Kodama, C. & Robinson, D. (2024). Successes and challenges of using emerging technologies to simulate authentic learning activities. *International Journal of Technology in Teaching and Learning, 20* (*2*), 127-142.
(Published on September 15, 2025)

Successes and Challenges of Using Emerging Technologies to Simulate Authentic Learning Activities

Christie Kodama
Towson University
David Robinson
Towson University

This paper chronicles a series of three case studies for the redesign of a graduate-level course for pre-service school librarians at a mid-Atlantic university from an in-person mode to a fully virtual mode. Specifically, this paper details how the instructors utilized High Leverage Teaching Practices Theory to redesign a rehearsal activity that many school librarians engage in their everyday practice: the reference interview. The case study documents the successes, challenges, and lessons learned throughout the process using Garrison and colleagues' Community of Inquiry for Online Learning Presence Theory (CoI) to examine three interdependent presences: social, cognitive, and teaching.

Key Words: virtual teaching, emerging technologies, technology integration, augmented reality in learning, simulation, community of inquiry for online learning presence theory

INTRODUCTION

School library media program faculty at a mid-Atlantic university in the United States meet biannually to disaggregate data from course key assessments, student course evaluations, and candidate post-graduate surveys. In the disaggregation of the data during the 2019-2020 academic year, one area identified for continued development was the need for more candidate practical experience in developing a skillset for building relationships with K-12 students. School librarians engage with all students and faculty in their respective K-12 schools, and establishing relationships with all patrons is imperative to having vibrant school library media programs that promote a positive learning environment, information literacy and technology skills, and student achievement as measured by standardized test scores (Lance and Kachel, 2018).

Christie Kodama is Adjunct Professor and David Robinson is Associate Professor in the Department of Learning Technologies, Design and School Library Media, Townson University, and can be reached at ckodama@towson.edu and derobins@towson.edu, respectively.
DOI: https://doi.org/10.37120/ijttl.2024.20.2.03

The high leverage teaching practices (HLP) of *building respectful relationships with students* (University of Michigan, 2013) and *engaging students in rehearsing an organizational or managerial routine* (University of Michigan, 2019) were viewed by faculty as complimentary practices/concepts to be used in practical reference interview applications.

In 2015, Towson University collaborated with the University of Michigan to facilitate the integration of HLP (University of Michigan, 2020b) into the University's College of Education Teacher Preparation Program. University of Michigan faculty offered HLP workshops to Towson University College of Education faculty. Subsequently, University faculty were able to apply for a College of Education sponsored HLP fellowship. One author of this document participated in several of the University of Michigan sponsored HLP workshops and as an HLP fellow. An HLP coach partnered with this author in integrating HLPs into a school librarian preparation course titled, *Information Literacy and Access*. Course participants were graduate students seeking a master's degree in Instructional Technology with a licensure to serve as K-12 school librarians.

Prior to the integration of the HLP in the *Information Literacy and Access* course, candidates were introduced to the concept of the reference interview as a means of building relationships with K-12 students with coached HLP rehearsals providing practical application of the reference interview and further enhancement of building relationships with students.

The process of integrating the HLPs, reference interview practice, and emerging technologies was chronicled in three phases with each phase serving as a case study. The first phase integration case study occurred when mock reference interview rehearsals were introduced in face-to-face sections of the *Information Literacy and Access* course. Supportive interactive technologies were utilized to document and evaluate the rehearsals in Case study I. Case study II naturally evolved when the *Information Literacy and Access* course was migrated to a fully online format during the COVID-19 pandemic. The migration to a fully online instructional environment prompted reflection, discussion, and testing of how to effectively facilitate reference interview coached rehearsals using fully online technology platforms.

To simulate a reference interview interaction with students, Case study III involved the incorporation of *Mursion*®, a virtual simulation application featuring student avatars in an interactive learning environment.

PURPOSE

This document presents the successes and challenges of the practice-based use of emerging technologies to simulate the concept of the common everyday practice of the school library reference interview in a school librarianship course. Three studies are presented. Instructor reflections and student course evaluation data were used to analyze the case studies based on two research questions interpreted through the Community of Inquiry for Online Learning Presence framework (Garrison et al., 2000). The case studies were guided by the following two research questions:

1. How did the redesign strengthen candidates' reference interview competence?
2. Why did certain design choices succeed while others faltered?

PEDAGOGICAL FRAMEWORK

The pedagogical framework, *High Leverage Practices and Reference Interview Rehearsal (HLPRIR) Framework*, was used to guide the reframing of the reference interview activity. Specifically, the HLP of *building respectful relationships with students* (University of Michigan, 2013) and engaging students in rehearsing an organizational or managerial routine (University of Michigan, 2019) facilitated the reference interview rehearsals in the *Information Literacy and Access* course. School librarianship information literacy concepts presented in the *HLPRIR Framework* adhere to the *RUSA Guidelines* (ALA, 2008), and the *ALA/AASL/CAEP School Librarian Preparation Standards* (2019a). Evaluation and assessment of the research questions occurred for each case study utilizing the Community of Inquiry for Online Learning Presence theory (Garrison et al., 2000) to examine three interdependent presences: social, cognitive, and teaching.

MODEL CORE COMPONENTS

Candidate prerequisite skills needed prior to the implementation of the *HLPRIR Framework* include proficiency in information literacy and technology skills, and knowledge of reference interview foundational concepts including the application of the *RUSA Guidelines*. This nested hierarchy of information literacy and technology, and rehearsal competencies is illustrated in Figure 1. Supporting research for these prerequisite skill components and the HLP are addressed in the following literature review.



