

## **Design and Preliminary Evaluation of a Psychological Counseling Training Game Using Generative AI Virtual Characters Based on Situational Learning as a Case Study**

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### **Abstract**

The recommended teaching strategy for psychological counseling training involves providing repeated training opportunities; however, the practical cost of implementation is high. Digital virtual simulations and game-based learning are expected to provide highly motivating, repetitive, low-cost training opportunities that are not restricted by time or space. This study employs the situational scaffolding-oriented generative AI virtual characters module developed by our team to design an educational game aimed at training psychological counseling. Players assume the role of a psychological counselor and conduct counseling sessions with AI characters within a limited timeframe, with the goal of eliciting positive responses from the characters. The participants in this study were 19 individuals who had completed the reserve training program in Taiwan. The research findings indicate that participants exhibited high of flow and did not experience excessive anxiety. They found the experience enjoyable and user-friendly, expressing a willingness to repeat the activity. Additionally, qualitative feedback revealed that over half of participants believed the activity aided in understanding empathy skills (56%) and identifying emotional cues (61%). It was also perceived as more simulation than general-purpose GPT models (83%) and more focused on counseling (61%). Preliminary findings suggest, this study designed a generative AI-based psychological counseling training educational game can be used for repeated practice of counseling techniques at low cost, making it suitable as a pre-practice tool before real-person case simulations. Future improvements could include adding learning feedback and scaffolding guidance to enhance the usefulness and realism of the training.

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## Introduction

In recent years, mental health issues such as anxiety, depression, low self-esteem, and interpersonal sensitivity have frequently emerged among college students (Li, 2024). While psychological counseling remains a traditional solution, limitations in clients' subjective feelings and expressive abilities, coupled with variations in counselors' professional skills and conversational techniques, often hinder effective resolution of psychological issues (Li, 2024). In counseling skills training, emphasis is typically placed on teaching counseling techniques and therapeutic methodologies (Lau & Ng, 2014), with less focus on developing soft skills such as empathy or therapeutic presence (Chan et al., 2020). Rogers (1957) research indicates that the core conditions for therapists' interpersonal skills are empathy, congruence, and unconditional positive regard. Cooper et al. (2025) found that young people value empathetic understanding during counseling. Furthermore, in social anxiety interventions for youth, early assessments of facilitator empathy have been shown to correlate with positive counseling outcomes (Brouzos et al., 2014).

Therefore, this study proposes an innovative online digital educational game for psychological counseling training titled *Yuri's Secret Thoughts*. Utilizing Google Sites in conjunction with a scaffolding-oriented GenAI NPC simulation editing module (Chen & Hou, 2024), a simulation counseling education game platform is designed. A virtual character representing a case of low mood is also developed. Learners assume the role of professional counselors, engaging in psychological counseling interactions with the character. The case content draws from diverse everyday events experienced by college students, while also reinforcing the virtual character's personality traits, including negative thinking and pessimistic tendencies. Consequently, during the GenAI counseling process, learners can train themselves to understand and conduct effective counseling with empathy. Simultaneously, this mechanism incorporates scaffolding guidance to enhance counseling trainer effectiveness. The interactive process sets achieving four types of positive feedback from the virtual character as task objectives. Preliminary analysis of this research mechanism is also explored.

## Research Purposes and Questions

The game task in this study involves learners assuming the role of a professional psychological counselor. Within the game, they engage in counseling conversations and provide psychological guidance to Yuri, a GenAI virtual character representing a specific scenario. Yuri is a college student experiencing severe emotional distress. Feeling down by university life and worthless, she has sunk into profound frustrated and seeks help through a counseling hotline. Throughout the counseling process, learners must employ empathy and counseling techniques to guide her, aiming to elicit positive feedback. Thus, this study aims to enhance counselors' communication skills and empathetic understanding through the scenario-based learning experience of *Yuri's Secret Thoughts*.

