to teach were categorised into four groups: interactive case studies, assessment/interview skills, providing care in unique settings, and specific educational topics and skills.

While virtual reality and computer simulations in social work education have, in a broad sense, been studied before to some extent, there still seems to be a lack of reviews focusing on *dialogue with avatars*. The current study was designed in order to take a step towards filling this knowledge gap.

The overall aim of this scoping review was to find out what is known about the use of dialogue with avatars in virtual reality in simulation-based social work education.

More specifically:

- How is the training with avatars organised?
- What types of conversational skills are practised through dialogue with avatars and in what kind of simulated situations?
- What opportunities and challenges are reported?

2. Concepts and Definitions

There are many different definitions of VR ([Kardong-Edgren et al. 2019](#)), but the term is often used as a synonym for “virtual world” and “virtual environment”, where the latter concerns settings for the VR experience ([Cant et al. 2019](#)).

VR can be divided into *desktop VR* and *immersive VR*. Immersive VR uses aids like head-mounted displays and earphones to provide a sense of immersion, while desktop VR is not immersive and uses only traditional hardware, such as a screen, keyboard, and mouse. Using VR can involve interacting with virtual avatars (see [Hamilton et al. 2020](#) for a discussion).

[Miao et al. \(2022\)](#) found that while the literature about avatars is still fragmented, there seem to be some common elements in defining avatars: they have an anthropomorphic or humanlike appearance, an ability to interact, and a controlling entity. [Miao et al. \(2022, p. 71\)](#) define *avatars* “as digital entities with anthropomorphic appearance, controlled by a human or software, that are able to interact”. In the current review this definition is used.

3. Background

For many years, researchers have argued that social work educators should prepare students for a working life that includes technological solutions for service delivery ([Giffords 2009](#); [Wilkerson et al. 2020](#)). As early as the end of the 1980s, [Cnaan \(1989\)](#) described a “three-fold mission for social work education: (a) to prepare computer-literate students, (b) to develop and implement computer applications specific to social work practice; and (c) to train students to protect and empower those who might be victimized by the new technology” (p. 236).

Information technology has long played a central role in both social work practice and education ([LaMendola 1987](#)). There have been discussions on the implications of what has been called the fourth industrial revolution for social work and social work education ([Safodien 2021](#)). Some argue that the development of information and communication technologies has changed the social sector, and these technologies are now common tools in social education as well as in social services ([García-Castilla et al. 2019](#); [Hodgson et al. 2022](#)).

This change has not occurred without resistance and critical voices. For example, when discussing information technology, [Smith and Bolitho \(1989\)](#) referred to studies where social workers were described as resistant and claimed that it was “because of difficulties over the nature and role of information in relation to themselves and the technology” (p. 85). Smith and Bolitho also saw a need for more advanced and sophisticated forms of

computer literacy. Others argued that educators should prepare students better (Cnaan 1989; Hodgson et al. 2022). García-Castilla et al. (2019) consider the change in social work due to the technological impact to be unstoppable, and Mishna et al. (2021) argue that the COVID-19 pandemic accelerated the process.

Technology, such as artificial intelligence (AI), is described as being increasingly common in social work practice (Reamer 2015). It is used to train practitioners in different vocational skills (Haider et al. 2024; Pickering et al. 2018; Simpson et al. 2023), such as to train family caregivers in negotiating with clients (Murawski et al. 2024). It is also used in gerontological social work, such as in sensor monitoring, smartphone apps and robots of various kinds (Mois and Fortuna 2020), and in online chat conversations with service users (van de Luitgaarden and van der Tier 2018). Other examples include the use of AI to identify people at risk of substance use disorders and to offer interventions, using the evidence-based approach Screening, Brief Intervention and Referral to Treatment, SBIRT (Washburn et al. 2021), and using VR exposure therapy for student veterans with PTSD and social anxiety (Trahan et al. 2021). This means that using new technologies in social work education may potentially contribute to professional development on multiple levels.

3.1. Studies About Simulation

Simulation-based learning has been described as a useful concept in social work education and can consist of role play, actor involvement, or computer simulation (Yildirim and Şahin 2020). The number of published studies about simulation in social work is increasing, and in 2021, the first special issue on this topic was published in a social work journal (Asakura and Bogo 2021). Simulation is described as a method which can be used when conducting research on competences in social work practice, and according to a scoping review by Asakura et al. (2021), this seems to have become more common in recent years.

