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Exploring a framework for gamified self-directed practice for interpreting students

Jiun Huh[1]✉

Self-directed interpreting practice is a key component of interpreter training programs. While self-directed practice, predominantly conducted in groups, helps interpreting learners acquire expertise, it requires student motivation for sustained implementation. Given the importance of self-directed practice and the need for motivation, this study explored the potential of adopting gamified learning in self-directed interpreting practice. A questionnaire survey was administered with interpreting learners to investigate what learners found to be effective or lacking in their self-directed group practices; explore the preferences of learners for gamified virtual self-directed group practice based on their gameplay and metaverse experience; and propose a gamified self-directed interpreting practice framework based on the results. Based on the findings of the survey, this study proposed a framework that utilises gamification elements in self-directed group interpreting practices to enhance the sense of achievement and affective engagement, intended for implementation on a metaverse platform.

[1] Ewha Womans University, Seoul, Republic of Korea. ✉email: huhjiun@ewha.ac.kr

Introduction

Sustained efforts to improve teaching and learning effectiveness have led to significant advancements in interpreter training, which has shifted from relying on an apprenticeship-based approach to embracing a learner-centred model (Pöchhacker, 2010; Wang, 2015). One of the most important aspects of learner-centred interpreter training is out-of-class, self-directed, group interpreting practice. This is because building interpreting expertise requires extensive interpreting practice, which often needs to be conducted out of class among peers (Wang, 2015). Aligned with this understanding, there has been a surge in research on self-directed learning beyond interpreting classrooms, occasionally incorporating the use of technology (cf. Braun et al., 2013; Lee et al., 2017; Sandrelli, 2005).

In the broader realm of pedagogical studies, the advancement of technology has facilitated the integration of technological tools in pedagogy, thereby enabling new ideas that were previously constrained by technological limitations. One such new approach is gamified learning. Gamification, in education and learning in particular, involves a series of activities and processes designed to address educational challenges by implementing game mechanics (Kim et al., 2018). While gamified learning includes both technology and non-technology-based approaches, the former has recently gained momentum, largely due to advancements in technology. Digital applications, Artificial Intelligence (AI), metaverse, and big data are increasingly adopted in education in the form of educational technologies, exemplified by platforms like Rosetta Stone, Duolingo, and Babbel. These self-directed learning services also feature gamified properties, such as gamified exercises, challenges, points, badges, and leaderboards (Bilham, 2021; Rosetta Stone, n.d.).

Another aspect of technological advancements in education involves platform technologies, which interpreter training programs have also adopted to varying degrees. Initially, Virtual Learning Environments (VLEs) or Learning Management Systems (LMS) were celebrated as emerging educational platforms facilitating remote asynchronous learning and the sharing of educational materials (Chua and Montalbo, 2014). However, there has been a recent surge in educational platforms, such as the metaverse, which enable real-time, synchronous interaction among students and teachers, even providing virtual, 3D experiences (Braun et al., 2013; Şahin, 2013; Zhang et al., 2022). The metaverse offers participants a palpable sense of spatial presence, facilitating more immersive and interactive experiences, even from remote locations. The advantage of the metaverse is that it incorporates gaming features such as avatars and other game mechanics, making it an accessible platform for implementing gamified education. However, while a few studies have adopted this new technology in interpreter training (e.g., Braun et al., 2013; Şahin, 2013), this type of training has yet to achieve widespread adoption. Moreover, the initial hype around the metaverse has weakened as the world emerged from the pandemic and resumed in-person classes.

Despite the attempts to embrace new methods, interpreter training programmes are still predominantly based on traditional curricula, except for a handful of programmes adopting Computer Assisted Translation (CAT) courses.[1] With the recent advancement of artificial intelligence, most discussions seem to centre around technologies used in professional interpretation or translation environments, such as post-editing and Computer Augmented Interpretation (CAI), rather than emerging pedagogy or technologies for training, such as gamification or the metaverse, which seem particularly well suited for self-directed learning.