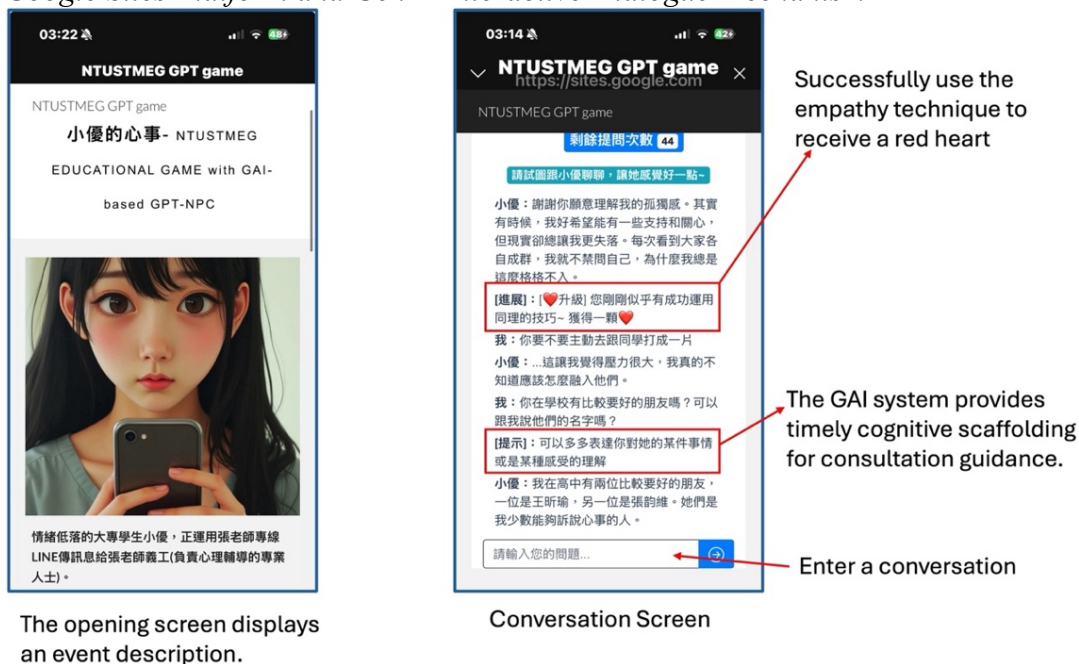
This study employs a plot dialogue interaction mechanism featuring GenAI virtual characters, immersing learners in highly simulation conversational scenarios while engaging them with authentic case events and character immersion experiences. Hou (2015) noted that scenario-based simulation games incorporating contextual learning may enhance learners' metacognitive processes. They can also boost learning motivation and maintain appropriate levels of anxiety, thereby achieving high levels of learning flow.

The research questions are as follows: *What are the learners’ flow, game anxiety, game feedback, and game elements when using a generative AI virtual character grounded in situational learning as the case in a psychological counseling training educational game design?*

### Method

The participants in this study were 18 individuals who had completed the reserve training program offered by Taiwan’s Teacher Chang Foundation. Prior to the assessment, none of the participants had undergone any training courses utilizing the GenAI virtual character interaction mechanism. The activity was conducted via a mobile platform, enabling participants to engage in free-form counseling conversations with GenAI, as illustrated in Figure 1. The left image depicts the game’s initial screen, where learners scan a QR code with their phones to enter the GenAI interaction interface, representing receiving a distress call from the virtual character Yuri, who is feeling down. The right image shows the interaction screen with GenAI, where learners can use voice input to simulate realistic, everyday conversational dialogue. When GenAI determines that responses demonstrate empathetic understanding or positive cognitive guidance, a red heart icon appears instantly. This signifies the learner has achieved a task objective and reinforces cognitive memory. Players can accumulate up to four hearts throughout the game. Success requires obtaining at least two hearts within 20 minutes using no more than 35 utterances. Additionally, the GenAI system provides cognitive scaffolding for counseling communication skills based on conversational context. Finally, a post-test questionnaire is administered, covering flow, anxiety, game feedback, and game elements. The experimental procedure begins with the researcher explaining the activity and testing process (5 minutes), followed by the instructional activity (20 minutes), and concluding with the post-test questionnaire administration (15 minutes).

**Figure 1**  
*Google Sites Platform and GenAI Interactive Dialogue Mechanism*



To investigate learners’ flow during learning activities, this study employed Kiili’s (2006) Flow Questionnaire as the flow assessment tool, translated into Chinese by domestic scholars Hou

& Li (2014). The questionnaire comprises two major dimensions: Flow Antecedents and Flow Experience, totaling 22 items. This questionnaire uses Likert's five-point scale.

To examine learners' anxiety levels during activity participation, this study employed the Affective Filter Hypothesis Scale developed by Krashen (1982), adapted by Hung (2001) into the "Learning Experience Scale," comprising 8 items. This questionnaire uses Likert's five-point scale.

To examine learners' experiences using the game, this study modified Davis's (1989) Technology Acceptance Model (TAM) scale. It comprises two dimensions: cognitive usefulness and cognitive ease of use. Additionally, game elements were evaluated based on Hou (2016)'s proposed elements for promoting game motivation, consisting of 12 items. This questionnaire also uses Likert's five-point scale.