Another scoping review (Kourgiantakis et al. 2020) focused on simulation-based learning in social work education, examining its characteristics, how it is used and assessed, and its facilitators and barriers. Here, the most common aim of the included studies was to examine aspects of student learning and preparedness for practice. Theatre students, professional actors, faculty members, or social work alumni acted as simulated clients. Another possibility described is to facilitate simulation-based learning in online teaching (Bay et al. 2021).

3.2. AI Applications in Higher Education

A systematic review of articles published between 2007 and 2018 showed that four categories of AI applications existed in higher education at that time: profiling and prediction, intelligent tutoring systems, assessment and evaluation, and adaptive systems and personalisation (Zawacki-Richter et al. 2019). The authors predicted that it was likely that “AI applications will be a top educational issue for the next 20 years” (Zawacki-Richter et al. 2019, p. 20).

One type of AI use that seems to be more common is found in VR applications. The use of VR is described as a method that makes it possible for students to practise demanding and complex tasks, allowing them to do this repeatedly in a safe environment (Hamilton et al. 2020). According to Fabris et al. (2019), VR can encompass both the programmes you can view on a flat screen and those where you need “goggles” or other types of head-mounted displays.

3.3. VR in Social Work Education

Several previous studies describe many areas and subjects in social work in which VR can be useful. The advantages described are that VR provides students with simulated experiences in a safe setting (Jacobsen 2019) and that students can practise repeatedly as often as needed (McDonald et al. 2021; Neden 2020; Putney et al. 2019).

Guidance and ideas for educators regarding home visits in VR are presented (Blakeman 2019; Davis et al. 2021; McDonald et al. 2021; Minguela Recover et al. 2021; Reeves et al. 2015), as is work against domestic violence (Adelman et al. 2016) and teaching SBIRT (Washburn et al. 2021; O'Brien et al. 2019; Putney et al. 2019). Other studies discuss assessing students' skills (Sacristan and Martinez 2023), teaching communication and/or interviewing skills (Casey and Powell 2021; Martin 2017; McDonald et al. 2021; Putney et al. 2019; Røed et al. 2023; Tandy et al. 2017), self-efficacy (Hsiao 2021), and research methods (Sanchez Mayers et al. 2019).

Others describe the use of VR in practice learning placements (Stone 2023), in supporting novice students in becoming familiar with new social contexts and communities (Lanzieri et al. 2021), in learning philosophies of life, values, and relationships in professional practice (Helle et al. 2023), in interprofessional learning (Buitron de la Vega et al. 2022), when working with offenders (Li et al. 2019), and in enhancing empathy (Han and Kim 2021; Rambaree et al. 2023).

However, in the studies presented above, *dialogue with avatars* has not yet been described.

4. Materials and Methods

The stages described in Arksey and O'Malley's (2005) scoping review approach were followed: (1) identifying the research question, (2) identifying relevant studies, (3) selecting studies, (4) charting the data, and (5) collating, summarising, and reporting the results. The review followed the guidelines for PRISMA-ScR (Tricco et al. 2018).

4.1. Identifying Relevant Studies

The databases ERIC, Scopus, IEEE Xplore, and Web of Science were searched to find peer-reviewed articles published before 12 February 2024, and the search was repeated on 27 June to bring it up to date. The search terms were: (education OR training OR student* OR learning) AND ("social work*") AND ("artificial intelligence" OR "virtual reality" OR avatar OR VR OR AI). The searches resulted in 1209 articles. After removing 144 duplicates, 1065 articles remained. The database search was conducted by the first author.

The database search was supplemented with two hand searches. Initially, the first author searched for relevant articles in the tables of content in the following journals: *Advances in Social Work and Welfare Education*, *Journal of Social Work Education*, *Journal of Social Work Education and Practice*, *Journal of Teaching in Social Work*, and *Social Work Education*. Secondly, the first author scanned the reference lists of the articles previously identified through the searches. Through these hand searches, three additional articles were identified.

4.2. Selecting Studies

Since the aim was to study what is known about social work students having dialogues with avatars in virtual reality in simulation-based social work education, the inclusion criteria (formulated by both authors) were: (1) journal articles written in English that were (2) empirical and peer-reviewed, (3) focused on projects containing dialogue with digital avatars in virtual reality (4) in social work education. Social work education included education on all levels (i.e., bachelor, master, and doctoral level). No restrictions in terms of time or geographical location were set, and all types of study design were included. Studies in social work practice were excluded, with the exception of studies in which social work students also were included. Studies that used real clients, actors in synchronous sessions, avatars that needed to be steered by an instructor synchronously (unless it included student avatars interacting with each other), and face-to-face role play with peers were excluded. However, studies where students interacted with each other as avatars were included.

