FACILITATING PARTICIPATION: TEACHER ROLES IN A MULTIUSER VIRTUAL LEARNING ENVIRONMENT

Airong Wang, Mid-Sweden University

This paper reports on a task-based language teaching course in Second Life. The data set consists of transcribed recordings and a teacher interview. Focusing on how the teacher facilitated student participation, this paper aims to explore the discourse functions in the teacher language output and then to address the teacher roles in three different task phases. All the turns produced by the teacher and the students were counted, the teacher language output in the recordings was classified into 19 discourse function categories, and then all the discourse functions were classified into six teacher roles. The results show that the during-task phase was student output oriented. This study reveals that in the pre-task phase the teacher used the largest number of types and tokens of discourse functions, and played a significant technical and social role. In the during-task phase, the teacher focused on motivating students to participate, monitoring student activities, and providing task support. In the post-task phase, the teacher was a language guide. While the teacher roles that were most prominent varied in the three task phases, the teacher was found to play four roles consistently in the three task phases: monitor role, motivator role, language guide role, and social role.

Language(s) Learned in this study: English

Keywords: Task-based Instruction, Virtual Environments, Discourse Analysis, Teacher Education


Received: October 29, 2013; Accepted: August 28, 2014; Published: June 1, 2015

Copyright: © Airong Wang

INTRODUCTION AND AIM

Language learning and teaching in Multi-User Virtual Environments (MUVEs) has been subject to a continuous research interest since their emergence. Among these, Second Life (SL) has drawn considerable attention. Inspired by their theme-based 3D immersive environments and a sense of social presence through real-time collaboration, researchers have started to explore what types of tasks can motivate student participation in MUVEs. It is reported that communicative tasks in MUVEs motivate language learning, for example, role-play (e.g. Peterson, 2010), or informal conversations of socialization and formal academic presentations (Deutschmann & Panichi, 2009).

Wang, Deutschmann, and Steinvall (2013) found that a teacher can potentially affect student participation in SL in different ways such as by balancing the output between active and inactive students and by reducing the negative impact of technology. Recently, there have been a limited number of discourse studies investigating teacher influence on participation (e.g. Deutschmann & Panichi, 2009). However, in-depth discourse analyses of teacher strategies for facilitating student participation in chronological task phases [i.e. pre-task phase, during-task phase, and post-task phase (Ellis, 2003)], and specific teacher role(s) in these phases are still lacking.

Accordingly, this paper focuses on how a teacher facilitates student participation in SL during an English course. More specifically, this paper aims to explore discourse functions in the teacher language output in
the different task phases, with a view to exploring how discourse functions reflect the different teacher roles during various task phases.

Background

Task-Based Language Teaching

Task-based language teaching (TBLT) is an established approach in the field of language education, which consists of tasks where “the target language is used by the learner for a communicative purpose” (Willis, 1996, p. 23). Concerning the abovementioned three task phases, Willis (1996) explains that the initial pre-task phase entails the introduction of topics and tasks and the language preparation for the during-task phase. Afterwards, in the during-task phase—an important output-oriented phase—learners use the target language to perform tasks under teacher monitoring (Willis, 1996). Finally, in the post-task phase, teachers provide feedback on students’ performance and correct students’ language deficiencies (Walsh, 2011; Willis, 1996).

According to Ellis (2003), only the during-task phase is obligatory in TBLT although the pre-task and post-task phases can maximize the effects of the task performance for language learning. Bygate (1999) argues that the pre- and post-task phases can help maximize language learners’ fluency and accuracy while performing tasks.

Task-Based Language Teaching in Second Life

In SL, users are represented via avatars, which perform limited actions such as walking, and animate limited emotions such as laughing. SL offers users synchronous voice chat and synchronous and asynchronous text chat. The voice chat in SL is both spatial—loudness is decided by the proximity between avatars (Wadley & Gibbs, 2010; Wigham & Chanier, 2013a), and duplex—a teacher can address a task breakdown directly without waiting for a turn to intervene (Wigham & Chanier, 2013b). In Wigham and Chanier’s (2013a) study of a foreign language course, due to the lack of body language in SL, the teachers had to address the students systematically by using the names of student avatars when organizing the proximity between the avatars. SL also allows users to build objects according to their need. According to Good, Howland, and Thackray (2008), the immersive and visual nature of SL offers plenty of opportunities for teachers to manage students’ collaboration. For instance, teachers can help and guide students to use various resources in SL and provide ongoing feedback, hence building a model of collaboration and strengthening the role of a teacher as a peer (Good et al., 2008).

A few documented pilot studies have applied TBLT in SL. For example, to test whether SL facilitates TBLT, Sadler, Nurmukhamedov, and Fassler (2008) studied different tasks during which English learners learned how to orient avatars and build objects in SL. Sadler et al. (2008) proposed that TBLT can be applicable in SL and maintains students’ motivation. After exploring two English courses in SL, Deutschmann, Panichi, and Molk-Danielsen (2009) found that task design, in terms of how student-versus teacher-centered the courses are, directly influences student real-time participation. These two studies are of relevance to the present study as the main focus of this paper is to reveal teacher roles as regards facilitating student participation within the same learning context.

Role-play, which has also been practiced in SL, is considered a typical kind of task in conventional TBLT (Willis, 1996). SL is a powerful tool for role-play because SL affords simulations where multiple avatars can take new identities and engage in a given situation (Good et al., 2008). Role-play in MUVEs is also conducive to language learning and motivates participation (Peterson, 2010). Chapelle and Hegelheimer (2004) suggested that a teacher should implement role-play to provide learners with opportunities to use a language. Concerning teacher intervention in role-play, Ho, Rappa, and Chee (2009) maintained that the teacher’s role in “maximizing the pedagogical impact of the intervention on student learning” (p. 397) is of importance in SL. Ho et al.’s (2009) study is of particular relevance to the present study, in which the teacher intervened in the role-play activities in the course under scrutiny.
Teacher Roles Influencing Participation in Task-Based Language Teaching

Willis (1996) stated that teacher roles change in the three task phases. Although researchers have discussed teacher roles in MUVEs, their focus has not been on teacher roles in the different task phases. For that reason, this section summarizes the previous research on teacher roles and relates them to the three task phases.

