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Harnessing New Technology and Simulated Role Plays for Enhanced Engagement and Academic Success in Online Social Work Education

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ABSTRACT

This study examines the impact of computer-based simulated role plays on the self-efficacy of Master of Social Work (MSW) students in online learning environments. As virtual education becomes more common, maintaining experiential learning remains a key challenge in social work training. To address this, a longitudinal, experimental study was conducted with 155 MSW students enrolled in synchronous and asynchronous courses. Students were assigned to either a control group receiving standard instruction or an intervention group that completed computer-based simulations through Simucase[®], a platform featuring interactive, computer-based client scenarios. Pre- and posttest measures assessed changes in students' self-efficacy related to clinical skills. Findings revealed that students in the simulation group experienced a statistically significant increase in self-efficacy compared to the control group. These results suggest that computer-based simulations can effectively promote confidence and competence in online clinical training. Incorporating these tools into online MSW curricula offers a practical strategy for enhancing engagement and replicating the benefits of in-person experiential learning in digital settings.

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Simulated role plays; social work education; online education; experiential learning; technology integration

Social work education is rapidly evolving with the increasing incorporation of digital learning environments, a shift accelerated by the COVID-19 pandemic. As educators, we must think beyond simply transferring our courses online, whether synchronously or asynchronously, and instead, explore how emerging technologies can preserve and enhance the high-quality experiential learning that is central to traditional classroom instruction. Recent advancements offer unprecedented opportunities to make higher education more applied, relevant, and engaging (H. B. Flaherty, 2022; Popenici & Kerr, 2017; Skulmowski & Rey, 2020). However, many commonly used online modalities, such as static learning management systems and text-based discussion boards, fall short of

cultivating core clinical skills. These platforms often lack opportunities for modeling and practicing interpersonal dynamics essential to the helping professions. For example, how can a skill as fundamental as empathy be effectively taught and reinforced without the ability to observe, experience, and reflect on human interaction in real-time? This highlights a key limitation in current online learning strategies and underscores the potential of immersive technologies like Virtual Reality (VR) to address this gap by enabling students to engage in realistic, responsive practice scenarios.

One promising solution to this conundrum is integrating computer-based simulated role plays. These technologies allow students to apply and practice their newly learned skills through simulated role plays of situations the students will encounter in the field. It will enable them to rehearse the learned skills in a safe and controlled space in the virtual classroom or metaverse before direct work with vulnerable clients (Cant & Cooper, 2010; Cooper et al., 2012; Craig et al., 2017). As these simulations imitate the real-world clinical environment in a low-risk context, they safely replicate clinical situations' critical components for students to test their newly acquired clinical skills. This experience prepares students to respond effectively when presented with similar incidents in practice (Bogo et al., 2014; Cant & Cooper, 2010).

Additionally, simulations generate greater creativity and empathy; students learn and practice clinical skills by playing the role of both the provider and the clinician and building empathy for the clients and respect for the therapeutic relationship (H. B. Flaherty, 2022). As the field of social work integrates more online education, new technologies such as VR can help professors create learning environments that engage students and increase a sense of community, knowledge attainment, and mastery of the skill.

This study aims to explore the impact of computer-based simulated role play technology and immersive media technology on student experience and academic success in synchronous and asynchronous online social work classrooms.

Although Simucase and similar technologies are not new and have been widely studied in social work and allied health professions, their impact on student success across different learning platforms remains underexplored. While existing research supports their effectiveness in skill development, there is limited evidence on how these tools influence self-efficacy outcomes in asynchronous, synchronous, and in-person educational settings.

Best practices for social work clinical practice classes

Social work education aims to foster the development of students' skills, knowledge, and adherence to professional values and ethics. Central to this work is the profession's mission of individual and community wellbeing, the pursuit of justice, and teaching culturally competent practice with diverse

populations. To this end, social work education is built on experiential learning and housed within a humanistic model. That is, social work education remains student-centered, focusing on individual learning needs and recognizing that learning occurs through experience and must focus on educating the whole person (DeCarvalho, 1991; Kolb, 1984). Additionally, the social work educator must strive to maintain a safe but challenging work environment, achieving a working balance for all students and their varying levels of ability while recognizing and teaching different learning styles in the classroom (Baskin, 2005; Kolb, 1984). They must also foster student collaboration, helping classroom members support each other while maintaining the educational contract (L. Shulman, 1987). Additionally, the social work educator must model professional behavior, self-awareness, and culturally competent practice as part of their instructional position.

David Kolb's experiential learning theory (1984) posits a connection between theory and practice skill development, stating that learning occurs through the transformation of experience. In adherence to this theory, through the signature pedagogy of the social work practicum, students are equipped to develop the necessary skills for the profession (L. S. Shulman, 2005). This experiential learning practice allows students to apply classroom theory and values to real-world situations under appropriate supervision. Integrating their classroom learning with practicum education thus allows students to strengthen the connection between theory and practice, enhancing the development of their clinical skills, critical thinking skills, and self-reflection skills (Wayne et al., 2010). To this end, the role of the social work educator must be to balance the focus on conceptual and executive learning.

