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Article

Exploring L2 Teacher Identities in an Intercultural Telecollaborative Mixed-Reality Teaching Environment

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Abstract

This study investigates the identities produced by three L2 teachers of different backgrounds and experiences in an intercultural telecollaborative project that integrated the use of mixed-reality technology. Content-analysis (Hoffman et al., 2011) and multimodal (inter)action analysis (Norris, 2011) were employed to identify the identity elements produced during their multimodal interactions. Using Darvin and Norton's (2015) model of investment (MOI) as an interpretative lens, this study uncovers the different identities held by the participants, and the ways in which they aspired to become good teachers. Findings also show that mixed-reality simulated teaching provided a safe environment for exercising professional agency, thereby facilitating identity development and promoting the sense of getting there. Interactive reflection provided a site of struggle where the value of capital and imagined identities shifted. Dialoguing among the participants allowed them to reassess the value of pre-acquired capital and move to (re)imagining new teacher identities and restructuring ideological structures. Mixed-reality teaching and intercultural professional learning sensitizes the less experienced teachers to the socially and culturally complex roles required for L2 teachers. The mixed-reality simulation technology still has its limitations, mainly where classroom interaction is concerned, because the number of avatar students is small and they cannot move around physically.

KEYWORDS: TELECOLLABORATION; MIXED-REALITY SIMULATED TEACHING; TEACHER IDENTITY; MULTIMODAL INTER(ACTION) ANALYSIS.

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1. Introduction

In comparison to researching language learning identity, studying language teacher identity is a recent feat. The synthesis study conducted by Kayi-Aydar (2019) reveals that it was not until the late 1990s that scholars began to examine foreign/second language (L2) teacher identities. The foci of the studies shifted from the professional identities of non-native English-speaking teachers to language teachers' sociocultural identities, and then to the plurality and composite nature of language teacher identities in the contexts of competing discourses and ideologies. With over 20 years of scholarly efforts, various conceptualizations have been made for researching language teacher identity. Study findings have shown that teacher identity plays a central role in the teaching profession (Kanno & Stuart, 2011; Richards, 2006; Tsui, 2007), and that understanding teacher identities can help to improve teacher education and pedagogical practices (Sarasa, 2017; Varghese et al., 2005).

While research has explored various contexts and research methods, few looked into language teacher identity in online teaching contexts. Even fewer studies have looked at teacher identities through the use of mixed reality, the merging of real and virtual worlds to produce new environments and visualizations where physical and digital objects co-exist and interact in real time, either inside or outside of telecollaboration contexts. As more and more language teaching takes place online, especially in the wake of the COVID-19 pandemic and the mounting efforts to use telecollaboration involving innovative technologies for teacher professional development, we have much to learn about teacher identities in such contexts. This study responds to this need by investigating the identities produced by L2 teachers of different backgrounds and experiences in an intercultural telecollaborative project that integrated the use of mixed-reality technology.

2. Literature Review

2.1 Research on Language Teacher Identities

Teacher identity has been a topic of interest for understanding language teacher professional growth. Research has shown that language teachers do not unconsciously represent a fixed identity (Kiely, 2014; Miller, 2009); instead, their professional identities are fluid and dynamic and must be understood in situated contexts (Clarke, 2009; Johnson et al., 2014; MacLure, 2003; Yang, 2017). Moreover, how "thinking, knowing, believing, and doing are enacted in classroom contexts" (Miller, 2009, p. 175) should be considered. Under this perspective, Tavakoli (2015) used Wenger's (1998) community of practice (CoP) to envisage teacher identity development as a negotiated trajectory of

participation, not only within classroom settings but also in wider educational and social systems. Also using the lens of CoP, Saito (2014) investigated first-year teachers' perceived influence of their interactions with students, mentors, and colleagues on their professional identity.

Norton (2013) introduced the notion of the sociological construct of investment to highlight agency deployment in teacher identity development. She points out that, when communicating in English as an L2, language teachers are engaged in identity construction and negotiation together with a process of "organizing and reorganizing a sense of who they are and how they relate to the social world (Norton, 2013, p. 4)". Based on the conceptualization, scholars are paying attention to teachers' decisions on investing, divesting, and reinvesting their personal (material, temporal, or attitudinal) resources with regard to the processes of becoming teachers (Sarasa, 2017), as well as to the tensions non-native English-speaking teachers experienced while positioning themselves as legitimate language teachers and English speakers (Sayer, 2012; Sayer et al., 2019). In addition, researchers are extending their quest to understanding L2 teacher identity development in globalized educational contexts. For example, Taylor and co-workers (2013) explored the relationship between teacher perceptions of their own identities and their acknowledgment of students' identities, and compared such perspectives held by teachers in Bulgaria, Germany, the Netherlands, and Spain. In a similar vein, Gu and Benson (2015) examined and compared how Hong Kong and mainland Chinese pre-service teacher identities were discursively constructed in the course of teacher education and under the influence of different social structures.