## Results and Discussions

Based on the results of the one-sample Wilcoxon signed-rank test. Table 1 presents the descriptive statistics of flow among learners after task completion. Overall flow ( $M = 3.74$ ,  $SD = 0.58$ ) was significantly higher than the median of scale (i.e., 3). Additionally, both flow antecedents ( $M = 3.69$ ,  $SD = 0.62$ ) and flow experience ( $M = 3.78$ ,  $SD = 0.60$ ) were significantly above 3. All other sub-dimensions' means also exceeded 3. Notably, the sub-dimension Goals of an activity reached an average of 4.31. This suggests that the overall game design of the GenAI virtual character dialogue interaction mechanism in this study—enhanced by adding plug-in modules under the RAG framework to configure character roles, case scenarios, and knowledge cognition, achieves more realistic role-playing. This enables learners to become more immersed in the game during interactions. C.-C. Chien et al. (2024) found that in scenario-based educational games, learner interactions with GenAI virtual characters facilitate deeper scenario analysis while sustaining high flow. This may occur because interactions with GenAI are based on learners' questions and corresponding responses, creating a sense of authentic dialogue and counseling, and learners experience feedback through their sense of control (Ngu et al., 2025).

**Table 1**  
*The Mean and Standard Deviation of Learners' Flow*

	(N = 18)			
	<i>M</i>	<i>SD</i>	<i>Z</i>	<i>Sig.</i>
Overall Flow	3.74	0.58	3.46 <sup>***</sup>	< .001
Flow antecedents	3.69	0.62	3.24 <sup>**</sup>	0.001
Challenge-skill balance	3.72	0.83	2.92 <sup>**</sup>	0.003
Goals of an activity	4.31	0.67	3.67 <sup>***</sup>	< .001
Unambiguous Feedback	3.06	1.00	0.42	0.674
Control	3.61	1.06	2.06 <sup>*</sup>	0.039
Playability	3.78	0.81	2.91 <sup>**</sup>	0.004
Flow experience	3.78	0.60	3.60 <sup>***</sup>	< .001
Concentration	4.08	0.97	3.20 <sup>**</sup>	0.001
Time distortion	3.81	0.84	2.91 <sup>**</sup>	0.004
Autotelic experience	3.67	1.06	2.43 <sup>*</sup>	0.015
Loss of self-consciousness	3.39	0.92	1.80	0.072

\*  $p < 0.05$ , \*\*  $p < 0.01$ , \*\*\*  $p < 0.001$

Table 2 presents descriptive statistics for learners' anxiety and overall game feedback. Overall anxiety ( $M = 2.43$ ,  $SD = 0.65$ ) was significantly below 3. Interactive games effectively reduce learning anxiety (Reed & Ferdig, 2021). C. C. Chien et al. (2023) noted that moderately low anxiety is a key indicator for sustained flow during game activities. Additionally, overall game feedback ( $M = 3.46$ ,  $SD = 0.75$ ), game usability ( $M = 3.91$ ,  $SD = 0.80$ ), and game elements ( $M = 3.71$ ,  $SD = 0.61$ ) were also significantly higher than the 3. Hassan et al. (2019) indicated that well-designed game elements evoke learners' sense of accomplishment, engagement, and enhanced motivation.

**Table 2**

*The Mean and Standard Deviation of Learners' Anxiety and Overall Game Feedback*

(N = 18)				
	<i>M</i>	<i>SD</i>	<i>Z</i>	<i>Sig.</i>
Anxiety	2.43	0.65	-2.75**	0.006
Game Feedback	3.46	0.75	2.21*	0.027
Game Ease of Use	3.91	0.80	3.13**	0.002
Game elements	3.71	0.61	3.43***	< .001

\*  $p < 0.05$ , \*\*  $p < 0.01$ , \*\*\*  $p < 0.001$

Additionally, qualitative feedback indicated participants found the game “fun and highly ease of use, willing to play repeatedly.” Over half believed it helped understand empathy skills (56%) and identify emotional cues (61%), while 83% felt it was more realistic than typical GPTs and 61% reported greater focus.

## Conclusion

Effective counseling involves helping individuals master psychological counseling techniques and actively apply them to address issues encountered by clients, thereby assisting them in resolving problems. The instructional strategy for psychological counseling training recommends repeatedly providing guidance and feedback training opportunities to prevent skill degradation. This study, Yuri's Secret Thoughts, involves learners engaging in free-form dialogue with a GenAI virtual character during counseling sessions. Counseling interactions are dynamically inductively analyzed to foster empathetic understanding, ultimately guiding the GenAI character to overcome psychological stress and achieve four positive feedback objectives as the task goals. Based on the above data analysis, learners provided positive feedback across all aspects: overall flow, learning anxiety, game feedback, and game elements. Preliminary findings indicate that the generative AI virtual character designed in this study, serving as a psychological counseling training game for cases, achieves low-cost, repeatable practice of key principles. It is suitable for repeated practice prior to real-person case simulations. Future enhancements could include learning feedback and scaffolding guidance to improve usefulness and fidelity.