In addition to preparation for the social work practicum, different rehearsals or simulations are integral to social work education. Role plays, in particular, are a major pedagogical tool and are considered a best practice within the profession because these serve to create a safe environment in which students can practice newly learned clinical skills and intervention techniques. Role plays have been found to increase students' confidence and competence in being able to handle real-world clinical situations (Kinney & Aspinwall-Roberts, 2010). A major benefit of using role plays within social work education is the flexibility offered in terms of structure. These can be structured as an instructor-to-student scenario, perhaps when additional role modeling or skills coaching is required. Role plays can also be structured as peer-to-peer or group interactions, with students taking turns playing the role(s) of the clinician and the client(s). These can provide familiarity with new skills and help develop empathy in students as they place themselves in the client roles. However, role plays must be carefully designed ahead of time to ensure that they are representative of different communities and that various diverse populations and experiences are reflected in these hypothetical scenarios.

Social work education must, therefore, ensure an approach of inclusive pedagogy. That is, multicultural frameworks must be integrated into the social work practice curriculum by including diverse case studies and discussions on power structures, privilege, and systemic oppression (Lum, 2019). Social work education involves students as active participants in their educational experience and encourages that they engage in self-reflection around topics such as gender, race, sexuality, and other intersecting identities (Fook, 2012; Wilkin & Hillock, 2014). It further requires that students consider how different systemic structures have an impact on their own lives as well as on the clients they serve.

In this study, the integration of computer-based simulated role plays is intended to complement, not replace, traditional practicum experiences. While field placements remain a cornerstone of social work education, these simulations offer an additional layer of preparation by providing structured, repeatable, and diverse clinical scenarios that help students build confidence and competence before and alongside their practicum work. The added value lies in the simulations' ability to replicate complex client interactions in a controlled environment, allowing students to develop and refine essential skills such as assessment, active listening, and intervention planning. By enhancing students' self-efficacy through experiential learning before or during practicum, computer-based simulated role plays serve as a bridge between classroom instruction and real-world application, ultimately supporting students' readiness for the demands of fieldwork.

Of course, as an instructor, an attunement to the learners' needs is paramount, and role plays, while beneficial, can potentially bring up negative emotions, especially when sensitive topics are brought forth (Baile & Blatner, 2014). Ensuring an ongoing assessment of the overall class needs and remaining attuned to students' level of engagement and their emotional responses is paramount to fostering a safe and successful class environment while using experiential learning methodologies (Kolb, 1984). To this end, debriefing, self-reflection, and tangible guidance around self-care and use of clinical supervision are critical components of social work education (Gitterman & Germain, 2008). Debriefing follows experiential learning activities such as practicum or role plays, and encourages students to engage in critical reflection on their experience, including their thoughts, actions, feelings, and/or assumptions (Bogo et al., 2014). Process recordings, a teaching tool in which students are asked to write their account of an interaction with a client, including dialogue and their observations, thoughts, feelings, and reflections, can be used as debriefings for practicum. Additionally, instructors may utilize reflective journal assignments, group discussions, one-on-one debriefings in certain cases as necessary, or other frameworks to engage students in the debriefing process after a classroom role play scenario (Campbell, 1999). This debriefing process has been found to increase students' self-awareness

and critical thinking skills, to aid with knowledge integration, and to lessen anxiety and emotional stress, all of which result in improved student confidence and competency (Bogo et al., 2014; Grant & Kinman, 2012). Self-reflection helps students internalize various theoretical concepts to apply them in practical settings later. It also allows students to examine their beliefs and biases, helping them grow as empathetic and culturally sensitive practitioners (Schön, 1983; Urdang, 2010). Finally, research has shown that providing social work students with education regarding self-reflection results in enhanced professional readiness and competence, as well as increased levels of self-awareness and empathy, and reduced levels of overall stress (Griffiths et al., 2019; Moore et al., 2011).

Self-efficacy in social work education

Introduced by Bandura (1977, 1994), self-efficacy is an individual's belief about their capability to achieve a designated level of performance. Bandura (1977) asserts that this belief in capacity is the most influential driver of outcomes, including the choices individuals make about behaving and determining perseverance in the face of adversity. Since its inception, self-efficacy has been applied to social science research to explore affective and cognitive processes related to motivation, self-regulation, and more. Sources of self-efficacy include four potential pathways: 1) mastery derived from experience, 2) vicarious experiences specific to observations of modeled behavior, 3) social persuasion through feedback and the messaging one receives, and 4) through modification of stress reactivity and perceived adverse reactions, including one's mood and physiological reactions (Bandura, 1994; Gale et al., 2021; Schunk & DiBenedetto, 2021a, 2021b). At its most basic level, self-efficacy holds true that if a person believes they can accomplish a task, they will, though the context of self-efficacy beliefs is integral to distinguishing it (Maddux & Kleiman, 2020; Pedrazza et al., 2013). Self-efficacy refers to an individual's perceived sense of agency within a specific domain or task. It reflects a belief in one's capacity to execute behaviors necessary to produce desired outcomes, which can influence motivation and action, though it does not guarantee performance or success (Bandura, 1977).