Figure 1. High Leverage Practices and Reference Interview Rehearsal Framework (HLPRIR Framework)

LITERATURE REVIEW

This review of literature presents background information on information literacy skills concepts and preparation, the *RUSA Guidelines*, coached rehearsals, and building respectful relationships with students while examining the use of video recording technologies and virtual simulations in educator preparation. The literature review culminates by providing an overview of Community Inquiry for Online Learning Presence theory (Garrison et al., 2000).

THE REFERENCE INTERVIEW

The reference interview encompasses the entire reference transaction from the patron approaching the school librarian through determining the patron's information needs to following up on the question (ALA, 2019b). School librarianship information literacy concepts presented in the *HLPRIR Framework* adhere to the *Guidelines for Behavioral Performance of Reference and Information Service Providers* (commonly referred to as the *RUSA Guidelines)* (ALA, 2008*)*, and the *ALA/AASL/CAEP School Librarian Preparation Standards* (2019a).

INFORMATION LITERACY SKILLS PREPARATION

Prior to the introduction of the reference interview, candidates develop information literacy and technology skills through course work aligned with *AASL School Librarian Preparation Standard 3 competencies* including: "candidates are knowledgeable in literature, digital and information literacies, and current instructional technologies; candidates know when and why information is needed, where to find it, and how to evaluate, use and communicate it in an ethical manner and candidates engage all learners in finding, evaluating, creating, and communicating data and information in a digital environment" (AASL, 2019a, p. 12).

RUSA GUIDELINES

The RUSA Guidelines were created by the Reference and User Services Association (RUSA), a division of the American Library Association, to "support excellent, user-centered services" by providing a general framework from which librarians in all contexts can use to help their patrons find the information they seek (ALA, 2013). There are five *RUSA Guidelines*: 1.0 Visibility/Approachability: a successful reference transaction requires a high level of visibility. Reference assistance should be available through a variety of technologies and at a patron's point of need; 2.0 Interest: a successful librarian demonstrates a high degree of objective, nonjudgmental interest in the reference transaction. Librarians who show high interest in patrons' inquiries will generate higher satisfaction among users; 3.0 Listening/Inquiry: the reference interview is the heart of the reference transaction and crucial to the success of the process. The librarian should effectively identify the patron's needs in a manner that puts the patron at ease. Effective listening and questioning skills are necessary for a positive interaction; 4.0 Searching: the search process is the portion of the transaction in which behavior and accuracy intersect with an effective search. Many aspects of searching that lead to accurate results depend on the librarian's behavior; and 5.0 Follow-Up: Supplying information is not the end of the reference transaction. The librarian is responsible for determining if the patron is satisfied with the results of the search, and, if necessary, referring the patron to other sources of information, including those not available in the local library (ALA, 2013, para. 5).

COACHED REHEARSAL

"A rehearsal strategy uses repeated practice of information to learn it. When students are presented with specific information to be learned, such as a list, they will often attempt to memorize the information by repeating it over and over. Repeated practice increases the student's familiarity with the information" (University of Kansas, 2000, para. 1). The University of Michigan's teaching work initiative extended this concept of a rehearsal into the coached rehearsal (2020a). The coached rehearsal is a live simulation. In the *HLPRIR Framework*, the higher education librarianship educator serves as a facilitator and coach,

while the candidate practices the role of school librarian, and the remaining candidates fulfill the role of K-12 students or observers. "Coaching of the reference interview fosters feedback but also a discussion of key points and promise of practice as they arise and inviting the group to collaboratively consider them. An effective coached rehearsal will involve cycles of repetition to offer repeated opportunities to participate in reference interviews, feedback and coaching from the higher education instructor, and opportunities for safe practice of real problems and practices without being overwhelmed" (University of Michigan (2020a, para. 1). Grossman and colleagues' (2009) pedagogy of "approximation" foundationally supports the concept of coached rehearsals which have traditionally taken place inside the teacher education classroom.

BUILDING RESPECTFUL RELATIONSHIPS WITH STUDENTS

The HLP of *buildings respectful relationships with students* via the reference interview is an extension of the HLP classroom concept of teachers intentionally building and sustaining relationships with students. *Building respectful relationships with students* is composed of four pillars. These pillars include establishing rapport, building mutual trust, monitoring and maintaining relationships with students, and examining and managing self in relationships with students (University of Michigan, 2019).

VIDEO RECORDING TECHNOLOGIES AND PRESERVICE TEACHING

Swivl® is a robotic video suite of software compatible with mobile video recording devices. It provides remote video recording and data collection of instruction. Teachers can use Swivl® as a tool for student reflection with annotation/commenting features (Sparks, 2016). "For virtual coaching and mentoring, users are able to track program participants' progress with time-stamped annotations and rubrics in the Swivl® Teams platform" (Swivl®, 2019). Swivl® was utilized in the first iteration of the HLPRIR framework.

MURSION® VIRTUAL SIMULATION USING AVATARS IN EDUCATOR PREPARATION

Mursion® is a technology created by a team of "experts in human intelligence, robotics, business analytics, project management, theater, education, design, and product development" (Mursion®, n.d.a). Mursion® is a form of mixed or augmented reality as it is "a combination of state-of-the-art hardware and software tools that blend human interaction with artificial intelligence to create realistic, dynamic simulations of classroom experiences" (Towson University, 2023). Mursion® uses a combination of artificial intelligence (AI), avatars, and human interaction to create a realistic learning environment and experience for participants (Hartle & Kaczorowski, 2019; Dalinger et al., 2020; Ferguson & Sutphin, 2022). Behind the AI avatars there is a simulation specialist, a real person acting and responding in real time to what participants say. Mursion® serves as a "low-risk practice session" for pre-service educators to provide them with real-life approximations of the kinds of interactions they would experience in a classroom or school library setting.