The dearth of research on these pedagogical approaches merits attention, highlighting the necessity for further research to enhance their adoption. Thus, this study focuses on how to apply gamification and the metaverse to self-directed interpreting practice, an essential element in interpreter training and learner motivation. In this paper, I will propose a framework for implementing a gamified self-directed interpreting practice deployed on a metaverse platform. A questionnaire-based survey was conducted on graduate students in interpreter training programmes in South Korea to investigate the following research questions: (i) What elements do interpreting learners find effective or lacking in their self-directed group practices? (ii) What are learners' preferences for gamified virtual self-directed group practice based on their gameplay and metaverse experience? (iii) Based on the findings of the previous two research questions, what kind of framework can be designed to integrate gamification to support learners' self-directed interpreting practice?

Literature Review

Self-directed practice in interpreter training. Interpreting competence is built through sustained skills-building efforts by both instructors and students (Wang, 2015). While instructors offer guidance on proper interpreting techniques in class, the development of actual skills primarily occurs through students' deliberate group practices out of class (Gile, 2005, p. 141; Gillies, 2013; Horváth, 2007; Wang, 2015).

Group interpreting practices were traditionally conducted through face-to-face practice sessions. However, the COVID-19 pandemic transformed the way interpreting practices were conducted, leading to the widespread utilisation of remote conferencing platforms, such as Zoom, Google Meet, and WebEx. In addition, virtual platforms, such as web platforms, digital applications, and the metaverse, were explored by interpreting researchers in order to leverage various features offered by new technologies. Virtual platforms, indeed, offer distinct advantages. Apart from enabling group meetings and practices regardless of distance, virtual platforms can offer self-learning tools such as interpreting corpus, transcription feature, or even immersive environments (Braun et al., 2013; Lee et al., 2017; Şahin, 2013; Sandrelli, 2005). They also foster student motivation for interpreting practice and alleviate stress in learning interpreting (Hansen andShlesinger, 2007; Hui, 2019; Şahin, 2013).

The interpreter trainer community's interest in embracing new technologies did not develop overnight. Even before the widespread adoption of remote conferencing platforms, researchers had shown interest in utilising or developing applications and platforms for self-directed learning and interpreting practice. The research efforts can be classified into three categories. First is blended learning, which is characterised by the combination of traditional offline classes and online learning components. This mainly involves utilising Learning Management System (LMS), an online platform for administering, documenting, and delivering educational content and enabling online interactions among students and instructors (Wang, 2015). The second line of research aimed to create Computer Assisted Interpreter Training (CAIT) tools or platforms tailored to interpreting practice, focusing on providing source texts for practice and features for analysing students' target texts (Hui, 2019; Sandrelli, 2005; Lee et al., 2017). The third line of research aimed at implementing a quasi-authentic virtual environment for immersive interpreting practice, where Şahin (2013) explored the possibility of integrating Second Life (SL), an online virtual world, into interpreter training and Braun et al. (2013) designed a customised 3D virtual world for interpreter training as part of their collaborative project, Interpreting in Virtual Reality (IVY). While interest in emerging technologies is growing gradually, they are yet to be featured

mainly in real-world classroom environments. Furthermore, few interpreting studies have attempted to explore gamified interpreter training, rendering this area of research underexplored. Before reviewing these studies, it would be worthwhile to have an overview of gamification and its application in educational contexts in the following section.

Gamification in education. Gamification, a strategy of integrating game mechanics into non-gaming contexts (Deterding et al., 2011; Plass et al., 2019), could be highly effective in digital education. Gamification in an educational context seeks to motivate students and boost engagement in both classrooms and out-of-class self-directed learning sessions by introducing game mechanics (Kim et al., 2018). According to a comprehensive analysis of relevant papers by Dicheva et al. (2015), integrating gamification with education offers numerous advantages, including higher student participation in learning activities, increased attendance and quantity of contributions, higher passing rate and participation in challenging tasks, minimised gap between top and bottom graders, stronger motivation, and easier learning. Game mechanics, such as badges, can be used to affect student behaviour in a positive way (Hakulinen and Auvinen, 2014). The favourable reactions to gamification stem from the intrinsic characteristics of games. Games are effective because they place players in environments where the fear of failure is mitigated (Osheim, 2016). In gaming, even death is just a minor setback, which allows players to adjust their strategies and learn from their mistakes (Osheim, 2016). Such an environment promotes self-directed learning that is not merely focused on immediate scores but on achieving long-term mastery (Osheim, 2016).