There has been research looking into language teacher identity construction in technologized teaching and learning contexts. With a focus on the virtual space as the environment for identity construction, Irwin and Hramiak (2010) examined the discussion board communications of trainee teachers, in order to understand their situated identities and the ways in which the identities were presented online. Similarly, Johnson and colleagues (2017) uncovered the changes in teacher educators' identities during the processes of their moving from on-campus faculty to virtual presence. Chen (2021) interviewed and observed the online teaching of a novice Japanese language teacher, in order to understand how she applied various strategies to construct her professional identities and transit between personal and professional identities. Using Darvin and Norton's model of investment (2015), Stranger-Johannessen and Norton (2017) investigated Ugandan primary school teachers' investment in a digital initiative, its impact on their teaching, and their changing identities. They found that having access to technology had significant effects on teachers' identities and conceptions of self.

2.2 Telecollaboration for Teacher Education

Telecollaboration, or "virtual exchange" (O'Dowd, 2018), comprises task-based interaction and collaborative projects organized by instructors to link learners in different geographical locations through online communication technologies (O'Dowd & Lewis, 2016). In addition to implementing telecollaboration to enable language learners to develop intercultural competence, there has been a growing interest in using telecollaboration to improve language teachers' intercultural communication skills and intercultural sensitivity (O'Dowd, 2017; Sadler & Dooly, 2016).

Despite being limited in number, research has uncovered that telecollaboration could also affect teacher identity development. For example, Dooly (2011) conducted a virtual exchange linking student teachers in Spain and the United States using Skype, Moodle, Voicethread, and Second Life (SL). It was found that both groups demonstrated more features of reflective teachers than they did at the beginning of the year, and that they co-constructed a shared identity as teachers in the virtual interaction through using the different communicative modes. In another study, Kitade (2014) engaged native Japanese-speaking student teachers in Wiki activities with learners from Japanese language classes abroad. The findings showed that the student teachers who initially relied on their native speaker authority gradually, through interactions with learners, realized the socially and culturally complex roles required for L2 teachers. In del Rosal and associates' (2017) study, language teachers who participated in online mentoring with language learners displayed various teacher identities, such as mentees and joint learners. Ensor and co-workers (2017) uncovered that telecollaboration helped teachers to redefine their roles and envisage a foreign language curriculum that integrates new, unfamiliar literacies and skills. Some correlations between intrinsic motivation and professional identity were found in the study conducted by Kramer and colleagues (2019), in which foreign language student teachers from European countries were linked for cross-cultural telecollaboration. Findings from the above relevant studies indicate that the intersection of technology, collaborative tasks, and culture could affect the development of language teacher identity.

2.3 Mixed-Reality Environments for Teacher Education

The use of immersive technologies, including virtual reality (VR), augmented reality (AR), and mixed reality (MR), stimulates physical senses for users to experience psychological immersion and open new possibilities across different dimensions in teacher education (see Kaplan-Rakowski & Meseberg, 2019, for in-depth discussions of the definitions of the technology, its evolution, and its current state in education). Mixed reality, the merging of real and virtual

worlds to produce new environments and visualizations, where physical and digital objects co-exist and interact in real time, has gained increased attention from teacher educators. For example, Driver and associates (2018) incorporated Mursion, an MR program, to develop pre-service teachers' ability to communicate effectively in collaborative partnerships. Another example is the way in which Hudson and co-workers (2018) used Mursion to enhance special education pre-service teachers' perceptions of their readiness to manage a classroom.

Studies on MR technologies for teacher identity development are relatively new endeavors, yet they have yielded interesting findings. For example, Piro and O'Callaghan (2018) used MR simulations, TeachLivE, for pre-service teachers to practice their instructions and explored their experiences in different exposure levels to simulations (i.e., pre-professional, liminal, and trending toward professional). They found that MR simulations facilitated the participants' development of professional identities as they faced instructional and behavioral challenges throughout their participation in the study. The researchers' studies called for continued examination of virtual worlds for teacher identity development.

Despite the increasing use of telecollaboration for developing language learners' intercultural and communication competence, few efforts have been made to exploit the benefits of linking teachers across geographical and cultural boundaries for teacher identity development. Among the many exciting and new technologies adopted in teacher education programs, the effects of MR simulations on teacher professional development require further study to take maximum advantage of them (Driver et al., 2018). This study intends to address this need by exploring (a) the identity development of participants in the different phases of telecollaboration and the possible contributing factors, and (b) the participants' perceived effectiveness of the MR approach to their professional development.

3. Method

3.1 Setting and Participants

Three teachers who enrolled in graduate-level teacher education programs in Taiwan and in the United States volunteered to participate in the study for 13 weeks. The two Taiwanese participants (Kathy and Sean, both are pseudonyms) both spoke Mandarin Chinese as their mother tongue, were in their mid-twenties, and had taught English as a foreign language (EFL) for three and five years at the elementary school level at the time of project implementation. The US participant (Jessica, pseudonym) spoke English as her first language and was an English-Spanish bilingual teacher who had nearly 10 years of teaching experience. They all signed up for opportunities to interact

with teachers from a different culture and use innovative technologies to hone their teaching skills. The participation was an enrichment experience, not part of the graduate program courses they took. Nonetheless, the participants all signed a consent form and approvals from the Institutional Review Boards of the two universities were obtained for conducting the study.