During the pre-task phase, previous research has suggested that teachers have three main roles: monitor, motivator, and language guide. According to Willis (1996), a teacher sets up tasks, as a monitor, and then motivates learners to do tasks, as a motivator. Raith and Hegelheimer (2010) proposed that a teacher should introduce tasks comprehensibly to learners. As Van Avermaet, Colpin, Van Gorp, Bogaert, and Van Den Branden (2006) emphasized, motivating students to participate is a teacher role throughout TBLT. Researchers (e.g. Hampel, 2006; Van Avermaet et al., 2006) also suggested that a teacher as a language guide should provide language input that can be used to improve learners’ language skills. Regarding the teacher role at the beginning of an English course in SL, Deutschmann and Panichi (2009) argued that teacher facilitation and coordination is a necessity.

In the during-task phase, it has been suggested that the teacher role of a task monitor is important to keep the students on task and intervene when a task faces a breakdown (Willis, 1996). Previous research also proposes that a teacher should provide interactive task support, as a task supporter, to facilitate the completion of tasks (Raith & Hegelheimer, 2010; Van Avermaet et al., 2006). For example, a teacher can trigger the task process, by means of planned or unplanned intervention, to help learners overcome problems in understanding the tasks or using the target language. Although Van Avermaet et al. (2006) suggested that providing task support is a teacher role throughout TBLT, they also recommended that teachers avoid becoming intruders, which can negatively affect student participation.

In the post-task phase, according to Willis (1996), a teacher is a language guide. As Willis (1996) argued, providing students with a summary of what they have achieved motivates their future participation. Moreover, it is also in this stage that a teacher corrects students’ language errors (Willis, 1996). However, error correction is not recommended in the pre-task and during-task phases because students need time to experience the target language and constantly correcting their errors damages their confidence and weakens their motivation (Willis, 1996).

Apart from the roles of monitor, motivator, language guide, and task supporter, in MUVEs a teacher has another role: that of technical supporter. The complexity of technology coupled with the multiple communication modes can influence participation negatively especially at the beginning of a task (Hampel, 2006). Students may be frustrated when there are not enough gestures in SL to communicate their intentions (Edirisingha, Nie, Pluciennik, & Young, 2009). Therefore, Edirisingha et al. (2009) suggested that teachers should be familiar with the complex nature of communication in SL in order to offer students technical suggestions. Similarly, other researchers propose that a teacher should provide technical support at the beginning of a course so that students may acquaint themselves with SL (e.g. Blasing, 2010; Cooke-Plagwitz, 2008), and that a teacher should give students technical guidance in the middle of a course to facilitate their completion of course activities (e.g. Wang et al., 2013).

Finally, the teacher also plays a social role. The communicative nature of TBLT together with the complexity of technology makes such a role important to create a friendly social environment, which is critical for successful moderating (Berge, 1995). As Edirisingha et al. (2009) maintained, the limited body language and the complexity of the multiple communication modes in SL may discourage students from participating, hence the need for teacher support in real-time social communication in SL. For example, teacher recognition of participants’ social presence in SL is a necessity as it motivates participation and activates language output (Cooke-Plagwitz, 2008). In addition, the establishment of social cohesion can help create a relaxed, social communicative environment (Peterson, 2006, 2012).
These studies concerning teacher roles provide a starting point for examining these roles in the different task phases of the complex SL learning environment pursued in this study.

**Discourse Strategies for Realizing Teacher Roles**

Specific discourse strategies used by teachers to facilitate student participation have been discussed in previous research (Deutschmann & Panichi, 2009; Walsh, 2011; Willis 1996; Sotillo, 2000). Sotillo (2000) outlines a system of discourse functions. Studying synchronous communication between teachers and English learners in an online writing course, Sotillo investigates the use of 14 discourse functions: “greetings”, “topic initiation”, “assertions/imperatives”, “questions/requests”, “responses”, “adversarial moves/challenges”, “off topic”, “topic shift moves”, “humor”, “requests for information”, “floor holding moves/topic continuation”, “corrective moves”, “reprimands”, and “closings” (p. 108). She further classifies questions/requests into “clarification requests”, “comprehension checks”, and “explanation requests”. Deutschmann and Panichi (2009) also pointed to the importance of using questions in a SL language scenario, but they classified questions into two different types: “directed elicitors”, questions directed to a specific person, and “general elicitors”, questions directed to a group in general. As regards the category responses, Sotillo (2000) also divides them into subcategories: “elaboration”, “explanation”, “clarification”, “apology”, and “agreement”. Of all these categories, Sotillo’s study suggests that topic initiation and corrective moves are used more often by the teacher than by the students.

Using back-channeling is also a strategy used to elicit student communicative participation. Back-channeling, such as *yeah* and *mm*, is of importance when people want to act as “supportive and engaged listeners in a conversation” (Lambertz, 2011, p. 11). Studying a language scenario in SL, Deutschmann and Panichi (2009) found that the teacher’s use of back-channeling encourages student participation, and is an important way to build social cohesion, especially given the lack of body language, as this strategy signals that the teacher is interested in students’ conversations.

Politeness strategies are also important strategies in MUVEs. This is shown by Peterson’s (2012) discourse studies of English learners’ interaction management strategies during task-based language learning and his 2006 study on role-playing language learning in MUVEs. In these studies of text chat, Peterson reported that the L2 English speakers extensively use politeness strategies, such as greeting and leave taking, to minimize their social distance, which successfully builds less stressful collaborative environments. Peterson (2006) also found that the English learners used apologies as a way to avoid imposition. Although Peterson’s studies examined student-student interaction, these strategies are of value to the present investigation focusing on how a teacher establishes social cohesion with students in SL.