Several benefits of Mursion® were identified in a study of 32 undergraduate students enrolled in an introductory teaching course. Ferguson and Sutphin (2022) found that students' confidence in their ability to teach grew because of their experiences with the Mursion® avatars. They also found that students felt better prepared for different situations they might encounter in teaching. Thrower, Mukherjee, and Carver (2020) found that Mursion® helped students learn course specific knowledge and provided opportunities to receive feedback on teaching which allowed students to master and hone critical

professional skills. Dalinger (2020) also identified several affordances that simulations like Mursion® provide to participants, including risk-free opportunities to assess their skills, building confidence and self-efficacy with repeated times to practice, and the ability to transfer skills and knowledge from one learning situation to another.

Research from field-based implementations of Mursion® demonstrated that mixed reality using a "simulation specialist…both human and computerized components working behind the scenes...create a realistic experience" (Hartle & Kaczorowski, 2019). Avatar interaction promotes realistic engagement experiences for preservice teachers (Dalinger et al., 2020). "Siri, Alexa, Watson, and other bots won't know how to respond to an emotionally charged conversation, but [Mursion®'s] trained simulation specialists will. …avatar-based simulations use a blend of live, real-time human conversation with artificial intelligence (Mursion, n.d.b)." These findings and a desire to provide a richer, closer to real-life experience with students in a reference interview prompted the use of Mursion® in the *Information Literacy and Access* course.

COMMUNITY OF INQUIRY FOR ONLINE LEARNING PRESENCE

The Community of Inquiry (CoI) framework was developed by Garrison et al. (2000) and is grounded in Dewey's (1938) theory of collaborative constructivism. As the CoI framework has evolved, it has become a tool for designing online learning environments that sustain connectivity among students, instructors, and peers by fostering three interdependent presences: social, cognitive, and teaching. These presences work together to build a sense of community and support individual learning (Garrison et al., 2000; Dewey, 1938). Social presence refers to learners' ability to project themselves socially and emotionally, thereby connecting with others in the community, building trust, and fostering a sense of belonging. It creates an environment where learners feel comfortable interacting and sharing their thoughts (Garrison et al., 2000; Gunawardena & Zittle, 1997). Cognitive presence focuses on the extent to which learners are able to construct and confirm meaning through sustained reflection and discourse. It involves engaging in critical thinking, exploring ideas, and actively participating in the learning process (Anderson et al., 2001; Garrison et al., 2000). Teaching presence encompasses the design, facilitation, and direction of cognitive and social processes for the achievement of meaningful learning outcomes. It involves setting curriculum, guiding discourse, providing direct instruction, and organizing the course to foster a cohesive learning community (Garrison et al., 2000; Anderson et al., 2001; Arbaugh & Hwang, 2006; Swan, 2002).

The CoI framework emphasizes the importance of building community, promoting critical thinking through structured discourse, and ensuring effective instructional support to maximize learning in online environments (Swan, 2002; Garrison et al., 2010). Preparing school librarians in effective reference and instructional practice begins with information literacy skill development and the full reference interview process, including needs assessment and follow-up, framed by the RUSA Behavioral Performance Guidelines and ALA/AASL/CAEP preparation standards. Garrison et al.'s (2000) Community of Inquiry framework—comprising social, cognitive, and teaching presences—serves as an integrative model for evaluating the discussion of the case studies.

SIGNIFICANCE OF STUDY

The dynamic and multifaceted role of the school librarian demands not only a firm grounding in theory but also fluency in everyday professional skills that make school library programs effective, responsive, and student-centered. Among these skills, the reference interview—an interactive conversation through which a librarian listens, probes,

clarifies, and negotiates with a patron to surface and meet an information need—stands out as truly high-leverage.

By embedding these rehearsal exercises at key points in the curriculum, instructors ensure that learners are ready to interact in the five roles of the school librarian (AASL, 2019a): information specialist, instructional partner, teacher, program administrator, and leader. In an online environment—where face-to-face apprenticeships may be scarce—the scaffolding that rehearsal provides is essential.

Rehearsal in an online school library media course goes far beyond reading about RUSA's guidelines for reference service or watching recorded demonstrations. Instead, it uses structured simulation—role plays, scripted dialogues, and avatars—to recreate the give-and-take of a live reference interview. As students cycle through rounds of practice, receive immediate feedback, and reflect on their questions and responses, they sharpen the listening, empathy, question-formulation, and information-seeking moves that RUSA prescribes. By embedding these rehearsal exercises at key points in the curriculum, instructors ensure that learners are ready to assume the five roles of the school librarian (AASL, 2019a).

By weaving rehearsal and simulation throughout an online course, instructors move prospective librarians from passive consumers of information about "how" to conduct a reference interview toward active practitioners who can navigate complex social and pedagogical dynamics. This experiential approach not only deepens understanding of RUSA's behavioral guidelines but also cultivates the adaptable, reflective mindset that today's school librarians need to fulfill all five AASL-defined roles effectively—and to serve as trusted, confident partners in learning communities. Using emerging technologies in rehearsals and similar online classroom activities allows candidates access to and experience with new educational learning tools as well as providing instructors with alternate means of teaching and garnering classroom participation.