Certainly, gamification has its drawbacks. While mechanics like rewards, badges, and leaderboards can motivate students who are disengaged or not actively participating in class, imposing these mechanics on students who already possess strong intrinsic motivation to learn can actually diminish their enthusiasm for learning (Hanus and Fox, 2015). It is crucial in gamification not to enforce these elements mandatorily but to offer them as optional, thus giving learners the choice to engage with them as they see fit (Hanus and Fox, 2015).

In this context, it is essential to establish an appropriate framework when implementing gamification in education and to organise game elements accordingly. Various gamification frameworks have been proposed based on elements such as dynamics, aesthetics, mechanics, components, story, technology, and mechanisms (Kim et al., 2018). Notably, Hunicke et al. (2004) developed a framework that meticulously organises game elements using the MDA framework as its foundation. The MDA framework organises game design by categorising its elements into three specific components: mechanics, dynamics, and aesthetics. Mechanics relate to the game's rules, consisting of the different actions, behaviours, and control mechanisms available to the player in a game setting; dynamics connects to the systems and functions to generate aesthetic experiences; aesthetics is the desirable emotional response games evoke in players, such as sensation, fantasy, narrative, challenge, fellowship, discovery, expression, and submission (Hunicke et al., 2004).

The MDA framework is helpful in designing games as it offers an organised framework that considers both user perspectives and game design fundamentals. The framework helps game developers understand user preferences and desires and connects them with the necessary building blocks, ensuring a systematic game design process instead of applying ideas and elements in an ad-hoc manner. The framework is a useful reference for the purpose of this study, as it attempts to create a framework for gamified interpreting practice based on learner needs.

At the same time, the description of each framework category remains rather abstract, open to interpretation when it comes to specific elements associated with each category. While Hunicke et al. (2004) list specific elements for 'aesthetics,' they only provide case examples for the other categories. Matallaoui et al. (2017) provide an interpretation for the other two categories suggesting rewards, status, attention, recognition, achievement, self-expression, competition, and altruism for 'dynamics,' and points, leaderboards, levels, achievement systems, identifiers, triggers, trigger conditions, count, and pre-requirements for 'mechanics.' However, as Kim et al. (2018) suggest, the game elements can be easily subsumed under a single category of 'game mechanics,' covering points, levels, badges, disincentives, leaderboard, avatar, competition, social graph, lottery, discovery, etc. Thus, while this study builds on the MDA framework, it is adapted in a way that enhances clarity and aligns with the present study's objective: Aesthetics encompasses learners' expectations, affective needs, and the kinds of experiences they anticipate or desire during the learning process; mechanics refer to all the game elements used for eliciting aesthetics; and dynamics is the system or layout adopted for enabling gamified learning.

While utilising various game elements according to the learning context and objectives may be essential, the framework would be incomplete without considering player and gameplay types. Considering that learners are not all the same and each has unique characteristics, there is a need to customise to the learner's —i.e., the player's—style to some extent. First, interpreting students possess unique characteristics that set them apart from other groups of learners. Moreover, there are diverse individual differences within the group of interpreting students. In this regard, it would be worthwhile to consider Bartle's (1996) classification of player types in gamification: killers, achievers, socialisers, and explorers. Killers are competitive users who are ready to take on challenges and defeat other users in order to win the game; achievers represent users who focus on building performance and outcomes, such as levelling up and gaining higher rankings; socialisers are interested in interacting with other users and building communities; explorers are driven mainly by discovering boundaries and applications (Bartle, 1996). While this study does not aim to develop a serious game but rather a gamified framework for interpreting learners, Bartle's (1996) classification may still offer useful insight, as its four types reflect tendencies often seen in gamified settings and continues to serve as a foundational model in many studies (Hamari and Tuunanen, 2014; Atanasova and Molnar, 2024). It may therefore be worthwhile to explore the player types of interpreting students in shaping an appropriate framework.