All the titles and abstracts from the initial database search were reviewed by the first author. After removing 1011 papers which did not correspond to our inclusion criteria, 54 articles remained. After the first author screened these articles in full text, the final selection was made by both authors, resulting in 8 articles. These were supplemented with

the 3 articles from the hand searches, leading to a total of 11 articles to be included in the study. For details, see Table 1.

Table 1. Identifying relevant studies.

	Database	Number of Papers	Review of Abstracts	Review of Papers in Full Text
Database searches	ERIC	29		
	IEEE Xplore	47		
	Scopus	216		
	Web of Science	917		
Duplicates		144		
Remaining papers		1065		
Reasons for exclusion	Book, book chapter, conference proceeding, etc.		55	2
	Not empirical		278	8
	Not social work education		646	13
	Social work education, but not dialogue with avatars		29	22
	Not available		3	1
	Sum		1011	46
Remaining papers			54	8
Hand searches				3
Selected papers				11

4.3. Charting the Data

A charting form was developed, extracting the following information from the included articles: (1) author(s), year of publication, and location; (2) purpose; (3) learning goals; (4) methods; (5) participants; (6) organisation and implementation of the training; and (7) findings. Each article was reviewed by both authors independently, and after discussing disagreements, both authors agreed on the extracted data in Table 2.

Table 2. Articles included in the review and synthesis of results.

Author(s), Year (Location)	Purpose	Learning Goal(s)	Methods	Participants	Organisation and Implementation of the Training	Findings
(Averbeck et al. 2024) (Germany)	Purpose: To address the relevance and implementation of VR.	Learning goal/s: Collaborative work	Methods: Questionnaire	Participants: Social work students (11)	Preparation: instructional videos Training: Students could borrow the VR headsets and work with them in the virtual spaces.	Satisfaction with the framework conditions and the hardware. Positive ratings of the focus on the virtual world and user-friendliness. Negative rating of whether the headsets facilitated communication and collaboration. Negative factor was feeling unwell.
(Lee et al. 2020) (USA)	Purpose: To evaluate the feasibility and acceptability of using a virtual world educational environment for interprofessional health profession students learning about palliative care.	Learning goal/s: Prepare health profession students to engage in collaborative team-based care.	Methods: Pre-and post-test survey, photos, and written reflection	Participants: Graduate students in medicine (n = 12), nutrition (n = 7), nursing (n = 6), physical therapy (n = 5), and social work (n = 5)	Preparation: Instructional sheet and researchers provided brief instructions. Training: Team building and team meeting with a virtual patient.	Pre- and post-test: Several improvements were reported. Themes in the qualitative analysis <ul style="list-style-type: none"> valuing the interprofessional education team. comfortable learning environment. unique and engaging learning experience. technology-mediated learning experience.
(Lee 2014) (USA)	Purpose: To compare learning objectives achieved in hybrid/online social work courses through the use of asynchronous forums, avatars, and virtual communities to those achieved in a traditional course.	Learning goal/s: Cultural competence, diversity.	Methods: Post-test survey and online discussion	Participants: Master of Social Work (MSW) students, 25 students in hybrid class and 22 in traditional class	Preparation: Instructor taught in class how to create and use avatars. Training: Student avatars were talking with each other at a virtual cocktail party.	In comparison with in-class students, students who attended the virtual community reported improvements in skills. In-class students reported higher mean score on comfort level in working with diverse population post-exercise. Students reported that they appreciated the opportunities offered with the training, which helped them to extend their empathy. Also, the virtual communities appeared to afford students the ability to be free.

Table 2. Cont.