Other discourse analyses of teacher strategies in the traditional classroom are also worth mentioning. According to Willis (1996), teachers can set up clear turn-taking rules to motivate shy learners to participate. Moreover, regarding motivating participation, Walsh (2011) found that a teacher can use a key strategy of pausing extensively longer than one second as extensive pausing gives sufficient time for language learners to take turns and to prepare responses.

These discourse strategies provide clues for detecting teacher roles when the teacher language output in different task phases is examined. Note that discourse strategies in this study refer to how a teacher uses language output to realize different discourse functions in conversational contexts. In this study, participation in MUVEs means that, “students not only listen and observe, but also contribute (in speech, in writing or through actions) to the interaction” (Wang et al., 2013, p. 4).
RESEARCH CONTEXT AND METHODOLOGY

Research Context

The data was collected from an undergraduate business English speaking course offered by a Swedish university in SL in the autumn of 2011. The objectives of the course were to train students’ spoken skills in business contexts and their ability to learn online. There were five sessions conducted within five weeks in this course. The class met once for two hours during the week. Session one focused on introducing the course activities and course assessments, and in session two, the language of interrupting and signaling active listening for a group discussion. Apart from the group discussion, session two was mainly devoted to one role-play practice named “poisoning the pigeons in the park”. Session three included a warm-up activity, a language practice activity named “outrageous opinions”, and individual presentations of things the students had found out about SL. Session four concerned a role-play assessment of “selling water purification devices to developing countries”. Session five was mainly about course evaluation. Figure 1 provides a snapshot of the role-play practice.

![Figure 1. The role-play practice in SL.](image)

The teacher, an L1 speaker of English, has been teaching English in SL since 2006. He had previously taught the same course eight times at the time of data collection. This teacher also “used to work for one of the originators of the whole idea [TBLT]” (Teacher, email correspondence, March 26, 2013). Regarding the design of the course, the teacher explained that pre-, during-, and post-task activities were spread out over different course sessions leading up to the role-play assessment task.

A total of 17 students were enrolled in the course. Apart from one student with an unknown nationality, eight students were Swedish, two were Chinese, and the remaining six were Ethiopian, Finnish, German, Polish, Russian, and Slovakian. The average age of the students was 24, ranging from 19 to 30. The students were either at level B2 of the Common European Framework of Reference for Languages (CEFR) or at C1 level in spoken English, and had all studied the equivalent of a three-year upper secondary course in English. All the students had either very limited experience in distance learning or none at all. None of them had prior experience in SL.
Data

The data set analyzed consists of two parts: recordings of the course and a teacher interview. With informed consent from the teacher and the students, the course was recorded using the screen-recording software ScreenFlow. The total length of the recordings is 17 hours and 16 minutes. According to the teacher, the text chat was used only occasionally because “[t]his course concentrates on spoken English, so it was both unnecessary and pedagogically distracting for the students to use text chat” (email correspondence, March 21, 2014). Consequently, the text chat was excluded from the data set and only recorded voice data was used in this study. Immediately after the course was completed, I conducted a 45-minute interview with the teacher in SL, recorded with his permission using ScreenFlow. It was guided by ten open-ended questions that concerned the teacher’s evaluation of student participation as well as a self-reflection of his roles (see Appendix A).

After examining the recorded sessions, three activities in the pre-task phase, three activities in the during-task phase, and two activities in the post-task phase were chosen for detailed transcription based on the requirement of the current study that the teacher participated in. To represent the complete dynamics of how the teacher facilitated the same tasks, the post-task activities were restricted to the teacher feedback immediately after the three selected during-task activities. However, the teacher did not offer feedback on the student performance after one during-task activity (group discussion); thus there were only two activities in the post-task phase that were transcribed. That mirrors Ellis’ (2003) statement that only during-task phase is obligatory. In the transcript, intonation patterns, overlapping and latching of turns, pauses between and within turns were noted (see Appendix B). In order to preserve anonymity, the teacher’s name was replaced by T, and the student names were represented by S plus a number (from 1 to 16). In total, 16 students and one teacher were represented in the transcribed data, which represented 85 minutes and five seconds of the total data recordings. Table 1 details the transcribed data.

Table 1. Transcribed Voice Data of Selected Activities

<table>
<thead>
<tr>
<th>Task Phase</th>
<th>Stage &amp; Objective</th>
<th>Activity</th>
<th>Number of students</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pre- (30.36)</td>
<td>Technical check-up: Online tools (5.46)</td>
<td>T checks students’ audio.</td>
<td>6 S1, S6, S7, S11, S14, S16</td>
</tr>
<tr>
<td>Warm-up: Socializing (5.50)</td>
<td>T assigns task: Tell the class three nice things that had happened since last time they met in SL.</td>
<td>6 S1, S6, S7, S9, S12, S14</td>
<td></td>
</tr>
<tr>
<td>Useful language: Practice agreeing, disagreeing, and changing a subject (19.00)</td>
<td>T models task: Finland is one of the most beautiful countries in the world. T participates with students in “My outrageous opinions.”</td>
<td>4 S3, S5, S8, S10</td>
<td></td>
</tr>
<tr>
<td>During- (39.36)</td>
<td>Practice: Interrupting and signaling active listening (16.01)</td>
<td>T tells story. In-group discussion, students identify lies in the story.</td>
<td>7 S1, S7, S9, S11, S13, S14, S16</td>
</tr>
<tr>
<td>Role-play practice (9.05)</td>
<td>Task: Students negotiate solution to eliminate a large number of pigeons in town.</td>
<td>5 S2, S4, S5, S10, S15</td>
<td></td>
</tr>
<tr>
<td>Role-play assessment: Graded task (14.30)</td>
<td>Task: Students decide in a managing meeting whether to start production in declining traditional sales.</td>
<td>3 S3, S5, S8</td>
<td></td>
</tr>
<tr>
<td>Post- (14.53)</td>
<td>Feedback (Practice) (2.53)</td>
<td>T gives feedback on practice role-play. Evaluation on performance and output.</td>
<td>5 S2, S4, S5, S10, S15</td>
</tr>
<tr>
<td>Feedback (Assessment) (12.00)</td>
<td>T gives role-play assessment. Evaluation on performance and output.</td>
<td>3 S3, S5, S8</td>
<td></td>
</tr>
</tbody>
</table>

Note: * Length in minutes in parentheses
It is worth noting that the different lengths of the three task phases transcribed reflect that the time allocated by the teacher to the three task phases is different. Most time was given to the during-task phase, less time was assigned to the pre-task phase, while the least time was spent on the post-task phase. Moreover, the composition of the groups and the number of students (from a minimum of three to a maximum of seven) in each activity transcribed were also different.