3.2 Implementation Procedures

A Padlet (https://padlet.com) site was first set up for the participants to introduce themselves. They were also encouraged to post images of objects that had special meaning for them and to explain why. Additionally, they completed a sentence starter, "A good teacher is someone who …" and responded to a situation in which a student questioned the correctness of information given by a teacher. The researchers then introduced Mursion (see Figure 1) (https://www.mursion.com/services/education) to the participants. Mursion allowed the participants to practice teaching specially designed scenarios with student avatars visible on a computer monitor. The avatars were controlled by artificial intelligence and a human interactor. The interactor wore an exoskeleton suit that allowed the manipulation of the avatars. Based on the participants' reactions, the interactor made the avatar respond in a way that both matched the scenario and the participants' behaviors in real time.

The participants were asked to enact simulated teaching with young English language learners from diverse cultures (i.e., Taiwan, India, and Mexico) individually for 10 minutes using Mursion. The lesson plan was pre-made by researchers, in order that the participants would enact the same lesson. The content objectives of the lesson were to build learners' background knowledge for understanding the Mulan story (https://www.youtube.com/watch?v=oLcI1W6AItw) and to connect the topic about having different identities to their personal experiences. The language objective was to enable the

Figure 1. Screenshot of a Mursion classroom.

avatar English learners to apply at least one keyword and one useful sentence starter in the story to express their thoughts on the conflicting identities held by Mulan, the protagonist of the story. The researchers arranged scenarios where avatar students would give wrong answers or disagree with answers provided by others during the participants' teaching. This arrangement was kept from the participants. The teaching was recorded for the participants to view and select clips to focus on individually in advance and later in a joint reflection. The joint reflection was done via Zoom and video recorded. Finally, each participant submitted their answers to the following questions in writing to the researchers: (1) If you were given another chance to teach the lesson, what would you do differently and why? (2) If you had 10 more minutes of instruction time with the avatar students, what would your lesson have been like in those 10 minutes?

3.3 Data Collection and Analysis

The data of this project included: (a) Padlet postings, (b) three 10-minute video recordings of Mursion teaching practices, and (c) 83-minute long video recording of the interactive reflection. All audio data were transcribed verbatim for analysis.

The participants' Padlet postings were deductively content-analyzed (Hoffman et al., 2011). The researchers read the written text multiple times to look for words and information that expressed identities. They first individually coded one Padlet posting and then met to discuss the results, in order to ensure that they had a shared understanding of identity-telling content. After that, they divided up the data and finished the coding individually. Again, the researchers jointly went over all the coding results. The researchers adopted the negotiated approach, where disagreements were discussed and joint decisions reached (Campbell et al., 2013).

The video recordings were analyzed by applying Norris' (2011) multimodal (inter)action analysis, because it takes into consideration the multiple modes in (inter)action that work together in building one system of communication. According to the framework, identity is "phenomenologically co(produced) through various levels of action within sites of engagement and within a particular social-time-place" (Norris, 2011, p. 52). Social actors produce a variety of identity elements in interaction, often simultaneously, where an identity element can be understood as expressing a situational identity. The social actions produced by social actors consist of lower-level actions and higher-level actions. The lower-level action is defined as the smallest pragmatic meaning unit of a mode; for example, an utterance is the smallest meaning unit of the mode of spoken language (Norris, 2004). Higher-level actions are those that social

actors usually intend to perform and are realized by chains of lower-level actions, such as hand gestures, postural or gaze shifts, etc. Thus, lower-level and higher-level mediated actions always constitute each other. By applying multimodal (inter)action analysis, the researchers of this study coded the participants' moment-by-moment higher-level and lower-level multimodal (inter) actions that produced their identities in Mursion teaching practices and their interactive reflection. The researchers first went through the video recording of interactive reflection independently. Then they compared the coding results to ensure a common understanding of the analysis framework and its association to the data set. Discrepancies in the coding results were discussed, and a consensus was obtained before they proceeded to analyze the video-recorded Mursion teaching.

The participants' perceived effectiveness of using MR teaching for L2 teacher professional development was examined via content-analyzing the audio recording of the transcript of interactive reflection and the participants' written responses to the two questions. Both researchers went through the transcript for words and information related to participants' thoughts on the experience. The coding results were individually categorized and later discussed for mutual agreements.

Darvin & Norton's (2015) model of investment (MOI) was adopted as an interpretative lens for this study. The model is based on Norton's (2000) identity theorization that has been widely used by scholars for investigating language learner identity (Kayi-Aydar, 2019). It was proposed in response to the current globalized and technologized world, in order to examine "how discrete events evolve into cumulative practice" using the key constructs of identity, ideology, and capital (Darvin & Norton, 2015, p. 42). Figure 2 shows how investment is located at the intersection of identity, capital, and ideology, and "identity