Author(s), Year (Location)	Purpose	Learning Goal(s)	Methods	Participants	Organisation and Implementation of the Training	Findings
(Levine and Adams 2013) (USA)	Purpose: To explore whether participation in a virtual role play could increase learners' feelings of self-efficacy for tasks needed to conduct a case management intake.	Learning goal/s: Understanding the importance of information gathering and how helpful it can be in assessing the needs of client/consumer.	Methods: Pre- and post-test survey	Participants: 9 undergraduate social work students	Preparation: Online orientation about the software. Scheduled one-to-one training with an instructional designer to practise chat or voice discussion. Training: In a virtual role play intake office, students were able to engage in synchronous voice or chat discussions.	Compared pre- and post-tests showed that all students felt greater confidence in <ul style="list-style-type: none"> providing information to clients. contributing to evaluation activities during the case management process. assessing the social functioning of the client. developing hypothesis about the client's behaviour.
(Liaw et al. 2019)	Purpose: To describe the design of a 3D virtual environment (VE) for interprofessional team care delivery and to evaluate healthcare students' perceptions and experiences of the VE for collaborative learning.	Learning goal/s: Not applicable.	Methods: Focus group, pre- and post-test questionnaires	Participants: 36 third-year undergraduate healthcare students, 6 from each healthcare course—medicine, nursing, pharmacy, physiotherapy, occupational therapy, and medical social work	Preparation: Orientation via a virtual exercise and an asynchronous online video instruction. Training: Student avatars individually assessed a virtual patient; later, student avatars had an interprofessional family conference.	Post-test scores indicated improvements in interprofessional competencies in attitudes toward working in an interprofessional team. About half of the students were positive about the usability, and half of them thought there was too much inconsistency in the system. Focus groups Four themes emerged: feeling real, less threatening, understanding each other's role, and technical hiccups.
(Matto et al. 2023) (USA)	Purpose: To understand the learning experiences of a cohort of specialisation year social work students who participated in a VR case simulation.	Learning goal/s: Skills training on substance use disorder (SUD).	Methods: Survey (after the case simulation)	Participants: 28 MSW students	Preparation: A video recording about the case, an article that discussed the principles of VR simulation and the "safe container", a content-specific article, and background reading on the case situation. Training: Performing an intake interview in a virtual hospital.	Training results showed that between 60% and 75% of the participants strongly agreed that they felt more prepared and confident in trained skills.

Table 2. Cont.

Author(s), Year (Location)	Purpose	Learning Goal(s)	Methods	Participants	Organisation and Implementation of the Training	Findings
(Minguela-Recover et al. 2024) (Spain)	Purpose: To study the factors that determine the predisposition of social work students to use VR as a complementary pedagogical tool in the theory-practice learning process.	Learning goal/s: How to conduct home visits to assess dependency.	Methods: Post-test survey	Participants: 42 third-year undergraduate social work students	Preparation: (not presented). Training: Students are engaged via voice interaction after watching different situations.	In the survey, 52% stated that they always or frequently use this kind of application for educational activities, and 50% always or frequently use social networks for teaching activities.
(Reinsmith-Jones et al. 2015) (USA)	Purpose: To evaluate student perspectives on the educational value of learning experiences in the 3D virtual world Second Life.	Learning goal/s: Critical thinking, discrimination, oppression.	Methods: Survey and reflective journals	Participants: 64 undergraduate social work students	Preparation: (not presented). Training: Interaction between student avatars in different scenarios.	Post-test: Students assessed exercises in the virtual store, plane crash, and Holocaust museum as good learning experiences. In the qualitative analysis four themes emerged: (a) emotions, (b) empathetic understanding of events, (c) critical thinking about immorality, injustices, and implications of discrimination, and (d) reflections on effects of personal behaviour and social work professional responsibility.
(Smith et al. 2021) (USA)	Purpose: To evaluate the initial feasibility, acceptability, usability, and effectiveness of implementing three computerized simulations with virtual clients.	Learning goal/s: Training in motivational interviewing and cognitive behavioural therapy.	Methods: Pre- and post-test survey	Participants: 22 MSW students	Preparation: Students were asked to review an eLearning content before the sessions to learn about the avatars' background and skills needed in the session. Training: For three weeks students completed 45-min training sessions with a new avatar. Each simulated a client facilitated by a matrix of three characters and three moods.	Between the pre-test and post-test , students reported significant increases in their self-efficacy concerning general clinical skills, specifically their exploratory, insight, and action skills. Qualitative analysis themes: Simulations provide a strong foundation that prepares beginners for clinical practice, and there are technical barriers to the simulation experience.

Table 2. Cont.