That self-efficacy is couched in social cognitive theory (SCT) and presents a unique fit for social work in research, education, and practice (Bandura, 1977) SCT assumes a person's functioning is derived from reciprocal interactions between influences within and outside of the individual, including the mutual give-and-take from the environment, thoughts, feelings and behaviors (Schunk & DiBenedetto, 2021b). This coaching, paired with the social work profession encompassing a competency-based education philosophy and approach, leads to a goodness of fit for social work educators intending to research best

practices for achieving competency-based education and favorable student outcomes (McGuire & Lay, 2020). Self-efficacy influences how individuals engage in goal setting, task completion, and managing present obstacles, which lends itself to informing educators' understanding of best practices for increasing social work competency among learners (Pedrazza et al., 2013).

In social work education, self-efficacy has been studied in several areas, including field instruction, social work research, legislative advocacy, interdisciplinary collaboration, general educational outcomes, education and training related to assessment, professional writing, and community practice (Gredig et al., 2022; Holden et al., 2017; MacLeod et al., 2022; Nowakowski-Sims & Kumar, 2021). More recently, social work educators have integrated advances in technology into classrooms to support students' developing professional competence and access to learning, including virtual world educational formats, digital storytelling, video platforms for instruction, and simulated client sessions (Reamer, 2019; Toros et al., 2023). This integration has led to emerging technology standards for educational competence, with one major area focusing on preparing students for practice to ensure that they are proficient in the use of technology as it relates to serving clients (Reamer, 2019). Being the signature pedagogy of the profession, it is not surprising that self-efficacy in social work education as it relates to practicum and practicum courses preparing students for professional practice remains a burgeoning area of study (Bogo, 2015; Wayne et al., 2010).

For example, Bragg et al. (2020) evaluated self-efficacy among advanced-standing MSW practice students learning motivational interviewing (MI) through simulated role play ($N = 17$). Students completed a bridge course in MI over three sessions, which encompassed an introduction workshop, the simulation, and an in-depth debriefing. The Counselor Self-Estimate Inventory (CSEI) was employed as a 37-item measure with established reliability and validity to evaluate self-efficacy among students. One-way ANOVAs indicated a statistically significant overall increase in self-efficacy among students post-simulation (Bragg et al., 2020).

Simulation in social work education

Skills-Based Learning (SBL) in social work education emphasizes developing practical, hands-on skills essential for effective practice. This approach encourages students to engage in role playing, case simulations, and direct practice opportunities, allowing them to apply theoretical knowledge in real-world contexts (Bogo, 2015). By focusing on communication, assessment, intervention, and ethical decision-making, SBL enhances students' ability to build rapport with clients, manage complex situations, and reflect critically on their practice (Wayne et al., 2010). Through experiential learning, social work

students develop the competencies necessary to address the diverse needs of individuals and communities.

However, a critical difficulty with traditional approaches is that students may not feel engaged with the content compared with working with live clients or communities. Students in role play activities often experience anxiety and have difficulty portraying an authentic clinical experience (Dodds et al., 2018). More immersive settings, such as simulation labs, are costly, hard to access, and do not provide students with repeated practice. As research and their use for addressing core competencies progresses, computer-based simulation-based learning strategies may bridge traditional approaches and their need to incorporate live clients (Asakura & Bogo, 2021).

Many social work programs have begun to use SBL strategies to promote equitable learning opportunities for all students. These include computerized virtual patient software, telehealth service delivery, and role play tutorials using video resources paired with supplemental activities (Eunjung et al., 2020). SBL strategies allow students to practice clinical skills in a virtual environment, and research also indicates that these methods can effectively supplement or even replace in-person learning experiences (Bogo et al., 2017; Logie et al., 2013; Todd, 2012).

One of the most accessible SBL strategies is computer-based simulations, defined as “. . . any computerized modality that requires interaction from the participant in a programmed environment” (Huttar & BrintzenhofeSzoc, 2020, p. 132). Computer-based simulations present a low-risk environment that allows students to develop clinical knowledge while simultaneously reducing the anxiety of making potentially harmful mistakes with clients and offering opportunities to refine skills through repeated practice (Smith et al., 2021). Computer-based simulations also allow students to practice deliberately without time constraints. Scenarios are designed to meet specific learning objectives and guarantee exposure to low-incidence populations. Scaffolded support and feedback from faculty during the simulation experience give students assistance they may not receive in the field when engaging with clients needing real-time intervention, allowing them to adjust their approach (Chernikova et al., 2020). The computer-based simulation also allows students to engage with clients from diverse cultures. It provides the opportunity to reflect on these interactions and seek training to provide multicultural care in practice settings (Asakura et al., 2020).

While computer-based simulations represent an important advancement in Skills-Based Learning (SBL), it is important to acknowledge that they are not universally accessible due to persistent disparities in digital access, often referred to as the “digital divide” (Robinson et al., 2015). Although simulations offer flexible, scalable, and often cost-effective training opportunities (Bearman et al., 2019), access to reliable internet service, updated technology, and digital literacy varies significantly across geographic and

socioeconomic contexts. Therefore, while computer-based simulations can enhance SBL strategies, they should not be assumed to be the most accessible option for all learners. Traditional, low-technology methods, such as live role plays, standardized patient exercises, and case-based discussions, remain critical components of SBL, particularly in settings where digital access may be limited. Future implementation efforts must consider accessibility and equity when integrating technology-based tools into educational programs.

