***Design and Evaluation of an Online Educational Game for the Development of
Communication and Response Skills in the Service Industry***

Yen-Ting Ho, National Taiwan University of Science and Technology, Taiwan
Huei-Tse Hou, National Taiwan University of Science and Technology, Taiwan

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**Abstract**
The service industry has the closest contact with people, and frontline service personnel usually need to face all customer's problems. In response to the post-epidemic learning trend, many service industry training has started using distance learning. Online learning is more challenging to create a sense of the context of a real situation to arouse learners' motivation. This study used Gather Town to build a virtual learning space for a travel agency, combines the interaction mechanism of Google Form to simulate the communication and interaction in the service process, and designs an educational game called "Difficult Customers" The game integrates realistic interaction and video guidance, and learners can solve travelers' problems step by step through video situations and menu choices. In this study, 8 participants were recruited openly, and a preliminary empirical study was conducted to investigate the flow state, anxiety, and game acceptance of learners in the game. According to the analysis of the study, the overall anxiety of the learners averaged 1.91, which was significantly lower than 3 (the median of the five-point Likert scale), indicating that this game mechanism did not cause anxiety in the learners. And the overall flow of the learners after the game reached 4.15, which was significantly higher than 3. This indicates that the game design mechanism can effectively improve the flow of the learners. Furthermore, the learner's acceptance of the game was above 4, indicating that the learner agrees that the game mechanism can help the service industry train communication skills and adaptability.


Keywords: Online Educational Game, Communication and Response Skills, Adaptability, Game Acceptance

**Introduction**

As learning styles change in the post-pandemic era, many training courses are being conducted online teaching. As a result, educational institutions are constantly looking for ways to improve students' ability to acquire knowledge (Mackavey & Cron, 2019). The ability to create an authentic learning experience environment is one of the critical factors in online teaching and learning (Serfozo et at., 2022). In addition, previous studies found that easy-to-use and easy-to-learn tools or learning platforms increase learners' motivation and engagement (Maskun et at., 2020; Domina et at., 2021). This research uses Gather Town and Google Forms to design an online educational game that builds communication and responsiveness in the service industry; allowing learners to have a realistic simulated spatial environment and use their familiar online forms to learn reduces their learning anxiety and increases their learning effectiveness and engagement. Whitton and Langan (2019) indicated that gamification is an engaging teaching method that reduces learners' learning anxiety and facilitates learning experience and knowledge acquisition. Gamification may increase learners' motivation and engagement, reduce anxiety, and generate flow, thus improving learning effectiveness. The prerequisite for success in the service industry is communication and response skills. This game uses the online meeting software Gather Town to design a scenario of a travel agency office, including the reception room, group department, ticket department, general manager room, and conference room. Learners are exposed to the process and objectives of the activity in the activity explanation and find clues in the travel agency scene. Learners then look for various tips in different departments. Through different prompts, learners can learn the service industry's communication and response skills, watch the conversations with NPCs to collect relevant information, interact with customers and resolve customer complaints in Google Forms. The learning objectives of this research are to acquire knowledge of communication and response skills through traveler's feedback and NPCs problem-solving and to develop communication and response skills and situational analysis skills through problem-solving contexts.

**Research purposes and questions**

This study designed "Difficult Customers", a contextual game design using Gather Town and Google Form interactive mechanism, to allow participants to solve travelers' problems through a dramatic context in a realistic travel agency environment, using realistic online games to reduce learning anxiety and increase learning flow to enhance learning. The research purpose is: To investigate the use of realistic online games to reduce learning anxiety, increase learning flow and improve learning effectiveness. The research question was: What were the learning flow, learning anxiety, and game acceptance of the online service industry communication and response skills game designed in a realistic context?

**Method**

The learners in this study were eight adults (three males and five females) aged 20 years or older in Taiwan through a preliminary case study. Each learner used a personal computer and participated in the " Difficult Customers " activity in their own separate space. This activity uses the Gather Town game platform to set up a realistic travel agency, allowing learners to explore and complete three tasks in the learning space. First, the activity was conducted after informing learners of the activity flow and rules (10 minutes). Then learners were allowed to explore the learning space, observe conversations between NPCs and information provided by various departments, go to the meeting room, talk to customers in the form and complete

the game tasks (40 minutes), as shown in Figure 1. Finally, after completing a task, learners proceeded to the next office, where they could observe the interactive dialogue between the NPCs to analyze the travelers' questions, as shown in Figure 2.

The study refers to the present reference to the flow scale revised by Kiili (2006) and translated by Hou and Li (2014), with 22 questions. The flow scales include two dimensions: flow antecedents and flow experiences. All scales were scored on a five-point Likert scale. The Cronbach's alpha for the internal consistency of the flow scale was 0.801, indicating a high degree of reliability. In terms of assessing learners' game acceptance, this study used Davis' (1989) technology acceptance scale with two dimensions: perceived usefulness and perceived ease-of-use, using a five-point Likert scale. In evaluating learner anxiety, we refer to the Affective Filter Hypothesis developed by Krashen (1981; 1987), the Chinese version of which was adapted by Hong (2001) as the "Learning Experience Scale" and embellished to make the narrative more consistent with this study. The Cronbach's alpha for the internal consistency of the learning anxiety scale was 0.817, indicating that the questionnaire is highly reliable.