**Method**

The data was analyzed in the following three ways. Firstly, discourse strategies can be used to manage turns (Walsh, 2011), and number of turns has been used to measure student online participation (Carr, Cox, Eden, & Hanslo, 2004). Therefore, to represent the overall participation of the teacher and the students, all the turns in the transcript were identified, and the number of turns was counted in terms of student-produced turns or teacher-produced turns.

Secondly, after the participation of the teacher and the students had been mapped, the discourse functions in the teacher-produced turns were identified in order to investigate what discourse functions were used by the teacher in the three task phases. Table 2 below lists the coding categories, most of which are adapted from the earlier research discussed previously. The first nine categories in Table 2 are from Sotillo’s (2000) study. Among these categories, some categories are also used by other researchers such as greetings (Peterson, 2006, 2012) and apologies (Peterson, 2006). Directive was adapted from Sotillo’s (2000) assertions/imperatives. Directive and question were each classified into two categories: “directed”, which meant addressed to a specific student and “general”, which meant addressed to all students present. The subcategories elaboration, explanation, apology, and agreement under the category response in Table 2 were all adopted from Sotillo’s (2000) study, while back-channeling was adapted as another type of response. Note that the two subcategories “explanation” and “clarification” in Sotillo’s (2000) study are represented only by the category “explanation” in Table 2, as the teacher’s use of “explanation” and “clarification” was found to have the same impact on student participation in the context of the present study. Apart from these categories, extensive pausing, i.e. pauses longer than one second (Walsh, 2011), and leave taking (Peterson, 2006, 2012) were also adopted. Two more categories that were not mentioned above were added: according to Willis (1996), success and satisfaction are “key factors in sustaining motivations” (p. 14), hence the discourse function compliment. Also, as an examination of the data revealed that the teacher often explained ongoing circumstances verbally to the participants, a discourse function, circumstance clarification, was introduced. For example, the teacher explained that someone was closing a door when the students could hear background noises in SL. In total, 19 discourse functions within 13 main categories were used in this study.

**Table 2. Teacher Discourse Function Categories, from Sotillo (2000)**

<table>
<thead>
<tr>
<th>Main categories</th>
<th>Subcategories</th>
<th>Examples</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 Greeting</td>
<td></td>
<td>“good afternoon, Mr. S8.”</td>
</tr>
<tr>
<td>2 Topic initia</td>
<td>ti</td>
<td>“the main business today is going to be, um, you doing your first assessment, me giving feedback on it.”</td>
</tr>
<tr>
<td>3 Directive</td>
<td>General</td>
<td>“ok, guys, off you go. talk to each other”</td>
</tr>
<tr>
<td>4</td>
<td>Directed</td>
<td>“yeah, go on, Ms S10”</td>
</tr>
<tr>
<td>5 Question</td>
<td>General</td>
<td>“is there anything else you wanna know”</td>
</tr>
<tr>
<td>6</td>
<td>Directed</td>
<td>“Ms S9 are you with us?”</td>
</tr>
<tr>
<td>7 Response</td>
<td>Elaboration</td>
<td>“in Saudi Arabia, I was there for about for about two years, it was from late 1989 until the middle of 1991. ( ) when I was so I- I got there and the invasion of Kuwait was the the summer of&quot;</td>
</tr>
</tbody>
</table>
8. Explanation  "I taught this kid for oh about four or five months in my second year."
9. Apology  "I’m sorry I shalln’t I won’t put you on the spot like that."
10. Agreement  "yeah the- the first one is- is the right answer."
11. Back-channeling  "yeah"; “ok”
12. Off topic  "I see Ms S11 has got a new ummm a new avatar name?”
13. Topic shift  “the director of the engineering development department has talked about umm <a small contract umm in Barcelona or a large contract in Indian Nepal.>”
14. Correction  “one of the problems I had with what you said Ms S10 was I don’t agree with you, ‘cause the problem is- with that is a little bit umm too direct.”
15. Closing  “you can take off your role-play hats now and I’ll put on my teacher hat. umm thank you very much I’ve got enough- plenty of information now on which to make a judgment.”
16. Extensive pausing  “would you like to say hi to us (5.0) not yet”
17. Leave taking  “I’ll see you later.”
18. Compliment  “you did a really good job here.”
19. Circumstance clarification  “we’ve got two people we haven’t haven’t met- we haven’t linked up with yet.”

The number of tokens of each discourse function was calculated for each task phase to provide an overview of the strategies used by the teacher in the three task phases.

Thirdly, to detect teacher roles, especially the prominent teacher role(s) in each task phase, every token of every discourse function employed by the teacher in each task phase was further classified into one of these six groups: monitor, motivator, language guide, task supporter, technical role, and social role. The classification was based on which teacher role a token realized in a specific context. The six teacher roles in the context of this study and the correlation to discourse functions in Table 2 are explained below.

