

A situation creation system to enable experiential learning in virtual worlds for developing cross-cultural competencies

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Abstract. The emergence of virtual worlds and simulation games provide ample opportunities for developing cultural competence by offering a visual, contextual, immersive, and interactive experience. Learners can benefit from contextual interactions and develop cultural competencies by fulfilling quests or exploring the environment. However, most of the existing systems contain few pre-designed scenarios, inadequate for covering unique aspects of different cultures. This study introduces a situation creation toolkit for teachers and learners to design their culture-specific scenarios in a 3D environment and share it with others to experience such situations. In a preliminary experiment, 37 English learners with different cultural backgrounds created a scenario, specific to their culture, and provided proper/improper communicative choices as well as cultural-related notes. Scenarios were then exchanged to those of different cultures for role-playing and decision-making. Results highlighted the influence of L1 culture and stereotyping when facing an unfamiliar cultural context, thus leading to culturally unacceptable behavior. Findings suggest that through real-life scenario design and experience, our platform can prepare learners to interact in culturally appropriate ways and encourages them to gain cross-cultural competence.

Keywords: intelligent situation creation tool, cross-cultural competence, experiential and situated learning, virtual worlds.

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1. Introduction

When it comes to learning and using a foreign language, it is necessary to consider intercultural awareness for realizing smooth interactions. In today's global society not only the knowledge of the target culture, but also a certain level of cross-cultural awareness is necessary when interacting with people of other cultures, using a foreign language (Byram & Wagner, 2018). The language barrier itself may result in odd situations, including miscommunication or misunderstandings, and the cultural differences can exacerbate the situation (Liddicoat, 2014).

A number of tools are developed in language learning domains to teach cultural norms and culture-specific behaviors. *Tactical Iraqi* (Surface, Dierdorff, & Watson, 2007) is one such project, which is a game designed to teach Arabic to soldiers deployed in Iraq. *Crystallize* (Culbertson et al., 2016) is another 3D simulation game to teach greetings in Japanese, which combines gaming strategies and immersive experiences to realize an engaging learning environment.

While these systems have a lot of potential, they are mostly scenario-oriented, where scenarios are pre-designed and programmed into the system. Such systems are not easily extendible, and their scenarios are not plentiful. Creative systems such as *Minecraft* and *Google Blocks*, on the other hand, enable creating 3D objects and environments, but lack contextual interaction and situation creation capabilities to realize embodied cultural practice.

We propose a situation creation toolkit that allows learners and teachers to create cultural scenarios in a 3D virtual world, designing culturally relevant interactions performed by embodied agents and providing elaborated cultural notes. Users can introduce numerous scenarios representing culture-specific communications, build branches by adding alternative interactions, and share the designed environment with learners of other cultures. These learners can explore the situation, play the role of one character, pick a choice to interact with the other characters, and learn from culture. Figure 1 shows the creation procedure of a cultural scenario using our tool, the output of the system, and the usage of the created scenario by another learner.

This system allows for situated and experiential learning (Peixoto et al., 2019), where learners can actively participate in the learning process, feel immersed in the situation, get hands-on learning experience, and learn from reflection on their actions.

Figure 1. Scenario creation (left), system output (middle), and role-play (right) using situation creation toolkit