Additionally, computer-based simulation can help facilitate interprofessional education (Trust & Whalen, 2020; Wade et al., 2023). Research suggests that students who participate in interprofessional simulations better understand their roles within interdisciplinary teams and how to interact confidently on a clinical level with team members from different disciplines (Murphy & Nimmagadda, 2015). In an evolving landscape where many social work students will provide collaborative service delivery with other professionals throughout their careers, this early experience with a systems perspective allows students to develop best practice strategies to serve their clients holistically.

Implementing new technologies in the classroom

Integrating new technologies in social work education can revolutionize the way students engage with course content, develop clinical skills, and prepare for the complexities of real-world practice. Virtual reality (VR), artificial intelligence (AI), and multimedia tools allow educators to create immersive learning environments where students can experience interactive simulations of case studies and interventions. VR, for example, has been used to simulate client interactions and crisis scenarios, enabling students to practice key skills like assessment, intervention, and decision-making in a controlled environment (Ms & Nirmala, 2025; Regehr & Birze, 2021). Research suggests that this form of experiential learning improves student retention of knowledge and enhances their preparedness for practice (Jefferies et al., 2023).

However, implementing new technologies in the social work classroom presents several challenges. One significant barrier is the resistance to change from educators and students, many of whom are accustomed to more traditional teaching and learning methods. Studies have shown that faculty members often experience discomfort with adopting new tools, particularly if they feel inadequately trained or supported (Diaconu et al., 2020; Mercader, 2020). This reluctance is compounded by concerns that technological tools might detract from the relational aspects of social work, which are centered around face-to-face, empathic interactions with clients (Mercader, 2020; Mercader & Gairín, 2020). Additionally, technical difficulties, such as unreliable software, equipment malfunctions, and

inconsistent access to the necessary resources, can further hinder the seamless adoption of technology in the classroom (Emezirinwune et al., 2024).

Financial limitations also pose a significant challenge. Many social work programs, particularly those with smaller budgets, may struggle to afford the upfront costs associated with new technologies, including VR equipment, AI-driven assessment tools, and multimedia platforms (Ms & Nirmala, 2025). This is compounded by the ongoing need for updates, technical support, and training to ensure faculty and students can effectively use these tools. Despite these costs, institutions increasingly recognize the value of investing in educational technology to improve student outcomes.

Furthermore, the rapid pace of technological advancement requires students and faculty to adapt continuously. Students, in particular, may feel overwhelmed by the need to develop technological competence in addition to mastering complex social work concepts and skills (Butler & Sellbom, 2002; Sharma, 2011). Faculty must also stay current with emerging technologies and adapt their teaching methods accordingly, which can be time-consuming and stressful. Despite these hurdles, these technologies can greatly enhance experiential learning and provide students with practical, real-world skills when implemented thoughtfully.

While integrating new technologies in social work education presents challenges, such as resistance from faculty and financial constraints, the benefits are substantial. By investing in training, support, and infrastructure, institutions can leverage these tools to create engaging, flexible, and immersive learning experiences that better prepare students for the demands of social work practice. The key is ensuring that the use of technology complements, rather than replaces, the development of interpersonal skills that are foundational to the profession.

The role of virtual reality and simucase in enhancing social work education and practice

While integrating new technologies into social work education presents challenges, the benefits of virtual reality (VR) technology have been increasingly recognized in the literature. VR has been shown to enhance engagement, empathy, and skill development for social work students and professionals. A systematic review by Huttar and BrintzenhofeSzoc (2020) explored the application of VR in social work education, finding that VR technology helps students build essential practice skills in a safe, controlled environment, allowing for experiential learning that enhances emotional and cognitive competencies. In particular, VR has been found to improve empathy by immersing learners in simulated experiences that mirror the emotions and perspectives of clients in distressing situations.

In addition to these general benefits, platforms like Simucase have accumulated substantial literature on the outcomes of using virtual simulations for developing clinical competencies. Simucase provides a virtual environment where students interact with simulated clients to practice assessment, diagnosis, and treatment planning in various clinical contexts. Research on Simucase has demonstrated its effectiveness in improving students' clinical skills by offering realistic, scenario-based interactions where they can receive feedback on their performance (Elliott & Brumbaugh, 2021). This platform allows social work students to engage in interactive simulations, from conducting assessments to planning and implementing interventions, all within a virtual setting replicating real-world complexities.

Studies have shown that using Simucase improves students' decision-making skills, critical thinking, and confidence in real-life clinical practice (H. Flaherty, 2025). For example, Simucase's simulations allow for repeated practice of specific skills, which has been shown to increase knowledge retention and the development of reflexive, evidence-based decision-making processes. Furthermore, Simucase's assessment features enable instructors to track student progress, providing a detailed evaluation of each learner's abilities and highlighting areas for improvement. This feature makes Simucase particularly valuable in evaluating novice and advanced social work students, providing personalized learning experiences catering to diverse educational needs.