The monitor role concerns setting up activities, introducing topics, keeping students on task, and triggering task processes. The topic initiation (category 2) is an example of the monitor role. The motivator role points to motivating students in general or a specific student to participate. Directed question (category 6) is a typical example of motivating a specific student to participate. The language guide role means providing language input, commenting on student language performance, and correcting students’ language errors, which is illustrated by correction (category 14). The task supporter role, as demonstrated by elaboration (category 7), mainly deals with providing interactive support, i.e. task-related information, so that the students can finish their tasks, especially when a task faces a breakdown. The technical role refers to testing technology such as checking whether the students’ audio is working, providing technical guidance, and explaining things that are difficult for the students to notice or know due to the complexity of the environment. The teacher provided technical guidance by directed directive (category 6). The remaining teacher role, the social role, covers establishing social cohesion with
students, as shown by greeting (category 1) and compliment (category 18).

The data from the teacher interview was analyzed to find further evidence on the number of turns produced by the teacher and the students, the discourse functions in the teacher’s turns, and the roles that the teacher played.

RESULTS AND DISCUSSION

The Number of Turns in Three Task Phases

The number of turns produced by the teacher and the students is represented for each task phase with the aim to see whether the students were actively involved and whether the teacher gave turns to the students, especially in the during-task phase.

As suggested by Willis (1996), a teacher is expected to allow students to play an important role in the during-task phase. This study generates similar findings, as shown in Figure 2. It is important to stress that the lengths of the task phases differ.

![Figure 2. Total number of turns by the teacher and the students in each task phase.](attachment:image)

As Figure 2 indicates, the increased number of student-produced turns in the during-task phase reflects that this task phase indeed centered on student output, and that the role-play in this course motivated student participation. Furthermore, the lower number of the teacher-produced turns in the during-task phase implies that the teacher did not occupy many turns when intervening (cf. Van Avermaet et al., 2006). Finally, the varying number of teacher turns in the three task phases suggests that the roles played by the teacher changed in these phases.

It is worth noting that the teacher and the students had nearly the same number of turns in the pre-task and post-task phases regardless of the difference in length of the phases. Nevertheless, the transcript showed that in the shorter post-task phase, the student turns were shorter, unlike in the other two task phases. This can be explained by the fact that in this phase the teacher gave detailed feedback on the students’ performance while the students mostly acknowledged their understanding, resulting in a significant amount of teacher language output time. A typical example of this is given in Extract 1. For all extracts, the captions show the task phase, the activity name, and the time (minute.second) the exchanges started and ended in the specific activities. Note that all the extracts reflect authentic communication and can contain slips.
Extract 1. (the post-task phase, role-play assessment feedback, 0.27–1.33)

→ T: [...] you were very very polite and very nice, [...] but you didn’t ummm take over the conversation and dominate it as did both Ms S5 and Mr S8 umm at different points in the conversation, so don’t be afraid of saying in a meeting like this when people are talking spontaneously. don’t be afraid of umm going through and saying >ok, now, hold on a minute, I’ve got something to say here. umm I’ve got a point to make I’ve got a contribution to make< umm, ‘cause if you keep waiting for your turn it- your turn will never come. [...] ok? Ms S3?

S3: yeah, I see.

Importantly, corroborating Willis’ (1996) point, the teacher explained to S3 how to take turns. S3 was an inactive student in the role-play assessment, thus it has been postulated that the teacher’s detailed instruction would help S3 realize the importance of obtaining turns and how she could do so.

The increased number of student-produced turns in the during-task phase and the teacher’s feedback to S3 in Extract 1 was consistent with the findings in the teacher interview. Regarding student participation, the teacher commented that in general all the students were active. The teacher also mentioned that he made it clear to the students that they had to learn how to intervene rather than wait for others to hand the floor over to them.

The following section discusses the discourse functions employed by the teacher to facilitate student participation in each task phase, aiming at showing the frequency of the teacher-employed discourse functions and the differences in the frequency of discourse functions.

Discourse Functions in the Three Task Phases

Number and Distribution

In three task phases, the teacher used a total of 299 tokens of discourse functions: 185 in the pre-task phase (30.36 minutes), 77 in the longer during-task phase (39.36 minutes), and 37 in the much shorter post-task phase (14.53 minutes). Figure 3 shows the raw frequency of the discourse functions used by the teacher in the three task phases.

![Figure 3](image-url)  
*Figure 3*. Frequency of discourse functions in each task phase.
Regarding the tokens of the discourse functions, it can be inferred that no direct connection exists between the length of a task phase and the number of tokens of the discourse functions used by the teacher. The pre-task phase has the largest number of tokens of discourse functions (185) even though it is not the longest (30.36), which implies that the teacher language output is of particular significance at the beginning of TBLT (cf. Ellis, 2003). By contrast, the number of tokens of discourse functions (77) in the during-task phase, which is the longest (39.36), is less than half of the number in the pre-task phase. The explanation is that the teacher only participated in this task phase when intervention was needed.

Types and Frequency

Concerning the types of discourse functions, two tendencies are found. First, compared with the pre-task and during-task phases, fewer types of discourse functions are used in the post-task phase. One reason for this is likely to be the shorter length of this phase. However, as the purpose of this task phase is simply providing teacher feedback (Willis, 1996), and also considering the significant amount of teacher language output time, this result would possibly be the same if the teacher had allocated more time to this task phase. This is further supported by the tendency above that no direct connection seems to exist between the transcribed time and the total number of tokens.