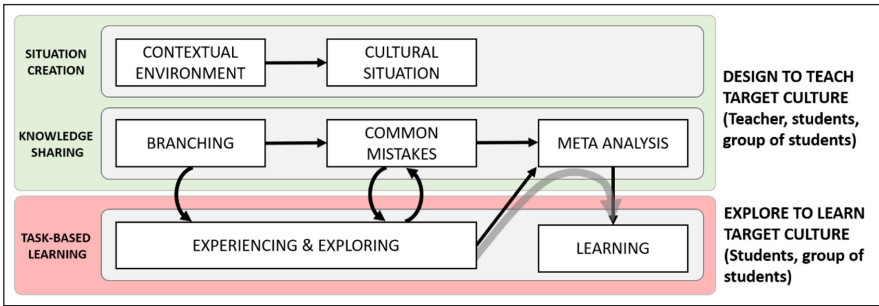
2. System design and methodology

Our goal was to design a system for non-professionals which facilitates content creation and enables exposure to cultural contexts. Features of this system include the addition of characters to the scene, controlling the movement of the characters and assigning appropriate actions to them, adding dialogues and narrations, providing first-person or third-person views, handling camera movement, storing cultural hints, and presenting them when necessary, enabling the insertion of dialogue/action choices to create branches of the scenario, and managing object interactions. The system is designed in Unity3D, with a rich reservoir of scenes, characters, animations, and objects. The output can be projected onto a 2D monitor or virtual reality head-mount display for a fully immersive practice. This tool allows the learner to use natural language for inputting scenarios and provides them with deft tools to organize the settings of the scene. Furthermore, the system can automatically handle the characters, camera movement, character actions, and animations.

To use this system, we propose a two-phase methodology of *content creation* and *exploratory role-play* (Figure 2). The first phase involves (1) brainstorming to find particular cultural situations in one's background culture, (2) designing this situation in a 3D environment using our proposed toolkit, (3) listing possible culturally-acceptable behaviors in the given situation, (4) listing common mistakes due to lack of cultural knowledge and their outcomes, named as branches, and (5) providing brief and simple explanations regarding the cultural points involved. The teacher assists the students, monitors the generated content, and selects the scenarios to be shared with other learners from a different culture. In the second phase, learners (1) participate in role-playing in the situation designed by their

peers, (2) navigate the interaction by choosing the appropriate choices, (3) reflect on their reasoning, expectation, and the actual outcome, (4) explore the cultural perspectives, and (5) revisit their choices, if necessary.

Figure 2. The methodology to use the system as a medium for cultural practice



3. Preliminary evaluation and discussion

A preliminary experiment was conducted with 37 English learners (graduates and undergraduates) with different cultural backgrounds (aged 19-27). They participated in scenario creation and role-play, using our system. This small-scale experiment investigates the acceptability, affordance, and effectiveness of the system in raising cross-cultural awareness. Following our methodology, learners were asked to create specific situations taking place in their background culture. A CALL researcher selects scenarios and distributes them to the learners for role-playing and choice selection. Learners' cultural backgrounds are considered to ensure that they receive a scenario of an unfamiliar culture. The participants were asked to elaborate on their reasoning when selecting communicative choices. A Likert scale questionnaire was used to elicit learner feedback.

Figure 3 shows the analysis of participants' choices in the role-play. We categorized their reasons based on the explanations provided. Data suggests that only 18.9% of the participants were able to choose the culturally-acceptable behavior in the given situation, with only 2.7% of them having prior knowledge about the cultural situation. A large number of the participants (32.5%) were applying their L1 cultural norms to that situation, which led to incorrect choices.

Figure 4 demonstrates learner feedback from a questionnaire. Results suggest that learners find the system effective in designing real-life cultural scenarios (Q9-

Q11), and experiencing cultural situations by feeling involved in the scenario (Q12-Q15). Participants enjoyed embodied cultural practice (Q16-Q17) and found this medium useful for understanding cultural differences (Q1-Q3) and learning discrete cultural points (Q4-Q8). Moreover, learners expressed their motivation to explore other cultures as well as sharing particular aspects of their own culture in a meaningful interaction (Q18-19).

Figure 3. Correct choices during role-play (red) versus incorrect choices (blue) and the selection reasons