These studies underscore the growing body of evidence supporting the use of VR in social work practice and suggest that, far from being a novel and untested technology, VR has already shown measurable benefits in engaging social work students and practitioners in meaningful learning experiences. As such, while further assessment of its effectiveness is always valuable, the research suggests that VR platforms like Simucase are proven tools for advancing social work education and practice (Elliott & Brumbaugh, 2021; H. Flaherty, 2025).

Methods

Study design

This study aims to explore the impact of computer-based simulated role plays and immersive media technology on student experience and academic success in both synchronous and asynchronous online social work classrooms. Specifically, the study investigates how participation in these simulations influences MSW students' self-efficacy in clinical social work skills, how students perceive the effectiveness and relevance of simulation-based learning in an online environment, and whether there are observable differences in

academic engagement or outcomes between those who participate in simulation-based learning and those who do not.

The current study employed a longitudinal, experimental design with a control group and a pre- and posttest format to explore the impact of computer-based simulated role plays on Master of Social Work (MSW) students' self-efficacy in online social work classrooms. In this context, online classes are structured educational experiences delivered through digital platforms, offered in synchronous (live-online) and asynchronous formats. Synchronous sessions involve live, real-time interaction via video conferencing, while asynchronous sessions allow students to access course materials at their convenience, supporting diverse learning needs (Allen & Seaman, 2017; Means et al., 2014). The study was conducted with students enrolled in Advanced Clinical Practice classes, and classes were randomly assigned to either the intervention or control group.

The intervention group engaged with a simulated role play platform that allows students to practice social work skills through realistic clinical scenarios in a virtual environment. The standard curriculum for the control group consisted of instructor-led lectures, case study discussions, and skill-building exercises commonly employed in social work education. These did not include the use of VR or computer-based simulated role plays. Students completed assigned readings and engaged in synchronous or asynchronous discussions but did not have access to interactive virtual simulations. Students of both groups completed surveys measuring self-efficacy at the beginning of the Fall 2023 semester (pretest) and at the end of the Spring 2024 (posttest).

Technology implementation

Simucase[®] was used as the technology for the intervention group. Simucase[®] is a computer-based simulation platform that provides students with interactive experiences designed to teach complete processes using virtual client scenarios. These scenarios provide students with the opportunity to repeatedly practice clinical skills in a safe, asynchronous learning environment. During an assessment or intervention of a virtual client, students must collaborate with and learn from other members of the care team. Students gain practice interviewing a client, collaborating with other professionals, performing assessments, providing intervention, and designing a plan of care. In doing so, they learn about the scope of practice, care teams, roles and responsibilities, and appropriate communication required to achieve optimal care.

Measurement

The Social Work Self-Efficacy Scale (SWSE) was employed to assess participants' self-efficacy in social work practice (Holden et al., 2007). The SWSE is

a 52-item scale developed following Bandura's guidelines for creating self-efficacy scales (Bandura, 1978; Holden et al., 2007). In the original validation study, the SWSE demonstrated excellent internal consistency ($\alpha = .98$). In the current study, the SWSE demonstrated similarly high reliability ($\alpha = .98$).

This scale consists of 52 items that assess social workers' confidence in their ability to perform various tasks related to their profession. Participants respond to each item using a rating scale from 0 to 100, where zero indicates "cannot do at all," 50 indicates "moderately certain can do," and 100 indicates "certain can do." Example items from the scale include, "Initiate and sustain empathic, culturally sensitive, non-judgmental relationships with clients" and "Intervene effectively with families to address complex social and emotional issues."

Participants

Participants were recruited from graduate-level Advanced clinical practice courses. Students were invited to participate via in-class announcements and follow-up e-mails from course instructors. No monetary or academic remuneration was provided for participation. The WCG Institutional Review Board (IRB) reviewed and deemed all study procedures exempt. Informed consent was obtained from all participants prior to data collection. Participants were provided with detailed information about the study's purpose, confidentiality protections, and their voluntary right to withdraw at any time without consequences.

The study sample consisted of 155 MSW students enrolled in live online and asynchronous Advanced Clinical Practice courses. A total of 65 students were assigned to the control group, while 90 students participated in the intervention group. The intended sample size was a minimum of 120 students based on prior simulation-based social work education studies reporting small-to-moderate effect sizes (Bragg et al., 2020). Participants were quasi-randomly assigned to intervention or control groups based on their course section enrollment. Full individual randomization was not feasible due to curricular constraints, but course sections were assigned to either the intervention or control condition to minimize selection bias. All Master of Social Work (MSW) students enrolled in the Advanced Clinical Practice course at Yeshiva University, Wurzweiler School of Social Work during Fall 2023 and Spring 2024 were eligible to participate. Recruitment occurred between August 28, 2023, and January 22, 2024, aligning with the Fall 2023 and Spring 2024 semesters. Students who provided informed consent and completed both pre- and posttest measures were included in the final analysis. There were no additional exclusion criteria.

Demographic information (Table 1) including age, gender, race/ethnicity, sexual orientation, and religious affiliation, was collected from participants.

Table 1. Demographics ($N = 155$).