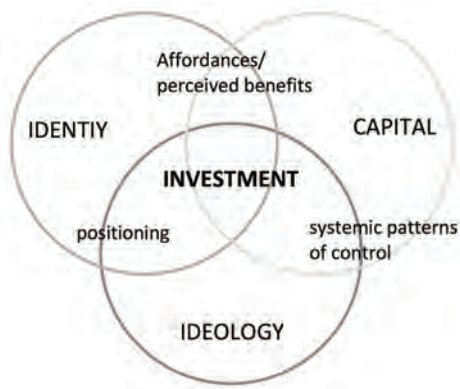


Figure 2. Darvin and Norton's (2015) model of investment.

is a struggle of habitus and desire, of competing ideologies and imagined identities. Governed by different ideologies and possessing varying levels of capital, learners position themselves and are positioned by others in different contexts" (Darvin & Norton, 2015, p. 45). In the model, learners' hopes and desires for the future are considered to be powerful sources of investment. Their desire to be part of an imagined community or to take on an imagined identity enables them to gain from or to resist these positions. Recognizing that they have the agency to assert their own identities, they are able to negotiate symbolic capital, reframe relations of power, and challenge normative ways of thinking. Stranger-Johannessen and Norton (2017) have applied the model in their study analyzing Ugandan primary school teachers' changing identities in a digital initiative that promoted multilingual literacy for African children. They reported that as the participants developed valued digital skills, they gained increasing cultural capital and social power. In the present study, the model was applied to analyze how the participants developed identities as they underwent telecollaboration via various ICT tools and MR technologies.

4. Findings and Discussion

The findings are organized temporally and according to the changes in interactive contexts during the telecollaborative processes: the Padlet postings, MR teaching, and interactive reflection meeting. Then, the participants' perceived effectiveness of the MR approach is reported.

4.1 Identities Presented in Padlet Postings

The participants' Padlet postings showed the different identities they chose to present at the initial stage of the project. In self-introduction texts, Kathy and Sean mainly indicated their status as graduate students of a TEFL MA program in Taiwan, and their excitement at participating in the project. As for the images of meaningful objects, Kathy posted photos of items that had accompanied her for years (i.e., musical instruments, teddy bears, and her favorite candy since childhood). Sean only posted a picture of a chameleon and explained, "It is interesting to see chameleons changing colors …, and some of the color changes are surprising, and one would not even know they exist. Likewise, I sometimes find myself changeable as a response to circumstances …" Jessica described herself as a doctoral candidate and a former language teacher in the United States, Mexico, and Chile. She also detailed the various tasks she took on as a teacher (e.g., cheerleading, writing curriculum) and shared photos exposing her other identities (e.g., a mother of a six-year-old, a sister, a world traveler). As already mentioned, Jessica has had years of

teaching in different educational contexts. In contrast, Kathy and Sean, being EFL speakers themselves, were early career teachers whose teaching experiences were locally in Taiwan.

Differences also existed in their handling of disagreements, as shown below. As a response to a situation where a student questioned the accuracy of an answer given by a teacher, Kathy and Sean both considered the situation as a hypothetical one and responded accordingly. Jessica's response was based on her usual practices.

> I believe that honesty is the best policy, so if I were the teacher, I would swallow my pride, admit the mistake, and let them know that no one is perfect. (Sean)

> I would admit my mistake and praise the student for having the courage to correct the teacher. (Kathy)

> I commend students when they notice a mistake I made and try to turn it into a teachable moment. (Jessica)

Further differences were found in their sentence completion responses. Kathy and Sean both perceived a good teacher to be a guide to help students gain knowledge or find answers. For Jessica, a good teacher assumed a variety of roles, including being a caring adult, a competent instructor, and a professional who is constantly improving oneself.

> A good teacher is someone who provides students with guidance, not giving them answers directly. (Kathy)

> A good teacher is someone who guides students to discover knowledge. (Sean)

> A good teacher is someone who genuinely cares about their students, differentiates instruction to reach all students, and never stops striving to be a better teacher. (Jessica)

From the analysis of self-introductions and posted images, it can be seen that the participants have already invested their time, experiences, networks, and education to various degrees. Whereas Jessica had developed and taken on different identities as an experienced bilingual teacher, Kathy and Sean were at the intersection of personal and professional identities, showing an eagerness to connect their multiple subjective selves to their teacher identity selves.

Kathy and Sean also shared identity in their responses to handling disagreements in a classroom: both were strategic users of face-saving acts. This likely socioculturally situated face-saving is essential in interpersonal relationships

in the Taiwanese culture and society. The differences between the Taiwanese participants' and Jessica's handling of disagreements (face-saving vs. teachable moment) revealed variances in the sense of their places as teachers, and how they should relate to students in such situations. In their imagined identity of a good teacher, again Kathy and Sean shared the vision of a teacher being a guide to help students gain knowledge or find answers. For Jessica, a good teacher cares and relates to her students and plays multiple roles.

According to the MOI, teachers' situational identities, in addition to being sociocultural, are also shaped by institutional contexts as systemic patterns of control, including their own schooling and teacher education programs. In other words, identity is related to habitus, a system that generates and organizes practices and presentations. While the participants of this study felt "at home" due to habitus, they find happiness in fulfilling their desired, imagined future. Volunteering to take part in the telecollaboration was part of the participants' ongoing investment to fulfill this desire. They recognized that interacting with teachers in different countries, familiarizing themselves with online teaching of students from diverse backgrounds, and using innovative technologies gave them valuable capital that would provide them with affordances for "getting there."