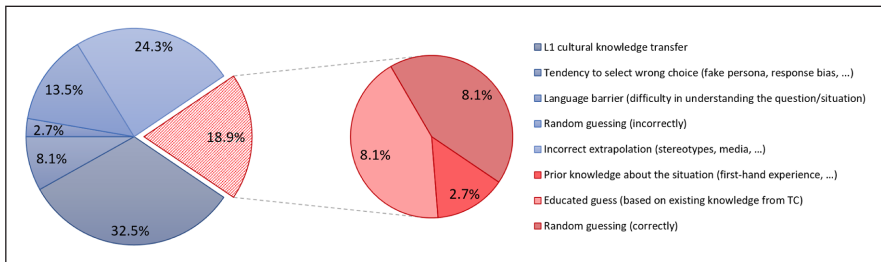
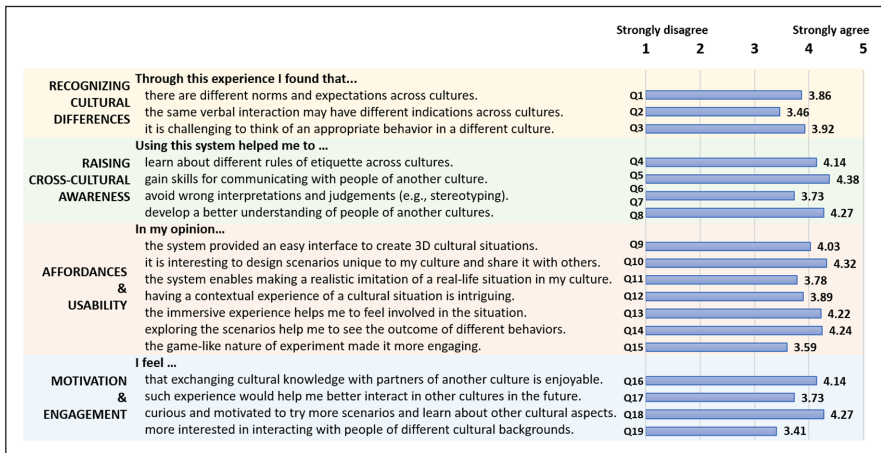


Figure 4. Learner feedback on the effectiveness and affordances of the system using a questionnaire



The findings provide initial support on the use of our system in fostering cross-cultural awareness. Learner feedback shows that the learners benefited from experiential learning, realized in our platform, and claimed that the scenarios inspired them to raise questions about unfamiliar cultural norms and seek the

answers. This, coupled with involving students in the creation and role-play process, can promote learner autonomy and provide a learner-centered experience (Lan, 2020). While more comprehensive evaluation is necessary, current findings highlight the lack of cross-cultural knowledge, the influence of stereotyping, and the need for prioritizing intercultural language teaching.

4. Conclusions

We introduced a tool that enables the creation of a wide variety of contextual situations and authentic conversations in different cultures, via an easy-to-use interface. Learners can play the role in the designed scenarios, aiming to realize culturally-acceptable interactions. Our findings revealed that the immersive experience fosters the improvement of cross-cultural competence through exposure to authentic cultural situations. Learners' feedback showed that they particularly enjoyed the hands-on experience provided by the system and the participative nature of cultural scenario creation, exploration, and practice. Future direction involves the extension of this platform to support real-time communication in a multiplayer environment where learners of different cultures can join the creation and role-play process to promote multiculturalism.

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References

- Byram, M., & Wagner, M. (2018). Making a difference: language teaching for intercultural and international dialogue. *Foreign Language Annals*, 51(1), 140-151. <https://doi.org/10.1111/flan.12319>
- Culbertson, G., Andersen, E., White, W., Zhang, D., & Jung, M. (2016). Crystallize: an immersive, collaborative game for second language learning. In *Proceedings of the 19th ACM Conference on Computer-Supported Cooperative Work & Social Computing* (pp. 636-647). <https://doi.org/10.1145/2818048.2820020>
- Lan, Y. J. (2020). Immersion, interaction and experience-oriented learning: bringing virtual reality into FL learning. *Language Learning & Technology*, 24(1), 1-15. <http://hdl.handle.net/10125/44704>

- Liddicoat, A. J. (2014). Pragmatics and intercultural mediation in intercultural language learning. *Intercultural Pragmatics*, 11(2), 259-277. <https://doi.org/10.1515/ip-2014-0011>
- Peixoto, B., Pinto, D., Krassmann, A., Melo, M., Cabral, L., & Bessa, M. (2019). Using virtual reality tools for teaching foreign languages. In *World Conference on Information Systems and Technologies* (pp. 581-588). Springer. https://doi.org/10.1007/978-3-030-16187-3_56
- Surface, E. A., Dierdorff, E. C., & Watson, A. (2007). *Special operations language training software measurement of effectiveness study: tactical Iraqi study final report*. Special Operations Forces Language Office.

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