Author(s), Year (Location)	Purpose	Learning Goal(s)	Methods	Participants	Organisation and Implementation of the Training	Findings
(Washburn et al. 2016) (USA)	Purpose: The principal aim of this study was to evaluate the feasibility and acceptability of VP simulations for the development of brief behavioural health assessment skills in a sample of MSW students.	Learning goal/s: Development of brief behavioural health assessment skills.	Methods: Surveys	Participants: 6 MSW students	Preparation: Informational session including description of the software and the tasks. Videos showing examples of interaction with avatars. Instructions on how to use the technology. Training: Students had 30 min to assess a virtual patient for any mental health or substance abuse concerns.	Results indicated that there was a significant increase in diagnostic accuracy. Students performed well on identification of the presented problem and responding to specific client concerns, but they performed poorly on identification of client strengths and exploring the impact of culture on the presented problem. Students rated the overall usability as good, and they felt that the training method had a positive impact on their clinical skills. Analysis of the open-ended questions showed that all students indicated difficulties with technological issues. The simulation decreased their anxiety and showed that repeated practice is helpful.
(Wilson et al. 2013) (USA)	Purpose: To provide students with an opportunity to practise the engagement and assessment skills that are specific to home visiting.	Learning goal/s: In a simulated home visit, practise the engagement and assessment skills associated with the general practice model.	Methods: Discussion and feedback from students and instructors	Participants: 41 MSW students and faculty instructors	Preparation: Instructors introduced the home visiting simulation in a live in-class demonstration and in orientation of technology. Training: Two student avatars (one client and one social worker) interact within the context of an apartment that was designed to have a number of occupants and environmental hazards that social workers may encounter when conducting home visits.	Both faculty and students noted the importance of preparing students in using technology. They thought the simulation provided meaningful learning opportunities. They believed that the simulations fulfilled the objective of making students aware of the challenges associated with conducting home visits regarding issues of safety and dealing with personal biases. Students reported that the simulations helped them to understand the types of skills needed for home visiting. Also, they discussed the benefits that would have resulted from having additional time to practice interacting with one another as avatars prior to engaging in the assignment. Faculty expressed that students' conceptualisations of their clients' circumstances and the resources available to them were expanded.

5. Results

A more detailed presentation of the included articles is given below, further illustrating the overview presented in Table 2.

5.1. Characteristics of the Included Studies

5.1.1. Location and Publication Year

Eight studies were conducted in the United States, one in Spain, and one in Germany. In one study, the authors did not say where the study was carried out; however, as all the authors were from Singapore, it is quite likely that the study was carried out there. All the articles were published between 2013 and 2024.

5.1.2. Purpose

Evaluating students' perceptions of aspects of training with VR was the most common purpose and constituted the objective in six of the studies (Lee et al. 2020; Liaw et al. 2019; Matto et al. 2023; Reinsmith-Jones et al. 2015; Smith et al. 2021; Washburn et al. 2016). The students' experiences and assessment of the feasibility, value, effectiveness, and acceptability of the training were investigated. Another common purpose was to evaluate the learning achieved: Lee (2014) compared hybrid/online social work courses with a traditional course; Levine and Adams (2013) studied whether virtual role play could increase students' self-efficacy; and Washburn et al. (2016) wanted to determine whether the training with VR could increase students' diagnostic accuracy. Others aimed to describe the design of the training and the virtual platform (Averbeck et al. 2024; Liaw et al. 2019) or how social work educators use virtual worlds (Wilson et al. 2013). Minguela-Recover et al. (2024) studied factors that determine the predispositions of students towards using VR in learning. While some studies aimed to investigate different outcomes of the training, several focused only on finding out how students perceived the training.

5.1.3. Methods Used

Almost half of the included studies used a mixed-methods design (Lee 2014; Lee et al. 2020; Liaw et al. 2019; Reinsmith-Jones et al. 2015; Wilson et al. 2013), and the rest used quantitative methods (Averbeck et al. 2024; Levine and Adams 2013; Matto et al. 2023; Minguela-Recover et al. 2024; Smith et al. 2021; Washburn et al. 2016). Surveys were the dominant way of collecting data and were carried out in all the studies except for that of Wilson et al. (2013), who used discussion and feedback from students and instructors. Other data collection methods were online discussions (Lee 2014), photos (Lee et al. 2020), written reflections (Lee et al. 2020; Reinsmith-Jones et al. 2015), and focus groups (Liaw et al. 2019).

5.1.4. Participants

In eight of the studies, the participants consisted solely of social work students (Averbeck et al. 2024; Lee 2014; Levine and Adams 2013; Matto et al. 2023; Minguela-Recover et al. 2024; Reinsmith-Jones et al. 2015; Smith et al. 2021; Washburn et al. 2016). In two studies, students from other programmes also participated (Lee et al. 2020; Liaw et al. 2019). In one study, the perceptions of both social work students and faculty instructors were included (Wilson et al. 2013). The participants from social work education were graduate/MSW students (Lee 2014; Lee et al. 2020; Matto et al. 2023; Smith et al. 2021; Washburn et al. 2016; Wilson et al. 2013) and undergraduate students (Levine and Adams 2013; Liaw et al. 2019; Minguela-Recover et al. 2024; Reinsmith-Jones et al. 2015). Averbeck et al. (2024) did not mention the students' level of social work education.