## References

- Brouzos, A., Vassilopoulos, S. P., & Baourda, V. C. (2014). Members' perceptions of person-centered facilitative conditions and their role in outcome in a psychoeducational group for childhood social anxiety. *Person-Centered & Experiential Psychotherapies*, *14*(1), 32–46. <https://doi.org/10.1080/14779757.2014.965843>
- Chan, S. H. W., Yu, C. K.-C., & Li, A. W. O. (2020). Impact of mindfulness-based cognitive therapy on counseling self-efficacy: A randomized controlled crossover trial. *Patient Education and Counseling*, *104*(2). <https://doi.org/10.1016/j.pec.2020.07.022>
- Chen, Y. C. & Hou, H. T. (2024). Design and Evaluation of the Framework of ChatGPT-based situational non-player character scaffolding for educational games, paper presented at IIAI International Congress on Advanced Applied Informatics (IIAI LTLE 2024), July 6-12, 2024, Takamatsu, Japan.
- Chien, C.-C., Chan, H.-Y., & Hou, H.-T. (2024). Learning by playing with generative AI: design and evaluation of a role-playing educational game with generative AI as scaffolding for instant feedback interaction. *Journal of Research on Technology in Education*, *57*(4), 894–913. <https://doi.org/10.1080/15391523.2024.2338085>
- Chien, C. C., Ho, Y. T., & Hou, H. T. (2023). Integrating Immersive Scenes and Interactive Contextual Clue Scaffolding Into Decision-Making Analysis Ability Training Game. *Journal of Educational Computing Research*. <https://doi.org/10.1177/07356331231205058>
- Cooper, M., Saxon, D., Duncan, C., Scruggs, R., Barkham, M., Bower, P., Cromarty, K., Pearce, P., & Stafford, M. R. (2025). Therapist Interpersonal Skills and Outcomes for Young People. *Psychotherapy Research*, 1–15. <https://doi.org/10.1080/10503307.2025.2457398>
- Davis, F. D. (1989). Perceived usefulness, perceived ease of use, and user acceptance of information technology. *MIS Quarterly*, *13*(3), 319–340. <https://doi.org/10.2307/249008>
- Hassan, M. A., Habiba, U., Majeed, F., & Shoaib, M. (2019). Adaptive gamification in e-learning based on students' learning styles. *Interactive Learning Environments*, *29*(4), 1–21. <https://doi.org/10.1080/10494820.2019.1588745>
- Hou, H.-T. (2015). Integrating cluster and sequential analysis to explore learners' flow and behavioral patterns in a simulation game with situated-learning context for science courses: A video-based process exploration. *Computers in Human Behavior*, *48*, 424–435. <https://doi.org/10.1016/j.chb.2015.02.010>
- Hou, H. T. (2016). Game-based Learning. *Commonwealth Magazine Co., Ltd.*
- Hou, H. T., & Li, M. C. (2014). Evaluating multiple aspects of a digital educational problem-solving-based adventure game. *Computers in Human Behavior*, *30*, 29–38. <https://doi.org/10.1016/j.chb.2013.07.052>

- Hung, M. H. (2001). “The Effects of Captioned, Subtitled and Non-Captioned Television Videotapes on Foreign Language Learning.” Master’s thesis, National Cheng Kung University Institute of Education. <https://hdl.handle.net/11296/sx7ca2>
- Kiili, K. (2006). Evaluations of an Experiential Gaming Model. *Human Technology: An Interdisciplinary Journal on Humans in ICT Environments*, 2(2), 187–201. <https://jyx.jyu.fi/handle/123456789/20195>
- Krashen, S. D. (1982). Principles and Practice in Second Language Acquisition. *The Modern Language Journal*, 67(2). <https://doi.org/10.2307/328293>
- Lau, J., & Ng, K.-M. (2014). Conceptualizing the Counseling Training Environment Using Bronfenbrenner’s Ecological Theory. *International Journal for the Advancement of Counselling*, 36(4), 423–439. <https://doi.org/10.1007/s10447-014-9220-5>
- Li, X. (2024). Application of emotion recognition technology in psychological counseling for college students. *Journal of Intelligent Systems*, 33(1). <https://doi.org/10.1515/jisys-2023-0290>
- Ngu, P.-C., Chien, C.-C., Ho, Y.-T., & Hou, H.-T. (2025). A generative AI educational game framework with multi-scaffolding supports workplace competency development. *Computers & Education*, 105421–105421. <https://doi.org/10.1016/j.compedu.2025.105421>
- Reed, J. M., & Ferdig, R. E. (2021). Gaming and anxiety in the nursing simulation lab: A pilot study of an escape room. *Journal of Professional Nursing*, 37(2), 298–305. <https://doi.org/10.1016/j.profnurs.2021.01.006>
- Rogers, C. (1957). The necessary and sufficient conditions of therapeutic personality change. *Journal of Consulting Psychology*, 21(2), 95–103. <https://doi.org/10.1037/h0045357>

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