	Control group	Intervention group
Semester		
Fall 2023 (pre)	32	58
Spring 2024 (post)	33	32
Age	34 (11.65)	32 (10.47)
Race/Ethnicity		
Black or African American	4 (6.15)	6 (6.74)
Hispanic, Latino or Spanish	5 (7.69)	4 (4.49)
White	46 (70.77)	72 (80.90)
Multi-racial	2 (3.08)	2 (2.25)
Other racial, ethnic or other	2 (3.08)	–
Gender		
Cisgender	0	0
Male	21 (32.81)	13 (14.94)
Female	41 (64.06)	69 (79.31)
Sexual Orientation		
Bisexual	1 (1.61)	1 (1.12)
Gay or Lesbian	2 (3.23)	3 (3.37)
Heterosexual or straight	57 (91.94)	81 (91.01)
Other	2 (3.23)	4 (4.49)
Religion		
Catholic	3 (4.62)	5 (5.62)
Protestant	2 (3.08)	1 (1.12)
Jewish	50 (76.92)	67 (75.28)
Muslim	–	3 (3.37)
Agnostic	–	2 (2.25)
Nothing in particular	5 (7.69)	3 (3.37)
Other	4 (6.15)	8 (8.99)
WSSW program		
WSSW MSW online	11 (9.38)	6 (6.74)
WSSW face-to-face	4 (6.25)	42 (47.19)
WSSW live online	37 (57.81)	37 (41.57)
WSSW – Asynchronous	4 (6.25)	4 (4.49)
Fieldwork placement		
Hybrid (Virtual & Onsite)	16 (24.62)	12 (13.48)
Virtual	10 (15.38)	12 (14.61)
In person/Onsite	39 (60.00)	64 (71.91)

Valid percentages are reported.

The average age of participants in the control group was 34 ($SD = 11.65$); in the intervention group, it was 32 ($SD = 10.47$). Most participants identified as white (70.77% in the control group, 80.99% in the intervention group), and the sample was predominantly cisgender females, with 64.06% in the control group and 79.31% in the intervention group.

Data analysis

Of the 199 initial participants, 16 (8%) completed less than 5% of the survey. A final analytic sample of 155 participants was retained based on the completeness of key demographic, group assignment, and timepoint data. This analytic sample reflects the merged pre- and posttest cohort. Missing data within this sample was minimal. A missing value analysis indicated that data was missing completely at random (MCAR). Full information maximum likelihood (FIML) estimation was used within the mixed-effects model to

account for missingness and include all available data. This has been clarified in the Data Analysis section.

A mixed-effects multilevel regression model was used to examine the relationship between MSW students' self-efficacy scores and two main predictors, the pre/posttest condition (baseline vs. post-intervention) and group (control vs. intervention). The model accounted for the nested structure of the data, with observations grouped by randomly assigned student IDs across 103 levels, with each level containing 1 to 4 observations. The model included fixed effects for both predictors and tested for any interaction effects between pre/posttest conditions and group assignments.

A comparison was conducted between students who completed only the pretest and those who completed both the pre- and posttest, using an independent sample t-test to strengthen the findings' internal validity and examine the potential attrition bias. Results indicated no significant difference in baseline self-efficacy scores between the two groups, $t(197) = -1.02$, $p = .31$, suggesting minimal risk of bias due to participant attrition.

Results

A comparison of baseline self-efficacy scores between the intervention and control groups revealed a significant difference. The intervention group ($M = 3150.24$, $SD = 1733.07$) reported higher self-efficacy at the pretest than the control group ($M = 2053.50$, $SD = 2095.15$), $t(129) = -3.30$, $p = .001$. Given this baseline difference and the non-randomized nature of group assignment, a mixed-effects multilevel regression model was used to control for initial disparities in self-efficacy.

The mixed-effects multilevel regression analysis indicated that the pre- and posttest condition was not a statistically significant predictor of self-efficacy scores ($\beta = 0.165$; 95% CI $[-0.254, 0.585]$, $p = .440$), suggesting that when controlling for group assignment, students' self-

efficacy scores did not significantly differ between pre- and posttest assessments (See Table 2). However, the group (control vs. intervention) significantly predicted self-efficacy scores. Students in the intervention group, who participated in virtual reality-based simulated role plays, demonstrated

Table 2. Fixed effects from mixed-effects regression predicting self-efficacy scores.

Predictor	Coefficient (β)	Standard Error (SE)
Pre vs. Post (reference Spring semester)	0.30 (-0.09, 0.65)	0.20
Spring \times Intervention	-0.13 (-0.70, 0.46)	-0.47
Pre vs. Post (Intervention vs. control)	0.40* (0.065, 0.74)	0.17

* $p < .05$.

Confidence interval is reported in parentheses.

a significant increase in self-efficacy from baseline compared to the control group ($\beta = 0.433$; 95% CI [0.021, 0.844], $p = .039$, $d = 0.46$). This finding suggests that using VR technology in the classroom significantly enhanced students' self-efficacy in applying clinical social work skills.