Figure 1. Learners use Google Forms to complete tasks
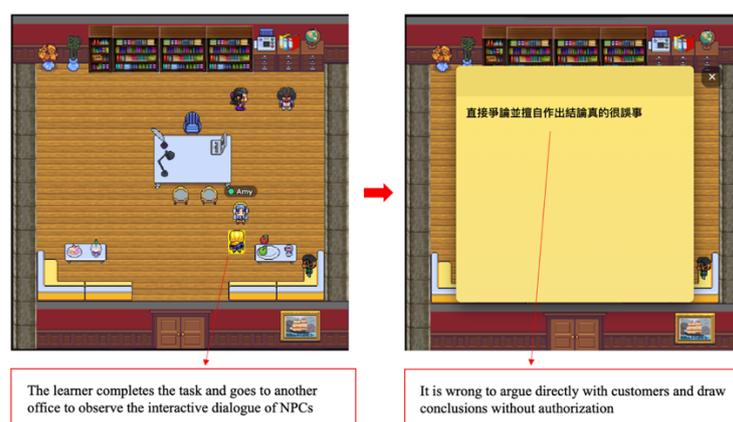in the Gather Town conference room.



Figure 2. Learners complete the task and go to the office to watch
the interactive dialogue of NPCs explaining the task problem.

**Results and Discussions**

In this study, nonparametric statistics analysis was carried out for each dimension. The results of the Mann-Whitney U-test are presented in Table 1, which was overall flow ($M$=4.15, $SD$=0.24) was significantly higher than median 3 on a five-point scale. The mean value of

each dimension in flow antecedents (*M*=4.15, *SD*=0.22) and flow experiences (*M*=4.15, *SD*=0.29) is higher than the median of 3 on the five-point scale. This indicates that the overall game design mechanism, so that learners can clearly understand the purpose of the activity, actively invest in the game and work hard to complete the task, achieve a high degree of flow experience, and then improve the effectiveness of online learning.

**Table 1. *Descriptive Analysis of Flow***

| Dimension | *M* | *SD* | *Z* | *Sig.* |
|---|---|---|---|---|
| **Overall Flow** | 4.15 | 0.24 | 2.52$^{*}$ | 0.012 |
| **Flow antecedents** | 4.15 | 0.22 | 2.53$^{*}$ | 0.012 |
| Challenge-skill balance | 3.81 | 0.37 | 2.57$^{**}$ | 0.010 |
| Goals of an activity | 4.25 | 0.46 | 2.55$^{*}$ | 0.011 |
| Unambiguous feedback | 4.25 | 0.27 | 2.59$^{**}$ | 0.010 |
| Sense of control | 4.06 | 0.32 | 2.59$^{**}$ | 0.010 |
| Action–awareness merging | 4.38 | 0.35 | 2.57$^{**}$ | 0.010 |
| **Flow experiences** | 4.15 | 0.29 | 2.53$^{*}$ | 0.012 |
| Concentration | 4.28 | 0.51 | 2.54$^{*}$ | 0.011 |
| Time distortion | 4.00 | 0.46 | 2.46$^{*}$ | 0.014 |
| Autotelic experience | 4.31 | 0.32 | 2.54$^{*}$ | 0.011 |
| Loss of self-consciousness | 3.69 | 0.26 | 2.60$^{**}$ | 0.009 |

$^{*}p$ <0.05，$^{**}p$ <0.01

Table 2 is the descriptive analysis of game acceptance and learning anxiety. We can know the learners' overall acceptance of the game (*M*=4.19, *SD*=0.63); perceived usefulness (*M*=4.28, *SD*=0.41), and perceived ease-of-use (*M*=4.34, *SD*=0.47) were all higher than the median of 3 in the five-point scale. Furthermore, the overall learning anxiety (*M*=1.91, *SD*=0.53) was lower than the median of 3 on the five-point scale. The results show that the design of this game will not cause learners' learning anxiety, and learners have a high degree of acceptance of this game design. This game is easy to play and helps learners' communication and response skills in the service industry.

**Table 2. *Descriptive Analysis of Game Acceptance and Anxiety***

| Dimension | *M* | *SD* | *Z* | *Sig.* |
|---|---|---|---|---|
| **Overall Acceptance** | 4.19 | 0.33 | 2.53$^{*}$ | 0.012 |
| Perceived Usefulness | 4.28 | 0.41 | 2.59$^{**}$ | 0.010 |
| Perceived Ease-of-use | 4.34 | 0.47 | 2.55$^{*}$ | 0.011 |
| **Overall Learning Anxiety** | 1.91 | 0.53 | -2.53$^{*}$ | 0.012 |

$^{*}p$ <0.05，$^{**}p$ <0.01

## Conclusions

This study developed a realistic online functional training game, "Difficult Customers" to cultivate the communication and response skills of the service industry. It applied the interactive mechanism of Gather Town and Google Form to design a situational simulation

game so that learners can experience real-life situations. In the travel agency situation, students played the role of the service staff of the travel agency. The learners used the computer to participate in the online game; however, they felt they were facing travelers and solving travelers' problems by simulating the information provided by a travel agency and the conversations between NPCs.

Based on the above data analysis of the above data, the learners' flow performance and game acceptance were significantly higher than the scale median. At the same time, their learning anxiety was lower than the median of the scale. It shows that this research uses the online realistic plot design, which can reduce learners' learning anxiety and improve the online learning flow during the learning process. It also shows that learners highly agree with the help of this game in learning communication and response skills knowledge in the service industry. In the future, this study will conduct a quasi-experimental design and increase the study's sample size and compare it with the control group to continue investigating the cognitive scaffolding, game elements, and learning effectiveness of this online game for different learners.

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**Contact email:** hthou@mail.ntust.edu.tw