4.2 Identities Produced in MR Simulated Teachings

The Mursion environment allowed the participants to enact teaching students from diverse backgrounds in a simulated context. Since the teaching was online, they were also practicing online teaching. In the following, the findings from the sections when disagreements occurred during teaching are described. From the MOI perspective, how participants navigated this new experience of performing their perceived teacher's roles as constructed by habitus is delineated.

Kathy's interaction with her avatar students showed that she focused on lesson objectives and was sensitive to students' feelings when disagreements occurred. She also applied face-saving strategies, as she said she would in the situational response. The analysis further revealed that by applying the strategy, she could accomplish the lesson objectives within the allotted time.

In Figure 3, frame 1, Kathy started by gazing at all three students and used her hand gestures to invite them to describe what they had observed about Mulan. When Ava raised her hand, Kathy immediately noticed and asked her to share her ideas. In frame 2, she fixed her gaze at Ava and listened attentively. Upon hearing Ava's answer, she uttered "yeah," then gazed away. She moved her head sideways and extended her hands to the other two students for more answers. The juxtaposition of Kathy's lower-level action of uttering

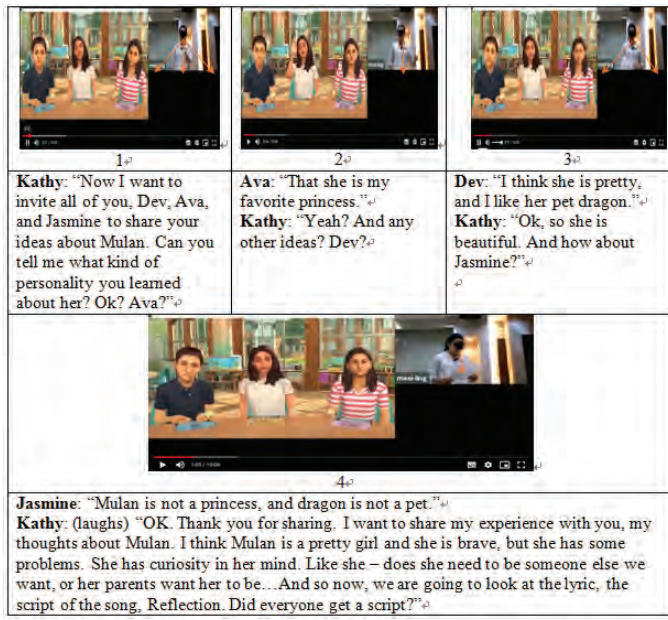
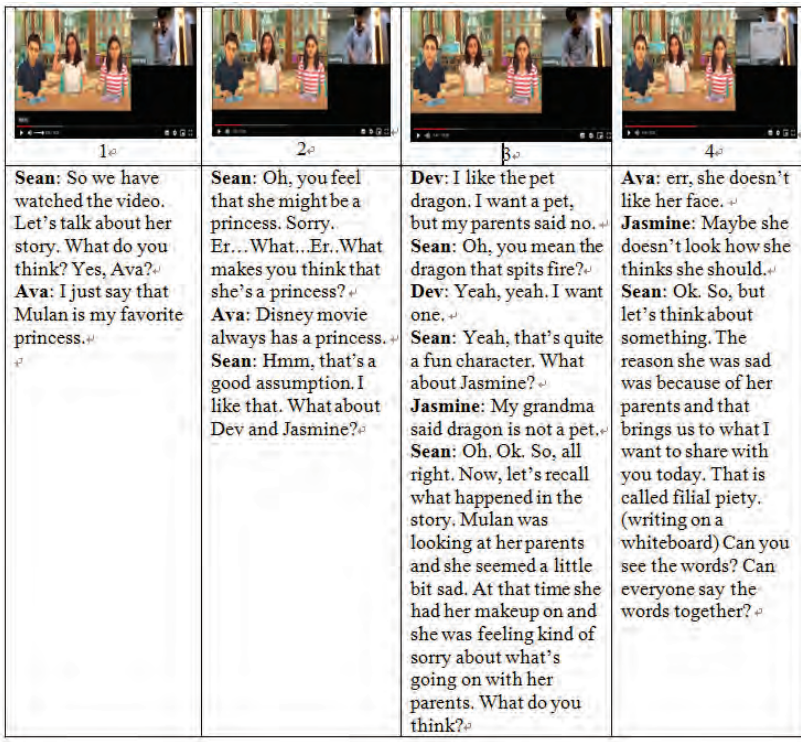


Figure 3. Multimodal interactions in Kathy's MR simulated teaching.