Second, the task phases, as displayed in Figure 3, differ when it comes to the predominant discourse functions. For instance, directed question (category 6), remains the most frequent discourse function in the pre-task and during-task phases, while, not surprisingly, correction (category 14), is the most prominent discourse function in the post-task phase (cf. Willis, 1996), pointing to the teacher’s language guide role in the post-task phase. Correction is negligibly used in the pre-task and during-task phases (cf. Willis, 1996). It is also worth mentioning that the teacher used directed question more frequently than general question. This suggests that the teacher might be compensating for the lack of body language, such as pointing to a certain student in SL, by explicitly directing questions to students (cf. Wigham & Chanier, 2013a). Furthermore, circumstance clarification (category 19) and greeting (category 1) are among the prominent discourse functions in the pre-task phase, but they are only marginally used in the during-task phase and are not used at all in the post-task phase. The reason is that the teacher used circumstance clarification to explain certain events in SL to the students such as a student avatar turning up late. As the teacher stated in the interview, he had to be mentally and physically alert because the students had no prior experience of SL and there was too much happening in this learning environment. While circumstance clarification was needed to facilitate student participation in the pre-task phase, it became unnecessary when students got used to the SL environment in the two later task phases. The same applies to greeting, which was helpful to recognize the presence of the students in the complex virtual environment (cf. Cooke-Plagwitz, 2008) and to establish a social cohesion (Peterson, 2006, 2012) in the pre-task phase, but was redundant in the other two task phases when participants had already met each other. The prominent use of circumstance clarification and greeting indicates that the teacher played significant technical and social roles in the pre-task phase. As regards another difference, back-channeling (category 11) is prominently used in the first two task phases, but not in the post-task phase. The nonexistence of back-channeling in the post-task phase can again be explained by the fact that the teacher language output comprised giving detailed feedback while the students acknowledged understanding by use of back-channeling (see Extract 1).

Figure 3 also generates different findings to previous research. In contrast to Peterson’s (2006, 2012) findings, leave taking (category 17) is only used marginally by the teacher in the during-task phase, and apology is only used in the pre-task phase once. The reason is likely to be that Peterson’s studies center on student interaction while this present study focuses on the teacher facilitating student participation. However, the results shown in Figure 3 are similar to Sotillo’s (2000) study in that topic initiation (category 2) is used by the teacher throughout all three task phases. Similar to Walsh’s (2011) finding, extensive pausing (category 16) is used in all the task phases, which indicates that the teacher often tried to give turns to the students, motivating students to participate.
The different types and tokens of the discourse functions employed by the teacher in the three task phases indicate that the teacher roles that predominate differ in each task phase. However, it cannot be claimed that a certain teacher role is the most prominent one in a task phase on the basis of the distribution of discourse functions alone, since the same type of discourse function can realize different teacher roles in different contexts.

**Teacher Roles in the Three Task Phases**

In order to have more accurate findings, every token of the discourse functions was further classified into one of these teacher roles: monitor, motivator, language guide, task supporter, technical role, or social role, depending on the teacher role realized by the token in a specific context in a task phase, as shown in C1–C3 (see Appendix C).

This study considers how often the teacher performed a certain role in each task phase rather than the time the teacher devoted to a certain role. It is found that there is only one type of discourse function, greeting, which could realize two teacher roles simultaneously in some contexts, since greeting as a signal of politeness could realize the social role. However, when the teacher made his purpose for using it explicit, i.e. testing a student’s audio, the teacher role realized by the greeting was judged to be confined to one role. Extract 2 is a typical instance.

**Extract 2.** (the pre-task phase, the technical check-up activity, 2.40–2.45)

→ T: […] Ms S9, how- hi, how are you? would you like to say something to me so that I can hear that your voice’s working?

In this case, the token “Ms S9, how- hi, how are you?” was classified only as the technical role, as were other similar tokens of greeting in such contexts.

The sections below reveal the teacher roles in the three different task phases, focusing on the prominent teacher role(s) in each task phase with an attempt to see if the teacher roles changed during the task phases, as suggested by Willis (1996). The roles are shown in descending order of frequency in Figures 4–6. The similarities and differences in the teacher roles in the three task phases are also discussed.

**Teacher Roles in the Pre-Task Phase**

The results in Figure 4 show that the prominent teacher roles in this task phase are different to the prominent teacher roles, those of monitor, motivator, and language guide, proposed by previous research (cf. Hampel, 2006; Van Avermaet et al., 2006; Willis, 1996).

![Figure 4](image-url)  
*Figure 4. Teacher roles in the pre-task phase.*
In the SL course examined, the most prominent teacher roles are the technical role and the social role. It can thus be argued that these findings mirror some characteristics of the learning context in SL, i.e. technical complexity, such as the multi-communication modes and the limited body language. This places demands on the teacher, for example, to eliminate technical problems (cf. Wang et al., 2013), establish a relaxed, social communicative environment (cf. Berge, 1995), and, especially, to create social cohesion with the students. The teacher’s prominent technical role in this phase was consistent with the teacher’s response in the interview that there were a few technical problems at the beginning of the course. If the teacher solved the technical issues arising in/ caused by SL, the frequency of his technical role should be reduced in the two later task phases (compare the frequency of the technical role in Figures 4–6). It is also worth noting that in Appendix C1, the number of discourse function types (greeting, directed directive, directed question, elaboration, explanation, and circumstance clarification), which are used to realize the technical role, is the highest of the number of discourse functions types used to realize all the six teacher roles. This further points to the fact that the teacher used different discourse functions to realize one role and also highlights the importance of a teacher’s technical support in SL to remedy the negative impact of technology on student participation.

In contrast to claims by Hampel (2006) and Van Avermaet et al. (2006), the language guide role is not significant in the pre-task phase. This is because the teacher focused on motivating the students to find the relevant ‘useful language’ by themselves.

**Extract 3.** (the pre-task phase, the ‘useful language’ activity, 1.03–1.22)

→ T: right then guys, um question is do you remember how- what you have to do if you wanna agree with someone? […] Ms S5, I think that Finland is one of the umm most beautiful countries in the world. and you wanna agree with me, so what you gonna say=

S5: =you are right- you are right T I think so too. it’s like the most beautiful country in the world=

In Extract 3 the teacher played the role of a motivator by motivating the whole class to recall how to show agreement and encouraging S5 to respond. Although the language guide role is unexpectedly infrequent when compared to the findings of Willis (1996), the teacher still provided students with some language input:

**Extract 4.** (the pre-task phase, the ‘useful language’ activity, 3.27–3.50)

→ T: […] whenever you need to say something negative, the magic words I’m afraid are always a good one to use. ‘cause the difference between saying >I don’t agree with you<, and >I’m afraid I don’t agree with you<, is that the first one sounds really really arrogant. […]

The study also generates findings similar to previous research. The teacher frequently played the role of a monitor (cf. Raith & Hegelheimer, 2010; Willis, 1996) and motivator (cf. Van Avermaet et al., 2006; Willis, 1996). The findings suggest that apart from the predominant technical and social roles that resulted from the specific learning context, the teacher monitored the activities and motivated the students to participate.