CASE STUDIES

CASE STUDY I: BUILDING THE FOUNDATION (2 COURSE SEMESTERS, 15-WEEK SEMESTER SESSIONS)

The reference interview rehearsals were implemented in the face-to-face *Information Literacy and Access* course sections in the fall of 2018, and in virtual course sections in the fall of 2020. The following process description applies to the face-to-face and virtual course sections.

SKILL BUILDING. Prior to the implementation of the coached reference interview rehearsals, candidates were introduced to the *RUSA Guidelines*, analyzed online recorded reference interviews using the *RUSA Guidelines*, and participated as a student/patron in a virtual reference interview with a librarian from a local public library. Class activities facilitated research-based discussion of K-12 students' developmental milestones, applications of information literacy strategies via an information literacy model, the application of information literacy and technology skills, and the use of research databases. Candidates viewed a recorded whole-class reference lesson and participated in small group synchronous discussions analyzing the lesson implementation with a focus toward building relationships with students.

IMPLEMENTING COACHED REHEARSALS – BRAINSTORMING. The Information Literacy and Access course candidates, instructor, and instructional coach discussed in

tangible terms what a successful reference interview looks like, as well as outcomes of a successful reference interview. The minimal components of a successful reference interview that were discussed included: (a) the student perceives the interaction as a positive experience, (b) the student would return to the school librarian for assistance in the future, based on the transaction, (c) the student has an opportunity to ask all questions and receives answers to those questions or is given a timeframe for having all questions answered, and (d) the student is provided with research strategies in alignment with an information literacy processing model.

MODELING. The instructor modeled the actions of a school librarian in conducting a reference interview based on a scenario in which the patron has little or no information about their stated topic. Candidates rehearsed the actions of the school librarian in conducting reference interviews based on varying scenarios. One candidate served as school librarian for each coached rehearsal, while the instructor or other candidates served as PreK-12 students (Rehearsal/Guided Practice).

To facilitate a safe rehearsal environment and maintain a learning environment conducive to formative learning and constructive feedback, there was no formal grading of the reference interview rehearsals. However, candidates received participation credit to promote sharing and contributions to the rehearsal experience. The reference interviews were recorded, and the students were provided with coached feedback and an opportunity to review the interviews for self-reflection. Target informal assessment criteria were identified as achieving 80% of an abridged rubric based on the RUSA Guidelines (Assessment). The reference interview rehearsals were recorded using the Swivl® app so that the interviews could be shared with candidates and allowed the instructor and students the ability to annotate the rehearsals for feedback and self-reflection. Swivl®'s one-way commenting feature allowed time-specific commenting and note-taking to actively reflect and engage (Swivl, 2016).

INSTRUCTOR REFLECTIONS. During Case study I, significant observations were made through an interactive and dramatic recreation exercise. The HLP lead facilitator for the College of Education assumed the role of a student, while the instructor portrayed the library media specialist (LMS). They engaged in a scripted exchange designed to model improper implementation of the RUSA guidelines. This dramatization included the facilitator, in the role of the library media specialist, being rude and expressing frustrations about the classroom teacher. The purpose was to provide a clear demonstration of how not to adhere to RUSA standards. As facilitators of this exercise, they decided to initially model an improper reference interview, rather than a successful one, to have the students observe and analyze the improper reference interview using the RUSA guidelines. The interview was then repeated based on the discussion of the student recommendations to model a successful reference interview.

Course candidates, experienced educators and many of whom were parents, noted the RUSA violations exhibited in this exercise. Their extensive backgrounds in education allowed them to authentically assume the personalities and dispositions of middle school students during the activity. The realism and authenticity of the exercise were remarked upon by the participants, who felt that the scenario closely mirrored real-life classroom dynamics. This immersive approach facilitated a deeper understanding of the importance of proper RUSA guidelines implementation in educational settings.

CASE STUDY I ANALYSIS. The case study analysis was completed by applying the Community of Inquiry for Online Learning Presence (CoI) and is sequentially present in

order of the following three criteria of social presence, cognitive presence, and teaching presence to address the research questions.

SOCIAL PRESENCE. **Research Question 1 (RQ1).** This case showed that having candidates use immersive role paly to alternate between librarian and student roles (including the dramatic "improper" enactment) fostered trust and open interaction, so participants felt safe to experiment and learn from mistakes. This authenticity helped them internalize effective interpersonal strategies when conducting a real reference interview. Peer coaching facilitated small-group synchronous discussions around recorded lessons that built a supportive community in which candidates shared observations and collectively constructed norms for what "good" reference interview dialogue looks like. **Research Question 2 (RQ2).** Success in this implementation of the reference interview activity was observed in the dramatization exercise (modeling a failed interview first) that leveraged participants' backgrounds as educators/parents, sparking lively critique and peer feedback. Its immediacy and emotional resonance sustained engagement. However, the participants' level of engagement was occasionally surface level; some quieter candidates did not fully engage, limiting mutual social bonding and reducing the depth of communal support.

COGNITIVE PRESENCE. **RQ1.** Introducing the RUSA Guidelines and analyzing recorded interviews provided the "triggering event" and initial exploration of concepts (Garrison et al., 2000). Rehearsals, followed by self-reflection on annotated videos, enabled learners to integrate theory (i.e. the guidelines) with practice, then resolve misunderstandings by comparing their performance against rubric criteria. **RQ2.** Time-stamped Swivl® annotations prompted targeted reflection (e.g., "here I forgot to ask a follow-up"), which deepened critical thinking, while without structured debrief questions after every rehearsal, some reflections remained descriptive rather than analytical, leading to missed opportunities for conceptual transfer.