Discussion

The findings of this study present an encouraging perspective on the effectiveness of computer-based simulations in enhancing students' self-efficacy in clinical social work skills. Although the analysis revealed that the pre- and posttest conditions did not yield statistically significant differences in self-efficacy scores overall, this outcome underscores the critical role of targeted interventions in effectively boosting students' confidence. Notably, the intervention group that engaged in computer-based simulated role plays exhibited a significant increase in self-efficacy ($\beta = 0.433$; $p = .039$). Although the intervention group started with slightly higher baseline self-efficacy scores (see Figure 1), the magnitude of the improvement observed from pretest to posttest still indicates meaningful gains attributable to the intervention. This suggests that the computer-based simulations not only maintained but also significantly boosted the self-efficacy of students who were already relatively confident.

This result highlights the potential of immersive educational practices to foster student growth and engagement, suggesting that experiential learning environments can profoundly impact student outcomes.

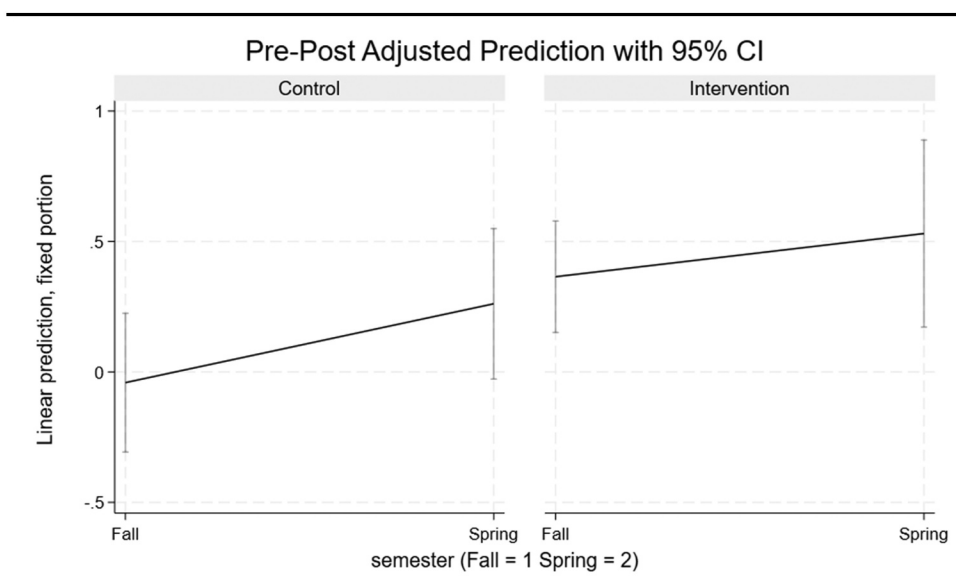


Figure 1. Fixed effects from mixed-effects regression predicting self-efficacy scores.

The substantial improvement in self-efficacy among participants who experienced computer-based simulations aligns with existing literature that supports experiential learning as a vital component of effective education. These simulations provide students with opportunities to immerse themselves in realistic scenarios, bridging the gap between theoretical knowledge and practical application. This approach enhances skill mastery and fosters emotional preparedness, equipping future social workers with the necessary tools to navigate complex client interactions. The capacity to practice in a controlled environment allows students to confront challenges and develop critical thinking skills without the immediate pressures of real-world consequences.

The interactive nature of computer-based simulations engages students in ways that traditional educational methods may not. These simulations encourage active participation and offer immediate feedback, significantly enhancing learning outcomes. By placing students in realistic clinical situations, they cultivate a deeper understanding of the dynamics involved in social work practice, leading to greater confidence and competence in their abilities. This sense of empowerment is crucial, as self-efficacy is closely linked to students' willingness to apply their knowledge in real-world scenarios, enhancing their readiness for professional practice.

The positive outcomes of this study also suggest that integrating computer-based simulations into social work education represents a transformative step toward preparing a new generation of practitioners. As educational institutions explore innovative teaching methods, the significant gains in self-efficacy demonstrated by the intervention group highlight the potential advantages of incorporating immersive technologies into curricula. This approach enriches the learning experience and fosters a greater sense of agency among students, motivating them to take ownership of their education and professional development.

The implications of these findings extend beyond the immediate educational context. As students build confidence in their skills through computer-based training, they may become more inclined to pursue diverse clinical experiences and tackle challenges throughout their careers. This increased willingness to engage in practice can lead to improved outcomes for clients and communities, ultimately advancing the field of social work as a whole. The development of skilled and confident practitioners can have a lasting impact, contributing to the overall effectiveness and responsiveness of social work services.

Future research must build on these encouraging results. Investigating the long-term effects of computer-based training on self-efficacy and clinical performance will provide deeper insights into its efficacy as an educational tool. Additionally, exploring the applicability of computer-based simulations across various educational contexts and among diverse student populations can further establish their role in enhancing self-efficacy across different fields

of study. Such research endeavors will be vital in shaping the future of social work education and ensuring that emerging practitioners are well-equipped to meet the challenges of their profession.