**Teacher Roles in the During-Task Phase**

In this task phase (see Figure 5), the most prominent teacher role is that of a motivator, a finding that differs from previous studies (cf. Raith & Hegelheimer, 2010; Van Avermaet et al., 2006), which report that teachers play a significant role as task supporter in this stage.
Motivating participation was constantly done by the teacher from the pre-task phase to the during-task phase as seen in the discourse types in Appendix C. These are general directive, general question, directed question, and extensive pause in Appendix C1, and directed directive, general question, directed question, topic shift, and extensive pausing in Appendix C2. The teacher motivated both the students in general and specific inactive students to participate in the pre-task phase. In the during-task phase, the teacher focused on motivating a few inactive students even in the role-play assessment activity where the teacher was supposed to be silent. This finding was consistent with the teacher’s comment on student participation in the interview: there were a few inactive students in the role-play activities. Therefore, motivating inactive students can be claimed as the sole reason for the teacher’s intervention in the two role-play activities, as illustrated in Extract 5.

Extract 5. (the during-task phase, the role-play assessment activity, 10.33–11.51)

→ T: [...] I’ve been asked by the sales director to sit here and observe what’s going on. [...] the director of the engineering development department has talked about umm <a small contract umm in Barcelona or a large contract in Indian Nepal.> umm which one are we talking about here? are we are we talking about going for the- for the- the small or the large one? (3.0) the director of the engineering development department can tell us about that.

(3.0)
S3: umm yeah I think I think erm depend on the world bank project we can erm sell it in the less development world and it is a majority, [...]
Extract 6. (the pre-task phase, the group discussion activity, 5.32–6.56)

S16: [...] does somebody know how long he was teaching them? [...]  
S14: no.  
S1: I haven’t heard that. 
S16: um 
(28.0) 
→ T: hi guys umm I can help you with that- [...] I taught this kid for oh about four or five months in my second year. [...] 

In this task phase, the teacher continued playing a social role to establish a friendly and supportive atmosphere even in the student output-oriented activities. However, the technical role in this task phase is marginal. The reason could be that the teacher solved the technical problems in the pre-task phase, so the students could conduct smooth communication in this task phase without much negative impact from technology. Similarly, the language guide role only occurred once in this task phase, supporting Willis’ (1996) suggestion that teachers should not correct students’ errors in this phase.

Teacher Roles in the Post-Task Phase

In this task phase, the most prominent teacher role is a language guide, which is the same as Willis’s (1996) point that the teacher is a language guide in post-task feedback. Figure 6 shows the teacher roles in this task phase.

Figure 6. Teacher roles in the post-task phase.

The teacher still played a comparatively prominent motivator role by using discourse types (directed question and extensive pausing), and had two equal roles in this task phase, those of a monitor and social role as seen in Appendix C3. However, two teacher roles, technical role and task supporter are completely missing from this task phase. The post-task phase in this study only consisted of the teacher feedback while the students did not perform any activity, hence no need for a task supporter role. The missing technical role indicates that the teacher solved the students’ technical problems in the pre-task and during-task phases in the course.

Similarities and Differences between the Teacher Roles

The above analyses show some similarities in the teacher roles in the three task phases—the teacher consistently played four roles throughout the three task phases: monitor role, motivator role, language guide role, and social role. The teacher spent much effort motivating students to participate (cf. Van
Avermaet et al., 2006) and monitoring the students’ activities to keep them on task. Moreover, the teacher tried to establish a relaxed social communicative environment for the students, especially in the pre-task phase. Furthermore, the teacher also played a conventional language teacher role by providing language input, correcting student language errors, and illustrating the turn-taking rules.

However, the findings in this study also indicate that the teacher roles changed in the different task phases (cf. Willis, 1996), and suggest that the nature of SL has an important influence on the changes. In the pre-task phase, the teacher focused primarily on providing technical support and establishing social cohesion, and secondarily on monitoring the learning activities and motivating student participation. This highlights that the teacher had to deal with technical issues in SL, especially at the beginning of TBLT. Although the teacher continued to play the prominent roles of motivator and monitor in the during-task phase, he also focused a great deal on providing task support. In the last task phase, the prominent teacher role was confined to that of a language guide, while two teacher roles found in the first two task phases were missing: the technical and the task supporter roles.

Corroborating Hampel’s (2006) statement that in an online environment a teacher performs the important role of a facilitator rather than that of a traditional instructor, the teacher in this study used different discourse strategies to realize different teacher roles throughout the TBLT course to facilitate student participation. This finding is consistent with the teacher’s comments on the roles he played in this course. In the interview, the teacher said, “in language teaching terms, I have a very conventional role here [SL] of a language teacher, running and facilitating communicative activities in spoken English”. This reflection indicates the teacher roles in the above findings: “a language teacher” (language guide), “running and facilitating” (monitor, task supporter, technical role, and social role). Hence the teacher was a facilitator in general and supported the students to complete the course in SL.

CONCLUSION

In the context of the first research aim, exploring the discourse functions used by the teacher in the three task phases, the results have shown that the pre-task phase, which is not the longest, has the largest number of discourse function types and tokens. This suggests that teachers should pay special attention to the pre-task phase, especially in complex MUVEs. The teacher under study used the voice chat in SL to perform various discourse functions that influenced student participation positively.

Regarding the second research aim, studying the teacher roles in the three task phases, the main difference found in this study, compared with previous research, is that the teacher played the most prominent technical and social roles in the pre-task phase. This finding suggests that the teachers using MUVEs might need to consider adapting their roles in this type of learning context in ways that can counterbalance the negative impact of technology on student participation and ensure the establishment of a social learning environment especially at the beginning of a language course.