TEACHING PRESENCE. **RQ1.** Clearly articulated rehearsal phases in the rehearsal design and organization (brainstorming, modeling, guided practice) and use of an abridged RUSA rubric provided transparent expectations and learning pathways. The pairing of direct instruction and facilitation permitted the instructor's modeling of both "wrong" and "right" interviews, coupled with coached feedback on recordings, scaffolded skill acquisition and guided learners toward higher competence. **RQ2.** The use of Swivl®'s one-way commenting feature successfully allowed "just-in-time" instructor notes, reinforcing key behaviors immediately after each rehearsal. Because rehearsals were ungraded, some learners reported reduced motivation to enact full fidelity to guidelines, blunting the intended formative impact of feedback.

CASE STUDY II: TRANSITION TO ONLINE ENVIRONMENT (2 COURSE SEMESTERS, 7-WEEK SEMESTER SESSIONS)

The *Information Literacy and Access* course migrated to a fully online format concurrent with the entire school library media program becoming fully online. Efforts were made to replicate the methodology outlined in Case study I. In addition to the course sessions being virtual, the course was now being offered in a seven-week online format (prior implementation was in fifteen-week semesters), which posed an additional challenge in effectively implementing the coached reference interview rehearsals within a shorter timeframe.

INSTRUCTOR REFLECTIONS. The study revealed several significant insights regarding the replication of the authentic experience and the constraints imposed by the course seven-

week duration. The attempt to replicate an authentic reference interview experience in an online environment appeared sterile. Participants reported a notable lack of immersive and interactive elements that are typically inherent in face-to-face settings. The digital format failed to capture the dynamic and spontaneous interactions that contribute to a genuine experiential learning environment. This sterility was attributed to the limited sensory engagement and the absence of non-verbal cues, which are crucial for fostering a sense of presence and immediacy. Another critical finding was the insufficiency of the seven-week course duration for adequate engagement in rehearsals. Participants expressed that the condensed time frame restricted their ability to fully immerse themselves in the rehearsal process. This limitation hindered the depth and quality of their practice and learning. The brief duration did not allow enough time for iterative feedback and improvement, which are essential for mastering new skills and concepts. As a result, students felt rushed and underprepared, suggesting that a longer course duration might be necessary to achieve the desired educational outcomes.

PHASE II - STUDENT COURSE EVALUATION DATA. In an analysis of student course evaluation data across several implementations of the *Information Literacy and Access* course, six questions were examined to evaluate the instructor's performance. For each question, 20 students provided responses, and several statistical measures were calculated. Table 1 below provides a summary of the data.

Overall, the instructors received high evaluations across most questions, with median and mode scores frequently at the maximum value of 5.00, indicating strong student satisfaction. However, the variability in responses, particularly for Questions 3 and 4, suggests some differences in student perceptions.

Table 1. Student Course Evaluation Data

The Instructor:	N	Mean	Median	Mode	Range	SD
Q1 - Facilitates active participation	20	4.60	5.00	5.00	2.00	0.58
Q2 - Employed a variety of instructional methods	20	4.40	5.00	5.00	3.00	0.80
Q3 - Promoted collaborative learning with others	20	3.95	4.00	5.00	4.00	1.32
Q4 - Facilitated open exchange of ideas	20	4.00	4.00	5.00	4.00	1.26
Q5 - Presented connections between theory and authentic classroom experiences	20	4.50	5.00	5.00	4.00	0.92
Q6 - Conveyed enthusiasm for teaching this course	20	4.50	5.00	5.00	4.00	0.92

CASE STUDY II ANALYSIS. SOCIAL PRESENCE. **RQ1.** Using Zoom and Blackboard Collaborate breakout rooms enabled small-group rehearsals, preserving peer interaction and allowing candidates to assume librarian/student roles virtually. This provided opportunities for rapport building, even without physical co-presence. Asynchronous Discussion Boards prompted reflection posts on Webex streams extended interaction beyond live sessions, giving candidates time to articulate experiences and respond to peers, deepening social connection. **RQ2.** Regular icebreaker "check-ins" marked success in helping to humanize participants, and countered some of the sterility of the online medium. These brief social activities fostered openness and trust. However, the lack of non-verbal cues (e.g., body language, eye contact) limited emotional immediacy and participant

response, making it harder for some candidates to read peer reactions, hindering natural conversation flow, thereby reducing a sense of community.

COGNITIVE PRESENCE. **RQ1.** Structured reflection prompts with time-stamped annotations (via Swivl® or platform recording tools) continued to scaffold critical analysis. Candidates pinpointed moments where probing questions were omitted or follow-up strategies succeeded. Although time-compressed, the scaffolded sequence (analyze–rehearse–reflect) remained intact, ensuring learners still experienced the rehearsal cycle process. **RQ2.** Recording rehearsals for later review allowed for successful deeper integration of theory and practice despite shorter live sessions. Candidates revisited their own performance asynchronously, which compensated somewhat for limited synchronous time. The seven-week pace left minimal time for multiple rehearsal iterations; many candidates reported feeling "rushed," resulting in shallower exploration and less opportunity to fully resolve misunderstandings before the next module.

TEACHING PRESENCE. **RQ1.** Candidates' success was strengthened by a clear online design. A condensed module map and explicit weekly milestones provided transparency, helping candidates understand expectations and manage time in the accelerated format. Instructors used platform comment tools to leave time-specific coaching notes, mirroring the Swivl® approach in Case study I and guiding skill refinement. **RQ2.** Weekly "office-hour" live Q&A sessions (via Zoom) reinforced instructor visibility and allowed real-time clarification, sustaining teaching presence, while the rapid turnover of content left little flexibility for just-in-time remediation; late-arriving feedback sometimes arrived after a candidate had already moved to the next rehearsal, diminishing its formative impact.