"yeah" and the higher-level actions (i.e., gazes, head movements, hand gestures) produced the identity elements of a teacher who was sensitive to students' feelings. Instead of showing disapproval of or disagreement with Ava's answer, she exercised face-saving strategies by responding with a low voiced "yeah" and soliciting answers from students. In frame 3, after receiving a response from Dev, she validated it by saying "OK" and repeating his answer. To ensure that all students had the chance to express their thoughts, she shifted her gaze to Jasmine and extended her hand to invite her to talk. In frame 4, Jasmine expressed her disagreement with both of her classmates' answers, which indirectly revealed her questioning of Kathy's judgment of Dev's answer. Kathy, facing the unexpected response, uttered some laughter yet thanked Jasmine for sharing her thoughts. Quickly, she lowered her head, shifted her gaze to the script in her hands, and announced that she wanted to give everyone her own ideas. In her speech mode, she avoided addressing Jasmine's disagreements with the other students' answers and focused on redirecting students' attention to what was on the lesson plan, which was to manage the conflicting identities held by the protagonist of the story.

Sean, too, focused on meeting both the content and linguistic lesson objectives. When students disagreed, he employed face-saving strategies to keep the students on task, as Kathy did. In Figure 4, frame 1, he was smiling and



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Sean: So we have watched the video. Let's talk about her story. What do you think? Yes, Ava? **Ava**: I just say that Mulan is my favorite princess.	**Sean**: Oh, you feel that she might be a princess. Sorry. Er…What…Er..What makes you think that she's a princess? **Ava**: Disney movie always has a princess. **Sean**: Hmm, that's a good assumption. I like that. What about Dev and Jasmine?	**Dev**: I like the pet dragon. I want a pet, but my parents said no. **Sean**: Oh, you mean the dragon that spits fire? **Dev**: Yeah, yeah. I want one. **Sean**: Yeah, that's quite a fun character. What about Jasmine? **Jasmine**: My grandma said dragon is not a pet. **Sean**: Oh. Ok. So, all right. Now, let's recall what happened in the story. Mulan was looking at her parents and she seemed a little bit sad. At that time she had her makeup on and she was feeling kind of sorry about what's going on with her parents. What do you think?	**Ava**: err, she doesn't like her face. **Jasmine**: Maybe she doesn't look how she thinks she should. **Sean**: Ok. So, but let's think about something. The reason she was sad was because of her parents and that brings us to what I want to share with you today. That is called filial piety. (writing on a whiteboard) Can you see the words? Can everyone say the words together?

Figure 4. Multimodal interactions in Sean's MR simulated teaching.

extending his hand to invite Ava to talk, producing identity elements of a teacher who is warm and open to students' ideas. However, in frame 2, he was a bit taken by surprise at Ava's comment about Mulan being a princess. His first reaction was to indirectly correct Ava by telling her it was how she felt, implying that she had made a mistake. Then he used the filler, "er," and paused to gain time and come up with the strategic move of giving Ava the chance to explain her answer. Upon hearing Ava's explanation, he validated the answer by praising and nodding, yet verbally pointed out that it was an assumption, and then turned to the other students for more answers to defuse the situation. In frame 3, Sean encountered further challenges, as Dev called the dragon a pet and Jasmin disagreed. With his head tilted, he repeatedly used the fillers "oh" and "yeah" to give himself time to respond. Finally, he decided to be the "teacher" by directing students to what he had intended for them to discuss, namely, what's going on inside Mulan's mind. In frame 4, the challenges of not getting "correct answers" from his students escalated. He uttered, "OK. So," signaling his intention to go back to what his students were supposed to be learning. This instructor-identity telling action was further solidified

by writing the words "filial piety" on the whiteboard, holding it to show the students, and asking them to read.

The multimodal analysis of the teaching by Kathy and Sean reveals that they experienced some turbulence; yet, instead of being disoriented, they successfully enacted what they perceived a teacher would do when disagreements occurred. According to the MOI, habitus provides learners with a conceptual understanding of what is reasonable and a tendency to act in specific ways. Kathy and Sean performed what they believed was expected of them and developed relationships with their students that were deemed appropriate. As such, this sense of agency, meaning having the capability to engage in thoughtful action to adapt to the situation, enhanced their teacher identities. Their professional identities became vivid and clear.

As an experienced teacher, Jessica enacted her approaches to handling disagreements in the MR environment in the same way as she typically did in her usual teaching context. She, too, fulfilled her perceived role of a good teacher. In Figure 5, frame 1, standing in front of a poster posted on a blackboard and holding a marker in her hand, Jessica produced a lower-level action of her

Figure 5. Multimodal interactions in Jessica's MR simulated teaching.

teacher identity. When she asked questions, she used higher-level actions to further assert her role as the teacher. Instead of first inviting students to share their thoughts about Mulan, Jessica asked the students to first talk about themselves. In frame 2, she responded to Ava's "wrong" answer by focusing on her liking Mulan and used it to motivate Ava to learn more about Mulan. Upon hearing Jasmine's disagreement with Ava's answer, she extended her hands to invite Jasmine to say more about her grandma. Thus, she turned the situation into an opportunity for the student to bring what she had learned at home into the classroom. Together, the verbal mode, eye gaze, and hand gestures produced the identity elements of a teacher who differentiated her teaching according to students' responses. In frame 3, she validated Jasmine's answer and modified it to make it clear. In frame 4, she prompted Jasmine to think about why Mulan was mistaken to be a princess without embarrassing Ava. A giggle was then shared with Jasmine after Jasmine showed her understanding by uttering "Mm-mm." The analysis revealed that Jessica was a caring teacher who tied students' experiences to her teaching. Meanwhile, she turned contradictions into a teachable moment.