These findings contribute to a growing body of literature demonstrating the value of experiential and simulation-based learning in professional education. While prior studies have documented improvements in students' clinical competencies through simulation, this study adds to existing research by focusing specifically on self-efficacy gains in social work students using computer-based simulations. By isolating the effects of a fully virtual, asynchronous simulation platform, the study expands on previous work centered mainly on in-person or hybrid formats, offering new insight into scalable, technology-driven training approaches.

Limitations

While this study offers valuable insights into the effectiveness of computer-based simulations in enhancing self-efficacy among Master of Social Work (MSW) students, several limitations should be acknowledged. First, the study's reliance on a single measurement tool, the Social Work Self-Efficacy Scale (SWSE), may not capture the full range of self-efficacy experienced by participants. Although the SWSE is a well-established instrument, its focus on specific tasks may overlook other important dimensions of self-efficacy that the intervention could influence. Future research could benefit from incorporating additional measures or qualitative assessments to provide a more comprehensive understanding of self-efficacy in social work practice.

Second, the longitudinal design, while beneficial for assessing changes over time, may introduce challenges related to participant retention. Although we aimed to assess self-efficacy at the beginning and end of the academic year, some students may not have completed both assessments for various reasons, such as course load or personal circumstances. This could lead to potential biases if those who dropped out differed significantly in self-efficacy from those who remained. Another limitation relates to potential participant attrition in the longitudinal design. While the current design aimed to assess self-efficacy at the beginning and end of the academic year, a small number of participants ($n = 10$; 6.5%) did not complete the posttest survey. To assess the risk of attrition bias, a comparison of baseline self-efficacy scores between those who completed both assessments and those who dropped out was conducted, and no significant differences were found, suggesting limited bias due to attrition.

Additionally, the study's sample size, although substantial, was limited to a specific cohort of MSW students enrolled in Advanced Clinical Practice classes. The demographic composition of the sample, which included a predominance of white, cisgender female students, may limit the generalizability of the findings to broader populations. Further research should aim to

include a more diverse range of participants to assess the applicability of computer-based simulations across various demographic groups.

Additionally, this study was conducted exclusively at a single university, which may limit the generalizability of the findings to other educational settings. Institutional factors such as curriculum design, faculty expertise, and student demographics unique to this university could have influenced the outcomes. As a result, the applicability of the results to other institutions or diverse populations may be constrained. However, single-site studies are valuable for providing in-depth insights within a specific context and can serve as a foundation for future research. The findings from this study contribute to the understanding of computer-based simulations in social work education. They can inform subsequent multi-site studies aimed at enhancing the external validity and broader applicability of these educational interventions.

Another limitation pertains to the control group, which followed a standard classroom curriculum without computer-based simulations. While this design is essential for comparison, it may not fully account for other factors that could influence self-efficacy, such as instructor engagement, peer interactions, and classroom dynamics. Future studies could explore how these variables impact self-efficacy in conjunction with simulation-based learning.

While this study relied on the Social Work Self-Efficacy Scale (SWSE), a well-validated instrument, using a single quantitative self-report measure limits the ability to capture the full complexity of students' experiences. Future studies would benefit from triangulating quantitative results with qualitative data, such as in-depth student interviews or reflective journals, to gain richer insights into how simulations influence learning, skill development, and professional identity formation.

Additionally, the study demonstrated a significant increase in self-efficacy among the intervention group. However, the specific aspects of the computer-based simulations that contributed to this change were not directly assessed. Understanding which features of the simulation – such as the realism of scenarios, the complexity of interactions, or the feedback mechanisms – had the most significant impact on self-efficacy would provide valuable insights for future educational interventions.

Despite these limitations, this study contributes important findings regarding the benefits of computer-based simulations in social work education. Addressing these limitations in future research will help refine our understanding of their impact and enhance their implementation in educational settings.

Conclusion

This study contributes significantly to the growing recognition of computer-based simulations as a valuable resource in social work education. The positive

improvements in self-efficacy observed among students in the intervention group highlight the transformative potential of innovative approaches in educational practices. By integrating computer-based simulations, we can empower students with the confidence and skills necessary for success in their careers, ultimately fostering a more capable and effective workforce in the field of social work.

Incorporating technology into the classroom – whether in asynchronous online, synchronous online, or in-person modalities – can enhance the learning experience across various educational settings. Each modality presents unique opportunities for leveraging technology to create engaging, interactive, and personalized learning environments. For example, asynchronous formats allow students to engage with simulations at their own pace, providing flexibility and encouraging deeper reflection on their learning. Synchronous online classes can facilitate real-time discussions and collaborative activities, enhancing peer interactions while integrating technological tools that simulate real-world scenarios.

In-person classrooms, too, can benefit from technology through blended learning approaches that combine traditional methods with digital resources. This integration fosters a dynamic educational atmosphere where students can practice their skills in realistic settings, receive immediate feedback, and collaborate with their peers.

As we look to the future, adopting these technologies across all modalities may enhance individual student outcomes and reshape the landscape of social work education for generations to come. Embracing such advancements will be crucial in preparing students to meet the complex challenges of the profession, ensuring they are well-equipped to provide quality care and support to diverse populations. Through continued research and implementation, computer-based simulations and other technological innovations have the potential to revolutionize how social work education is delivered, ultimately benefiting both students and the communities they serve.

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