Additionally, the preferred gameplay types may vary depending on the user. Kapp (2012) introduces three types of gameplay: competitive play in individual achievements; cooperative play, where players work with and help each other to achieve common goals; and self-expression, where players focus on exercising their creativity and building the environment. In gamified learning and education, it is crucial to systematically and comprehensively address the aforementioned elements to construct an effective educational environment. Thus far, gamification has been discussed in the context of education in general. The following section examines its application within interpreter training.

Gamification in interpreter training. Interpreting studies are also exploring the integration of gamification into training, though the body of research in this area remains limited. Wang (2022) designed a consecutive and simultaneous interpreting

game for developing interpreting skills, subject knowledge, and interpersonal skills by adopting fun elements such as quests, leader board, and special missions. The game also aimed at motivating students to spend more time practising interpreting (Wang, 2022). Alcaide-Martínez and Pastor (2024) created gamified terminology activities using an ad-hoc corpus built via commercial tools like Sketch Engine. The gamified activities, presented through open-access platforms, achieved a high participation rate, highlighting the positive impacts of gamification in domain-specific training environments (Alcaide-Martínez and Pastor, 2024). Huh (2022) laid out the building blocks for designing a conceptual framework for gamified interpreter training, adapting Hunicke et al. (2004)'s MDA framework, and proposed specific mechanics appropriate for the interpreter training context.

However, gamification is yet to feature strongly in interpreter training research, with most studies focused primarily on case studies that directly apply limited sets of gamification elements. Thus, the gamification framework and elements discussed in this literature review deserve attention and further research. A systematically structured gamification framework can serve as a reliable checklist for planning well-designed gamified activities and environments for interpreter training. Considering the dearth of fundamental research on frameworks and necessary gamified elements that are customised for interpreting students, this study seeks to investigate and delineate specific user requirements via a questionnaire-based survey covering learners' experience and needs in group interpreting practice and game design constructs —including learners' preferences and expectations (aesthetics), associated elements (mechanics), the enabling layout or platform (dynamics), player types and gameplay types—and propose a gamified self-directed practice framework for interpreter training based on the findings.

Study method

A questionnaire-based survey was conducted on graduate students in interpreter training programmes in South Korea to (i) investigate what learners found to be effective or lacking in their self-directed group interpreting practices; (ii) explore the preferences of learners for virtual learning based on their gameplay and metaverse experience; and (iii) propose a gamified self-directed practice framework based on the results. The survey was conducted between February 18 and March 23, 2023, via the web-based SurveyMonkey platform.

Questionnaire design. The questionnaire items were developed based on the research questions of the present study and referring to the literature on gamification discussed in Chapter 2, asking their needs (aesthetics), the associated game elements (mechanics), the enabling environment and competitive structure (dynamics), player types, and gameplay style (Bartle, 1996; Hunicke et al., 2004; Huh, 2022; Kapp, 2012; Kim et al., 2018; Matallaoui et al., 2017). The questionnaire of the present study consists of three main parts aside from demographics. The first part of the questionnaire focuses on how participants currently conduct self-directed interpreting practice, including their perceived needs and challenges. These responses offer insight into participants' learning needs and their general characteristics, as well as the gaps that gamification could address. The second part explores participants' experiences with games and the metaverse, as well as their related preferences. Their responses may provide a better understanding of their specific preferences in games, player types, gameplay tendencies, and favoured mechanics. In the third part of the questionnaire, participants were asked about their preferences for a gamified approach to self-directed interpreting practice. Their responses may offer insight into specific gamified features they value in an interpreting practice setting, such as preferred mechanics, interaction structures, gameplay style and player types. Table 1 presents a comprehensive overview of the questionnaire's structure. The questionnaire primarily consisted of open-ended questions designed to encourage participants to provide comprehensive and detailed responses, allowing an in-depth understanding of their experiences and views. Closed-ended questions were added to gain straightforward insights into participants' preferences for game elements and gameplay style.