In the MR simulated teaching, all three participants enacted the identities as desired. The way in which they enacted their teacher roles in the simulated situation also demonstrates that identity positioning is associated with ideological practices in the participants' respective local contexts; for example, disagreements were handled differently (i.e., face-saving in the Taiwanese context vs. teachable moment in the US context), and the importance of adhering to the pre-planned lesson varied.

4.3 Identities Produced in Interactive Reflection

According to the MOI, capital is power, and ideological structures determine its value, but it is continually negotiated in different fields or sites of struggle. Engaging in intercultural dialoguing on language teaching and their teaching offered the participants opportunities to compare and contrast among themselves and across different cultures. The analysis showed that student–teacher interactions were the most evident site of struggle.

During the meeting, Jessica invited Kathy and Sean to share their observations. Kathy (Figure 6, frame 1) at first looked straight at the screen. Upon hearing Jessica's question, she raised her head and looked away, searching for an answer (frame 2). She then slowly replied that she was impressed by how good Jessica was at praising her students. In frame 3, she paused and added hand gestures to emphasize her realization that the avatar students really valued the teacher's reaction to what they said and wanted to be praised. She positioned herself as a Taiwanese teacher by saying, "we teachers," in contrast

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Jessica: "What did you all notice anything really similar between all three of us, or anything really different?"	**Kathy**: "I think teachers in Taiwan do not respond to students the same way. You are good at giving students positive responses."	**Kathy**: "But in Taiwan, we teachers (paused). I'm not good at that. Students in the states, they really care about teachers' reaction to their opinions or if they are sharing. They want to be praised. But I am not good at doing that."	**Kathy**: "That's the difference."

Figure 6. Kathy's reflections on teacher–student interactions in Taiwan.

to the way she had detached herself in frame 2 by saying, "teachers in Taiwan." She explained the reason she was not good at praising students was due to her being a member of the teacher community in Taiwan. In frame 4, she looked straight at the screen again. She said, "That's the difference," to reiterate her realization of the sharp contrast between teacher–student interactions in the two different educational contexts.

Following on from Kathy, Sean supported her observations (Figure 7, frame 1). In frame 2, similar to Kathy's higher-level actions, he also lifted his head, looked up to the right, and said, "I feel when teachers do that, it shows respect to the students that teachers actually pay attention." In frame 3, while waving his hand and nodding, he admitted his own difficulty in responding to students' questions or giving "really in-depth" feedback. In frame 4, he exposed his dilemma of being a teacher in Taiwan and wanting to be a good teacher.

Responding to Jessica's question and comparing how the same pre-planned lesson was delivered by different partners enabled Sean to imagine a different identity of himself and other teachers in Taiwan: a teacher who pays attention to and values what their students have to say. According to the MOI, capital is dynamic and fluid, subject to the dominant ideologies of specific groups or fields. Its value shifts across spaces as one moves across communities. For Kathy and Sean, their investment in moving from their local teacher community to exchanging teaching practices with a teacher from a different community shifted the composition and trajectory of their capital. Intercultural dialoguing serves as a valuable resource for possible identity shift and imagination of new teacher identities.

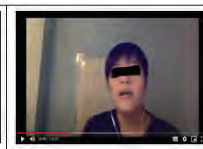
1	2	3	4
			
Sean: I agree to what Kathy just said. I feel most teachers they were, I would not say they don't listen to students, but it seems more difficult for teachers to respond in-depth to the students.	**Sean**: I feel when teachers do that, it shows respect to the students that teachers actually pay attention.	**Sean**: "I found in the videos of myself and Kathy when avatar threw out questions, my own strategy, I was like nodding. I would try to give them feedback but not really in-depth because I need more time to process, to digest before I can give constructive feedback."	**Sean**: I wanted to say more but I found that it's not as easy as I thought it would be."

Figure 7. Shifts in Sean's capital enabling identity change.

Such an affordance of interactive reflection was also found in Jessica's capital trajectory and likely identity shift. The following exemplifies how Jessica compared her teaching with Sean's and expressed what she would do differently in the future. In Figure 8, frame 1, after receiving compliments from Kathy and Sean about how much they learned from her, she lowered her head to humble herself and revealed her own shortcomings. In frame 2, she confessed that she still could not teach the more complicated language listed in the lesson objectives, such as "filial piety." In frame 3, she smiled meekly and further explained that her wish to respect her students' responses distracted her from fulfilling the lesson objectives. In frame 4, she reiterated her ability to get all the students to talk in class, yet this was just one of the objectives in the lesson plan.

The teacher–student interaction differences pointed out by Kathy and Sean led Jessica to see how her lesson delivery had been shaped by the ideological practices that emphasize respect for students. She, too, imagined a different teacher identity of someone who would balance caring for all students with fulfilling lesson objectives.