5.1.5. Skills Trained

The training involved a broad range of professional skills. Training was given for skills connected with *assessments of client needs* in four of the studies (Levine and Adams 2013; Minguela-Recover et al. 2024; Washburn et al. 2016; Wilson et al. 2013). In three of

them, training in assessment skills was combined with *training in home visits* (Minguela-Recover et al. 2024; Washburn et al. 2016; Wilson et al. 2013), and in one, it was combined with developing *understanding of the importance of information gathering* (Levine and Adams 2013). The other skills taught were *collaborative work* (Averbeck et al. 2024), *interprofessional competence* (Lee et al. 2020; Liaw et al. 2019), *cultural competence* (Lee 2014), *substance use disorder* (Matto et al. 2023), *critical thinking and issues regarding discrimination and oppression* (Reinsmith-Jones et al. 2015), and *motivational interviewing and cognitive behavioural therapy* (Smith et al. 2021).

5.2. Organisation and Implementation of the Training

5.2.1. Preparation

The ways of preparing students for the training differed. In three studies, students were given background reading on theories (Lee et al. 2020; Matto et al. 2023; Smith et al. 2021), and in others, they were also shown a video about the cases (Liaw et al. 2019; Matto et al. 2023). Other forms of written information (e.g., on how the system can be used) were also used in order to prepare students (Lee et al. 2020; Matto et al. 2023; Minguela-Recover et al. 2024). To prepare them for the training, students received, for example, video instructions on the use of the systems and devices (Averbeck et al. 2024; Liaw et al. 2019; Smith et al. 2021; Washburn et al. 2016); they were instructed during a lecture (Lee 2014; Lee et al. 2020; Levine and Adams 2013; Liaw et al. 2019; Matto et al. 2023; Smith et al. 2021; Washburn et al. 2016; Wilson et al. 2013) or via the learning platform (Averbeck et al. 2024; Lee et al. 2020; Liaw et al. 2019; Levine and Adams 2013); or they were given a demonstration of the system (Wilson et al. 2013). In some studies, students were given the opportunity to practise using VR before the session (Averbeck et al. 2024; Levine and Adams 2013; Liaw et al. 2019; Reinsmith-Jones et al. 2015; Wilson et al. 2013).

5.2.2. Types of Dialogue

There was great variety in how the avatars were used. In several studies, the student avatar was talking to another student avatar (Averbeck et al. 2024; Lee 2014; Levine and Adams 2013; Reinsmith-Jones et al. 2015; Wilson et al. 2013). In others, the student avatars were talking to a client avatar who was not played by a student (Minguela-Recover et al. 2024; Smith et al. 2021; Washburn et al. 2016). In some studies, there were both avatars that were played by students and ones that were not (Matto et al. 2023; Lee et al. 2020; Liaw et al. 2019).

5.2.3. Examples with More Detailed Descriptions of the Virtual Avatars' Capabilities

In the study by Liaw et al. (2019), the training is described more in detail. Here, the patient avatar is able to express specific responses or actions, such as facial expressions, body positioning, and limb actions. Also, heart rate, respiratory rate, blood pressure, oxygen saturation, lung sound, and pupillary reactions could be programmed. Liaw et al. also explain that the patient avatar could respond verbally to the healthcare team, using vocal sounds (e.g., moaning, groaning, etc.). Furthermore, the healthcare avatars could communicate with one another and move freely inside the virtual hospital. Simple gestures such as waving and a thumbs-up could also be used.

In another example (Smith et al. 2021), the avatars had three characters with different moods and could react in the conversation with students. The avatar was randomly selected to begin as "open to change", "willing to consider change", or "will not change". Also, the avatar's mood begins as "neutral", and depending on the students' performance, the avatar changes to "engaged" or "disengaged". The student's clinical statements inform the algorithm that decides how the virtual client's character and mood evolves.

5.2.4. Movement and Mobility of Student Avatars

The student avatars possessed different possibilities for moving around in the virtual world. Students could move around freely (Liaw et al. 2019), move through certain places

or virtual worlds (Lee et al. 2020; Reinsmith-Jones et al. 2015; Smith et al. 2021), or be moved to different locations by a facilitator (Lee 2014). In other studies, it seems that students stayed in one place during the whole training session (Averbeck et al. 2024; Levine and Adams 2013; Matto et al. 2023; Minguela-Recover et al. 2024; Washburn et al. 2016; Wilson et al. 2013).