CASE STUDY III: VIRTUAL SIMULATION WITH MURSION® (1 SEMESTER, 15-WEEK SESSION)

Teaching the *Information Literacy and Access* course in a fully virtual mode and building upon what was already established and done in Case studies I and II, the instructor chose to incorporate Mursion® to provide a more authentic and engaging experience with how candidates practice the reference interview. Instructor reflections on previous course implementation revealed that the role-playing method used for the practice reference interviews was a hit or miss. Wanting to take advantage of the university's various technology tools available to faculty to aid in teaching and learning, the instructor was eager to incorporate Mursion® into this course. She knew that Mursion® was used in various in-person classrooms for teacher candidates to simulate interactions and lessons with students, and wanted to see if it could be used successfully in a fully virtual course.

The process of using Mursion® in the reference interview rehearsal activity took some time, forethought, and pre-planning. Several weeks before the course began, the instructor set a date for when the Mursion® session would take place during the course. Considering the course calendar, the skills and knowledge that candidates needed to know to prepare for conducting reference interviews, and Mursion® preparation, Week 10 looked to be an ideal time in the course to have candidates practice reference interviews using Mursion®. This date was later in the course, allowing time for students to get a good grasp of course content and how using the reference interview could be an informal way to help students with their information literacy skills and meet their academic and personal information needs.

Once the Mursion® session date was decided, the instructor contacted the Mursion® coordinator at our university to see if Mursion® would be available to us on the chosen course session date and was directed to fill out a standard request form that included a

course summary, avatar type needed, and objectives and outcomes for using Mursion® in the course. The instructor and the Mursion® coordinator exchanged many emails and had several meetings, in-person and virtual, to discuss how to use the Mursion® technology with students. As plans are often likely to shift and change, a couple of weeks into planning, the date of the Mursion® session needed to be changed due to some schedule conflicts during Week 10 of the course. Reviewing the course schedule and accounting for other activities and assignments in the course, Week 8 now became the best time for the Mursion® session to take place.

After finalizing the date of the Mursion® session, the instructor backwards planned to ensure she taught the prerequisite skills for successful enactment of a reference interview using Mursion® with her school library candidates. In addition to the prerequisite information literacy skills identified in Case Studies I and II, a short Mursion® simulation session with candidates prior to the actual session was scheduled to briefly introduce the Mursion® technology and avatars. This proved vital since none of the candidates had worked with a program like Mursion® and familiarizing them with the technology was critical.

To ensure a more authentic experience, the Mursion® coordinator also requested information on the different topics that would be the focus of the candidates' reference interviews. Using the candidates' pathfinder topics (another assignment in the course) as the focus for the information that would be sought by the avatars was a natural choice as candidates would already have extensive knowledge on a number of resources they could direct students to. Although it would have been acceptable for the avatars to not have any information on the reference interview topic (as sometimes students don't fully know what their information needs are), the Mursion® simulation specialist wanted to research the different topics to emulate prior knowledge students might have about the topics to make the rehearsed reference interviews as realistic as possible. To provide time for the Mursion® coordinator to research the different topics, the pathfinder assignment topics that would be used in the reference interviews needed to be provided a few weeks in advance.

The Mursion® coordinator and the instructor continued to exchange planning emails throughout the semester until the scheduled date of the Mursion® simulation. The following graphic illustrates the timeline of implementing Mursion® into the *Information Literacy and Access* course.

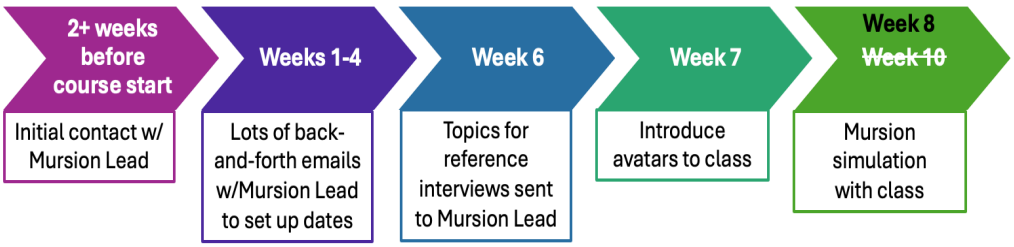


Figure 2. Mursion® Preparation and Implementation Timeline

INSTRUCTOR REFLECTIONS: SUCCESS. The integration of Mursion® into the *Information Literacy and Access* course yielded several successes. The initial success lay in the meticulous planning process, which ensured the smooth implementation of Mursion® in the classroom. Key aspects of this planning included setting up the technology and coordinating with the university's Mursion® coordinator to guarantee seamless session execution.

Reflective debriefs after each practice interview emerged as another significant success, enabling the provision of constructive feedback and thoughtful reflections. The use of Mursion® also aligned well with the high-leverage practice (HLP) goal of fostering relationship-building skills with students. Moreover, there was a marked shift in focus towards genuinely assisting students with their research queries rather than merely adhering to the RUSA criteria guidelines.

Students reported that the Mursion® experience facilitated more authentic conversations about reference interviews compared to traditional role-playing exercises. They perceived the simulations as reflective of real-life interactions they might have with their future students.

*INSTRUCTOR REFLECTIONS: CHALLENGES***.** Despite the successes, several challenges were identified. Technological issues with using Mursion®, an emerging educational technology, arose during the Mursion® session. The candidates' diverse levels of teaching expertise, spanning all K-12 age bands, necessitated switching from elementary-aged avatars to secondary-aged avatars to ensure authenticity, which sometimes resulted in delays in the Mursion® technology, showcasing the technology's limitations.