While MR simulated teaching affirmed and enhanced the participants' teacher identities, interactive reflection shifted and expanded the participants' imagined identities. This reflects the struggle that teachers tend to experience at this stage of their careers, when transiting between "communities of practice" (Wenger, 1998). In addition to providing the participants with a site of struggle between habitus and desire, and between competing ideologies and imagined identities, the joint reflection also served as a platform for mutual

1	2	3	4
Jessica: I wanted to have them use more complicated language, like you taught filial piety, and I had- I don't think I chose a word that hard.	**Jessica**: I was nervous, I think. So, I think- I don't remember what my word- I had a couple of words I wanted them to use eventually.	**Jessica**: Oh, I think respect and it was something else. But I didn't even get to that part. I had whole another sheet of stuff for them to do that I did not get to.	**Jessica**: But I did at least get every student to speak. And so, that was my goal. That every student spoke in a sentence.

Figure 8. Jessica's interactive reflection with Sean and Kathy.

support and encouragement. Despite coming from different backgrounds and experiences, they could identify good practices in one another's teaching, show appreciation, and learn from each other.

4.4 Participants' Perceived Effectiveness

An analysis of participants' perceived effectiveness regarding the MR simulated teaching shows that they were surprised by how real-lifelike the interactions with the avatars had been. As Kathy exclaimed, "I felt nervous because I had no idea how the [students] would react to my questions. But after teaching, I couldn't stop smiling because they were so real. They were just like students in Taiwan!" Investing in MR teaching afforded Kathy and Sean cultural capital in experiencing teaching students from diverse backgrounds. As they had successfully completed their teaching practice, they gained confidence not only as EFL teachers in Taiwan, but also as non-native English-speaking teachers in a more diverse context. Kathy realized that students from various backgrounds would respond to teachers' questions differently, and so she needed to become a better listener in the future. She said, "I will pay attention to every student's feelings during the discussion by giving them positive responses after they share their thoughts … I want to know how they feel about themselves and their peers." This imagined new self means that she would be a member of a transnational English teacher community: "I want to work with students but not to lecture like my junior high school English teacher did."

Having only a few students in the Mursion classroom was another perceived benefit according to the participants. Sean pointed out, "There are fewer of them than in most classrooms. The interaction is purer." With fewer students, Sean could pay closer attention to his interaction with students, which then led to his realization that he was not able to respond to students in depth. In his everyday teaching, he had many students and experienced the pressure to meet curriculum demands. As a result, teacher–student interaction became secondary. Instead, focusing on keeping to the course of fulfilling lesson objectives was prioritized. Sean was pleased with the MR teaching system and even asserted that, "It can be a game-changer for any teacher or any experimental teaching."

For Jessica, having fewer students gave her the chance to "not worry about behavior problems and just focus on teaching," and she considered it a safe environment to try out something without worrying about the repercussions as much as in a real classroom. However, she was disappointed that she could not interact physically with students, as in a real classroom: "I would have them get up, or move seats, or act something out, and you can't do any of that, so sometimes I feel a bit constrained by the technology."

5. Conclusion, Pedagogical Implications, and Limitations of the Study

The findings of this study demonstrated that participation in a telecollaboration project integrating the use of MR simulations could affect the identity development of language teachers. The integration of MR simulations enabled the participants of this study to go beyond geographic boundaries to enact lesson plans via online platforms, which generated analytic reflection on teaching practices and their identities as L2 teachers. Combining content analysis and multimodal (inter)action analysis helped to expose the nuances in the identity development process temporally during the telecollaboration. The findings of this study uncover the different identities held by the three English teachers across diverse cultural and life experiences, and the ways in which they aspired to become good teachers for students. Mixed-reality simulated teaching provided a safe environment for exercising professional agency, thereby facilitating identity development and promoting the sense of getting there. Interactive reflection, however, was a site of struggle, where the value of capital and imagined identities shifted. Dialoguing among the participants enabled them to reassess the value of pre-acquired capital, move to (re)imagining new teacher identities, and restructure ideological structures.

Via the lens of MOI, this study provided insights into identity development in language teacher telecollaboration and the affordances of integrating MR

technology into telecollaboration. The findings of this study resonate with Clarke (2009, p. 187) that, "identities are the result of the inescapable and ongoing process of discussion, explanation, negotiation, argumentation, and justification that partly comprises teachers' lives and practices." They also echo findings from previous studies that MR teaching practices can be beneficial in facilitating the professional identities of less experienced teachers as they go through instructional and behavior challenges occurring during the process (Piro & O'Callaghan, 2018; Puvirajah & Calandra, 2015). In addition, the MR teaching and intercultural professional dialoguing in this study achieved a similar effect as in Kitade's (2014) study, namely, that the less experienced teachers (i.e., Kathy and Sean) were sensitized to the socially and culturally complex roles required for L2 teachers. Despite the benefits, technology constraints should also be noted when the technology is employed for teacher education. The MR simulated teaching has its limitations, primarily where classroom interaction is concerned, because the number of avatar students is small and they cannot move around physically. The study has its limitations as well. The number of participants is small, and the duration is limited. As language teacher identities are becoming a potential site of pedagogical intervention and an area of explicit focus in teacher preparation (Clarke, 2009), with a larger-scale project and a longer implementation duration, more data could be collected and helpful information for language teacher education obtained.

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