It is hoped that the present study has provided some insights for those interested in applying TBLT in MUVEs or for researchers interested in language education in MUVEs. Given the complexity of this type of environment, this study has shown that teachers need to change their major roles during the different task phases. All of these roles can be realized by using various discourse functions discussed in this paper.

APPENDIX A. Teacher Interview Questions

1. How many times have you taught this course in SL?
2. What is your overall impression of student participation?
3. How would you like to define your roles during this course?
4. What motivated you to use different forms of teaching such as storytelling and lecturing?
5. What motivated you to use the presentation, the role-play, and the group discussion?
6. Were the course activities engaging?
7. Could you specify your evaluation of student participation in the three types of activities (the presentation, the role-play, and the group discussion)?
8. Have you found anything that affected student participation during the course?
9. Did you pay special attention to introduce cultural differences in the course? If so, how and why?
10. Did you encourage students or give students opportunities to discuss cross-cultural issues?

**APPENDIX B. Transcription Glossary** (Adapted from Hutchby & Wooffitt, 2008, p. x-xii, based on transcription conventions developed by Gail Jefferson)

(1.0) The number in parentheses indicates a time gap in tenths of a second
a::: The number of colons indicates the degree to which the prior syllable is prolonged
= The equal sign indicates latching between utterances
[ ] Square brackets indicate the onset and end of a spate of overlapping talk
( ) Empty parenthesis indicates the presence of unclear fragment in the recording
. A full stop indicates a falling tone
, A comma indicates a continuous tone
? A question mark indicates a rising tone
**under** Underlined fragment indicates the speaker’s emphasis
yeah- The short dash indicates a ‘cut off’ of the prior word or sound
> < The utterance within is delivered quicker than the surrounding talk
< > The utterance within is delivered slower than the surrounding talk
→ Arrows in the left margin point to the specific part of an example under discussion

**APPENDIX C. Discourse Functions Contributing to the Teacher Roles in Each Task Phase**

**C1. Discourse Functions Contributing to the Teacher Roles in the Pre-Task Phase**

<table>
<thead>
<tr>
<th>Discourse function</th>
<th>Monitor</th>
<th>Motivator</th>
<th>Language guide</th>
<th>Task supporter</th>
<th>Technical role</th>
<th>Social role</th>
</tr>
</thead>
<tbody>
<tr>
<td>Greeting</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>6</td>
<td>9</td>
</tr>
<tr>
<td>Topic initiation</td>
<td>10</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>General directive</td>
<td>5</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Directed directive</td>
<td>14</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>5</td>
<td>0</td>
</tr>
<tr>
<td>General question</td>
<td>2</td>
<td>3</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>Directed question</td>
<td>2</td>
<td>10</td>
<td>0</td>
<td>0</td>
<td>10</td>
<td>0</td>
</tr>
</tbody>
</table>
Elaboration & Explanation

<table>
<thead>
<tr>
<th>Discourse function</th>
<th>Monitor</th>
<th>Motivator</th>
<th>Language guide</th>
<th>Task supporter</th>
<th>Technical role</th>
<th>Social role</th>
</tr>
</thead>
<tbody>
<tr>
<td>Greeting</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>Topic initiation</td>
<td>4</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>General directive</td>
<td>8</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Directed directive</td>
<td>2</td>
<td>2</td>
<td>0</td>
<td>2</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>General question</td>
<td>3</td>
<td>1</td>
<td>0</td>
<td>1</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Directed question</td>
<td>0</td>
<td>8</td>
<td>0</td>
<td>2</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Elaboration</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>5</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Explanation</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>9</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Agreement</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>Back-channeling</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>8</td>
</tr>
<tr>
<td>Topic shift</td>
<td>1</td>
<td>3</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Correction</td>
<td>0</td>
<td>0</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Closing</td>
<td>2</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Extensive pausing</td>
<td>0</td>
<td>7</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Leave taking</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>4</td>
</tr>
<tr>
<td>Circumstance clarification</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>2</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td><strong>Sum</strong></td>
<td><strong>20</strong></td>
<td><strong>21</strong></td>
<td><strong>1</strong></td>
<td><strong>19</strong></td>
<td><strong>2</strong></td>
<td><strong>14</strong></td>
</tr>
</tbody>
</table>
C3. Discourse Functions Contributing to the Teacher Roles in the Post-Task Phase

<table>
<thead>
<tr>
<th>Discourse function</th>
<th>Monitor</th>
<th>Motivator</th>
<th>Language guide</th>
<th>Task supporter</th>
<th>Technical role</th>
<th>Social role</th>
</tr>
</thead>
<tbody>
<tr>
<td>Topic initiation</td>
<td>4</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>General directive</td>
<td>0</td>
<td>0</td>
<td>2</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Directed directive</td>
<td>0</td>
<td>0</td>
<td>2</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Directed question</td>
<td>0</td>
<td>6</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Explanation</td>
<td>0</td>
<td>0</td>
<td>4</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Back-channeling</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>Off topic</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>Topic shift</td>
<td>3</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Correction</td>
<td>0</td>
<td>0</td>
<td>7</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Extensive pausing</td>
<td>0</td>
<td>2</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Compliment</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>5</td>
</tr>
<tr>
<td>Sum</td>
<td>7</td>
<td>8</td>
<td>15</td>
<td>0</td>
<td>0</td>
<td>7</td>
</tr>
</tbody>
</table>

ABOUT THE AUTHOR

Airong Wang, doctoral student, specializes in English Didactics at Mid Sweden University, Sweden. She received her MA in Foreign Linguistics and Applied Linguistics: Translation Theory and Practice from Xi’an Jiaotong University in China. Her current research focuses on language teaching and learning in Multi-user Virtual Environments.

E-mail: airong.wang@miun.se

REFERENCES