Time management was another significant challenge. The time required to switch avatars and the fixed durations of Mursion® sessions created concerns about ensuring all students had the opportunity to conduct a practice reference interview. This issue was compounded by the need to accommodate the variable lengths of reference interviews, typically determined by the interaction between the librarian and the patron, as noted by Ferguson and Sutphin (2022). Furthermore, there was insufficient time to debrief all interview experiences due to course session and Mursion®'s time constraints.

Coaching strategies also presented difficulties. The instructor noted a lack of experience with using Mursion® as a coaching tool, leading to missed opportunities for pausing and providing guided instruction during the session. Despite prior introduction to the Mursion® technology, some students felt unprepared for the Mursion® simulation, which contributed to their discomfort and made the experience awkward and more challenging than real classroom interactions (Ferguson and Sutphin, 2022).

Overall, while the inclusion of Mursion® in the course demonstrated significant benefits in terms of planning, authentic practice, and student engagement, addressing the challenges related to technology, time management, and coaching strategies is essential for optimizing its effectiveness in educational settings.

STUDENT COURSE FEEDBACK WITH MURSION®. Student feedback via the course evaluation in respect to Mursion® was limited. Comments included:

- "It's weird how authentic the conversation sounds when you're in [Mursion®]."
- "these are the exact same conversations I'm going to have with my students."
- "[I] felt more comfortable than I thought I was going to."

CASE STUDY III ANALYSIS. SOCIAL PRESENCE. **RQ1.** The redesign of the reference interview activity to include Mursion® avatars provided a more lifelike "patron" than previous peer role-play simulations of this activity. This helped candidates perceive the interactions as genuinely social and allowed them to build confidence in leading these types of conversations with students. Additionally, the class debriefs after each avatar simulated rehearsal interview fostered open sharing of experiences, allowing peers to affirm successes and normalize struggles and challenges in a supportive virtual community. **RQ2.** The novelty of interacting with professionally voiced avatars sparked excitement and deeper engagement—students reported greater emotional buy-in than with traditional role-plays. However, technical glitches and avatar-switch delays interrupted the social rhythm

of the rehearsal session, breaking rapport and making interactions feel less spontaneous, which undercut the sense of authentic presence.

COGNITIVE PRESENCE. **RQ1.** Candidates were able to problem solve in real-time as they participated in or observed the avatar simulated reference interviews. Encountering unanticipated avatar responses forced candidates into on-the-fly inquiry and strategy adjustment, deepening their ability to analyze patrons' cues and integrate strategies based on the RUSA guidelines. Starting with the end goal of candidates participating in a Mursion® simulation and then planning for the skills and knowledge needed through pathfinder topic research as well as an introduction to the Mursion® avatars (backwards planning) to ensure candidate success, learners were also able to reinforce conceptual transfer of the reference interview process through various stages of learning: triggering events (first exposure to Mursion® avatars), exploration (practice), integration (reference interview rehearsals), and resolution (debrief). **RQ2.** Providing topic-specific avatars (via pathfinder topics) enabled candidates to apply domain knowledge, strengthening links between theory and practice. Timing for using Mursion® was an aspect of the activity that could have been more carefully monitored. The shortened simulation windows and inflexible session lengths meant many candidates could not fully work through one instance of a reference interview; candidates who were scheduled later in the class session had less/no time to practice their reference interview with the Mursion® avatars than those candidates who went earlier in the session.

TEACHING PRESENCE. **RQ1.** Advance orientation to the Mursion® technology and clear preparatory tasks (i.e., pathfinder creation and examples of reference interviews) created a transparent roadmap, guiding learners through successful completion of the activity objectives through the new technology. Collaboration with the Mursion® coordinator and the included coached pauses (after simulation segments) offered targeted teaching interventions, addressing misconceptions and challenges in real time. **RQ2.** Embedding a "trial run" with avatars before the main event lowered cognitive load during the actual simulation session, so students entered Week 8 with baseline comfort in how the avatar reference interviews would proceed. Initial inexperience with pausing the simulation to insert coaching left missed teachable moments; without built-in pause-points, feedback came only post-session, reducing its immediacy and potential impact.

RECOMMENDATIONS FOR THE FIELD

This initial integration of high leverage teaching practices, the RUSA guidelines, and avatar simulations yields promise for future study. Recommendations for the school library media preparation field include the following:

- **Longitudinal Study:** Conduct a longitudinal study to evaluate if and how course recommendations are implemented post-completion. This study should analyze the contexts in which these implementations occur.
- **Immersive Qualitative Study:** Engage in immersive qualitative research to gain deeper insights into the practical application and effectiveness of course content in real-world settings.
- **Survey Course Completers:** Regularly survey individuals who have completed the course to gather feedback on the impact of course activities and areas for improvement.

- **Use of Avatars and Simulation Programs:** Integrate avatars and simulation programs like Mursion® into classroom situations to replicate authentic interactions, thereby enhancing practical training for students.
- **Use Reference Interviews for Relationship Building:** Emphasize the use of the Reference Interview as a tool for ongoing relationship building with students and as a method to advocate for the school's library program.
- **Integrate High Leverage Teaching Practices:** Expand the use of high leverage teaching practices, such as rehearsal techniques and case study scenarios, in school library media coursework to improve instructional effectiveness.
- **Time Efficiency in Planning:** Explore and implement strategies to enhance time efficiency in the planning and use of avatars in higher education school library media preparation programs.