5.2.5. Scopes of Student Communication

As the sessions were sometimes carried out together with other students, the training could not be conducted whenever or as often as wanted (Averbeck et al. 2024; Lee et al. 2020; Lee 2014; Liaw et al. 2019; Matto et al. 2023; Reinsmith-Jones et al. 2015). Also, the form and frequency of communication varied. In all but two studies, it seems that students could speak relatively freely; in Minguela-Recover et al. (2024), students were expected to speak when given a certain signal, and in Liaw et al.'s study (2019), only one student at a time could speak.

5.2.6. Feedback and Debriefing

After the training sessions, students were often offered a debriefing session (Lee et al. 2020; Liaw et al. 2019; Matto et al. 2023; Minguela-Recover et al. 2024; Reinsmith-Jones et al. 2015; Wilson et al. 2013). However, sometimes no feedback or debriefing is described other than what takes place in traditional teaching (Averbeck et al. 2024; Lee 2014; Levine and Adams 2013). In the studies by Smith et al. (2021) and Washburn et al. (2016), students could obtain feedback during the sessions.

5.3. Findings from the Studies

In many of the studies, training with avatars in VR is assessed as providing meaningful learning for social work students in a safe and comfortable learning environment that is perceived as less threatening (Lee et al. 2020; Liaw et al. 2019; Wilson et al. 2013). Furthermore, the training is described as helping the students to feel free during the training experience (Lee 2014; Liaw et al. 2019), offering an opportunity to train in practical skills (Lee et al. 2020; Liaw et al. 2019; Matto et al. 2023; Smith et al. 2021; Washburn et al. 2016; Wilson et al. 2013) and acquire empathetic understanding (Reinsmith-Jones et al. 2015).

According to pre- and post-tests, students' skills seemed to have improved after the training (Lee et al. 2020; Levine and Adams 2013; Liaw et al. 2019; Reinsmith-Jones et al. 2015; Smith et al. 2021; Washburn et al. 2016). For example, improvements in teamwork, collaboration, and leadership skills were described (Lee et al. 2020), as were learning about diversity and gaining self-awareness (Lee 2014). In one study, improvements in almost twenty different work tasks were reported, in relation to client work (e.g., responding empathically, requesting disclosure or opinions from clients, and identifying dynamics in relationships with clients) and also concerning assessments (Levine and Adams 2013). In Liaw et al. (2019), post-test scores indicated improvements in professional competencies and attitudes towards working in an interprofessional team, and in Reinsmith-Jones et al. (2015), there were improvements in decision making, group processes, and talking about feelings attached to discrimination. A large majority of the participating students reported being better prepared regarding several skills, such as responding to changes in their clients' conditions and providing interventions that foster client safety (Matto et al. 2023). Furthermore, after pre- and post-tests, significant increases in self-efficacy regarding several general clinical skills were identified (Smith et al. 2021).

However, not all skills were reported to be improved, such as identifying clients' strengths, involving the client in goal setting and exploring the impact of culture on the presented problem (Washburn et al. 2016). Difficulties in communicating due to avatars' lack of body language was reported (Lee et al. 2020; Liaw et al. 2019). Averbeck et al. (2024) reported that using a VR headset neither improved collaboration nor facilitated communication in the group. While Lee (2014) found increased skills regarding diversity, self-awareness, and understanding of issues related to families; based on the post-test, the

same study also concluded that students in a traditional course experienced higher levels of working with diverse populations than those who used VR.

The reported challenges mostly concerned technical problems (Liaw et al. 2019; Smith et al. 2021; Washburn et al. 2016) and the fact that training with the avatars was needed before the session or assignment was carried out (Wilson et al. 2013; Liaw et al. 2019). In several studies, negative feedback from students often concerned having too little time to learn how to use the software (Wilson et al. 2013) and lack of confidence in using the hardware and software independently (Averbeck et al. 2024). Here, feeling unwell and exhaustion after the training were also described.

5.4. Summary

- The most common skill that was taught in the studies concerned the assessment of clients' needs. In some studies, this was combined with virtual home visits or a focus on the importance of information gathering. Other skills taught were interprofessional competence, cultural competence, competence concerning substance use disorder, critical thinking, motivational interviewing, and cognitive behavioural therapy.
- Students were *prepared for the sessions* through readings, videos, instructions, or demonstrations during lectures or on the learning platform and through practice.
- There were different possibilities for *student flexibility* during the sessions. In some studies, students seemed to stay in one place in the virtual world, while in others they were able to move around or be moved by a facilitator.
- All but two papers explain that students were offered a *debriefing* after the session in the virtual world.
- *The findings of the included studies* suggest that training with avatars seems to
 - provide meaningful learning;
 - occur in a safe and comfortable environment;
 - be perceived as less threatening;
 - help students to feel free during the training;
 - offer an opportunity to train in practical skills;
 - help in the acquisition of empathetic understanding.
- According to the pre- and post-tests, many—but not all—skills seemed to have improved.