CONCLUSION

Many digital tools are available for higher education instructors to use in preparing their pre-service candidates for success in real-world work situations. While tools such as Swivl® and Mursion® have afforded instructors opportunities to provide more meaningful and engaging experiences in online learning, careful thought and planning must go into its application within the virtual classroom. As these new learning technologies grow in prevalence and popularity, students and instructors will become more familiar and comfortable with using them, enabling instructors to harness and realize their full potential in online learning, and thereby prepare professionals who are equipped and ready for the demands and roles required to successfully integrate these tools into their own practice.

REFERENCES

American Library Association (ALA). (2008). *Definitions of reference.* http://www.ala.org /rusa/guidelines/definitionsreference

American Library Association (ALA). (2013). *Guidelines for behavioral performance of reference and information service providers.* http://www.ala.org/rusa/resources/guide lines/guidelinesbehavioral

American Association of School Librarians (AASL). (2019a). *ALA/AASL/CAEP school librarian preparation standards (2019)*. http://www.ala.org/aasl/sites/ala.org.aasl/ files/content/aasleducation/ALA_AASL_CAEP_School_Librarian_Preparation_Stan dards_2019_Final.pdf

American Library Association (ALA). (2019b). *Reference interview 101*. http://www. ala.org/rusa/reference-interview-101-3 (Accessed November 17, 2020) Document ID: db14aeed-8175-4a33-abd8-a42a7ca04617

Arbaugh, J. B., & Hwang, A. (2006). Does "teaching presence" exist in online MBA courses? *The Internet and Higher Education, 9* (1), 9–21. https://doi.org/10.1016/j.ihe duc.2005.12.001

Dalinger, T., Thomas, K.B., Stansberry, S, & Xiu, Y. (2020). A mixed reality simulation offers strategic practice for pre-service teachers. *Computers & Education*, *144*, 103696-. https://doi.org/10.1016/j.compedu.2019.103696

Dewey, J. (1938). *Experience and education*. Macmillan.

Ferguson, S. & Sutphin, L. (2022). Analyzing the impact on teacher preparedness as a result of using Mursion® as a risk-free microteaching experience for pre-service teachers. *Journal of Educational Technology Systems, 50*(4), 432-447. https://doi.org/ 10.1177/00472395211067731

Garrison, D. R., Anderson, T., & Archer, W. (2000). Critical inquiry in a text-based environment: Computer conferencing in higher education. *The Internet and Higher Education, 2*(2–3), 87–105. https://doi.org/10.1016/S1096-7516(00)00016-6

Grossman, P., Hammerness, K., & McDonald, M. Space (2009). Refining teaching, re-imagining teacher education. *Teachers and Teaching: Theory and Practice*, *15*(2), 273-289. https://doi.org/10.1080/13540600902875340

Gunawardena, C. N., & Zittle, F. J. (1997). Social presence as a predictor of satisfaction within a computer-mediated conferencing environment. *American Journal of Distance Education, 11*(3), 8–26. https://doi-org.proxy-tu.researchport.umd.edu/10.1080/08923649709526970

Hartle, L., & Kaczorowski, T. (2019). The positive aspect of Mursion® when teaching higher education students. *Quarterly Review of Distance Education*, *20*(4), 71-78,100.

Lance, K. C., & Kachel D. E. (2018). Why school librarians matter: What years of research tell us. *The Phi Delta Kappan, 99*(7), 15-20. https://doi.org/10.1177/00317217187678 54

Mursion®. (n.d.a). *Who we are.* https://www.Mursion.com/team/

Mursion®. (n.d.b). *Grounded in research.* https://www.Mursion.com/why-it-works/

Platt, J., & Benson, P. (2010). Improving the virtual reference experience: How closely do academic libraries adhere to *RUSA Guidelines*? *Journal of Library & Information Services In Distance Learning*, *4*(1–2), 30–42. https://doi.org/10.1080/15332901003765811

Sparks, N. (2021, March 19). *Use annotations to accelerate language learning*. Swivl. Retrieved April 30, 2023, from https://www.swivl.com/2016/10/20/accelerated-language-learning/

Swan, K. (2002). Building learning communities in online courses: The importance of interaction. *Education, Communication & Information, 2*(1), 23–49. https://doi.org/10.1080/1463631022000005016

Swivl. (2019). *Swivl for Researchers.* https://www.swivl.com/2019/11/13/swivl-for-researcher

Thrower, D., Mukherjee, K., & Carver, L. (2020). Students' perception of the benefits of using Mursion® Avatars. *Interdisciplinary Insights: The Journal of Saint Leo University's College of Education and Social Services*, *2*(2).

Towson University. (2024). *SimTeach@TU: Mursion®.* https://wp.towson.edu/simteach/Mursion/

University of Kansas (2000). *Rehearsal strategies.* https://specialconnections.ku.edu/instruction/cognitive_strategies/teacher_tools/rehearsal_strategies

University of Michigan. (2013). *Teaching Works: High leverage practices.* https://www.teachingworks.org/high-leverage-practices/

University of Michigan. (2019). *Building respectful relationships decomposition.* https://library.teachingworks.org/curriculum-resources/teaching-practices/building-respectful-relationships/

University of Michigan. (2020a). *Coached rehearsals.* https://library.teachingworks.org/curriculum-resources/pedagogies/coached-rehearsals

University of Michigan. (2020b). *High leverage practices.* https://soe.umich.edu/academics-admissions/degrees/bachelorscertification/undergraduate-elementary-teacher-education/high-leverage-practices