The challenges reported mostly concerned technical problems and a need to train using the software before the session.

6. Discussion

The overall aim of this scoping review was to find out what is known about the use of dialogue with avatars in virtual reality in simulation-based social work education. More specifically, how the training with avatars is organised, what types of conversational skills are practised through dialogue with avatars and in what kind of simulated situations, and what opportunities and challenges are reported.

The included studies show that there seem to be both opportunities and challenges, even if opportunities are described more often. An overall finding is that the dialogue itself is often neither described in detail nor analysed in the 11 articles included in our review. In several studies, the sessions with avatars are reported to have a positive impact on different skills, such as communication, cultural diversity skills, and interprofessional competence. Negative reports mostly concern technical issues and unfamiliarity with the software. This is likely to be overcome in new generations of students.

The most common skills taught are those that cannot easily be taught in a classroom, such as home visits in difficult situations or meeting patients in a hospital. This underlines the benefits of this form of training and emerges as one of the most important results, as the student can learn important skills in a safe situation without being exposed to risks. However, it is very likely the training will be developed further in the future with the help of new technology.

Making it possible for students to undergo the training at times that suit them best and in locations other than those at the university could also improve the value of the training. However, an obstacle here is that technical equipment is needed, which might be a problem. In several of the studies in our review, the training was carried out at scheduled times and with facilitators present. In one frequently used platform, the training could only be conducted in collaboration with another person, which also reduces the possibilities of conducting the training at times which best suit the individual.

With the rapid development of AI, the perceived difficulties connected to the technology will possibly be easier to overcome. For example, avatars could be trained to respond to students in a more natural and appropriate way (cf. [Asakura et al. 2020](#); [Chan and Li 2023](#); [Røed et al. 2023](#)). To be able to communicate orally with the avatar, where the avatar is trained to answer in an adequate way and in response to what the students say, would have many advantages. For example, training could be carried out without collaboration with others, which would make it more flexible.

Despite involving many advantages, a question raised concerns what this technological development might mean in the future. One reflection concerns what the use of chatbots might mean for training and practice in social work, with regard to ethical aspects and the appropriateness of the responses from the chatbot, for example. It seems important that future studies follow this development, observing both the advantages and risks. Even if the described technical issues will possibly be solved in the near future by the seemingly rapid development of AI, other more serious concerns might be raised. As [Strannegård \(2024\)](#), professor of business administration and leadership, expresses it: “The generative artificial intelligence does not generate knowledge but information . . . the computers have no consciousness and thus no understanding, no wisdom, no feelings”.

While the results of this scoping review point to more opportunities than challenges and indicate that training with avatars in virtual worlds seems to be a useful tool in social work education, it is important to keep in mind that the number of studies found is limited. In addition, the number of participants in the studies in this review was often small, ranging from 6 to 64 persons at most.

To contribute to the development of educational practice, there is a need for research to focus more clearly on how the dialogue with avatars can take place, with regard to the avatars’ ability to provide adequate comments, be flexible in their responses, and act appropriately, for example. Another area of study concerns which preparations are needed for students to be able to focus on the dialogue itself during the session. While most of the studies found in this review are small-scale endeavours, further research could contribute with larger samples to measure the outcome of the dialogues.

7. Conclusions

Even if the included studies do not focus in detail on the specific contents of the dialogues with avatars, this review points to several positive experiences of engaging in dialogue with avatars in social work education and indicates that this kind of training in many ways seems to fulfil its aims. Training with avatars seems to offer great potential in preparing students in skills that cannot easily be learnt in a classroom, even if there still seem to be technical issues that would benefit from further development. Since previous research suggests that many of the newly graduated begin their careers with the most difficult work tasks ([Tham 2007, 2016](#); [Tham et al. Forthcoming](#)), while reporting that they are not prepared enough for the often emotionally demanding work ([Björktomta and Tham Forthcoming](#); [Kapoulitsas and Corcoran 2015](#); [Long et al. 2023](#); [Ravalier et al. 2021](#)), improved training where students can be exposed to challenging situations in the safe virtual world seems important. This might be one way of narrowing the gap between the preparedness from university and the demands of the workplaces. In the long run, better preparing new graduates for the challenges of the profession might lead to lower turnover and increase the quality of the help and support given to clients.

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