Participants. Participants were recruited using snowball sampling. The survey primarily targeted Korean students enroled in graduate interpreting programmes in Seoul, South Korea, as well as recent graduates within one year of graduation. The survey timing coincided with the beginning of the new semester in March at South Korean universities. As a result, it included individuals who were students as of February but had transitioned to recent graduates by the time they completed the questionnaire in March. While the initial survey design was intended for a broader group including undergraduates and instructors, the analysis was purposefully limited to participants at the graduate level. From this group of graduate students and recent graduates, 94 individuals initially responded to the study invitation. Of these, three were excluded as they did not meet the eligibility criteria or did not provide informed consent. Consequently, 91 Korean participants completed the survey through the weblink sent via email. All participants provided informed consent, and the study obtained the Institutional Review Board (IRB) approval. The details of the participant data are presented in Table 2.

Data analysis. The survey comprised both open-ended and closed-ended questions. Open-ended questions were analysed qualitatively using a thematic analysis approach. Following the guidelines of Braun and Clarke (2006), the author went through six phases of thematic analysis: familiarising with the given data, generating preliminary codes, looking for potential themes and subthemes, reviewing themes and subthemes, establishing themes and subthemes, and producing a report. As the survey questionnaire was semi-structured, the main themes were primarily delineated based on the questions themselves and are reflected in the subheadings. Thus, the thematic analysis in this study focused on generating subthemes. Due to the large number of subthemes identified under each theme, it was not feasible to provide a detailed discussion for every subtheme. Instead, a descriptive overview is presented, listing the subthemes under each theme along with the percentage of respondents associated with each, where applicable. In the context of this study, the diversity and relative proportion of these subthemes themselves appear to offer insight into the broader patterns emerging from the data. The author also sought the advice of an experienced researcher in the field of interpreting to check whether the subthemes represented the experiences and needs of interpreting students. The qualitative data of this study were initially coded using NVivo 1.7.2., followed by manual refinement to develop more sophisticated sub-thematic categories. Participants responded in Korean, and the researcher translated the quotes into English when describing them in the Results section.

Closed-ended questions were analysed using descriptive statistics. For each question, response frequencies and percentages were calculated. For the single-response multiple-choice and binary choice questions, respondents were allowed to select only one option, and percentages sum to 100%. For the multiple-response multiple-choice question, respondents could select more than one option, and the sum of percentages may exceed 100%.

Table 1 Questionnaire structure.

Category	Question items	Response type
Current methods of self-directed interpreting practice	General description of current methods of self-directed interpreting practice Benefits and challenges of self-directed group interpreting practice sessions Feedback preferences in group practice sessions Advantages and disadvantages of online and offline interpreting practices	Open-ended question
Experience with gaming and the metaverse	Gaming experience: - Reasons for enjoying games (e.g., points, graphics, narrative, leaderboard, etc.), gameplay frequency, gameplay style - Reasons for not enjoying games Metaverse experience: general experience, preferences, concerns, and other advantages and disadvantages.	Open-ended question
Preferences for gamified interpreting practice	Preferred modes and environments when using online platforms such as social media, the internet, metaverse, and games: - Competitive vs Non-competitive - One-on-one vs Team-versus-team competition - Proceeding as planned vs Chances and surprises	Binary choice
	Additional comments	Open-ended question
	Preferences for partners in gamified self-directed interpreting practice on a metaverse platform: - Practice alone - Practice with current partners and colleagues - Practice with any students majoring in interpreting who matches one's skill level - Practice with anyone after checking the user profile provided by the platform	Single-response multiple-choice question
	Additional comments	Open-ended question
	Preferred game mechanics for gamified interpreting self-directed practice: challenge, fantasy, narrative, competition, avatar, self-expression, fellowship, game stats & levels, reward, leaderboard, penalty, none of the above	Multiple-response multiple-choice question
	Additional comments	Open-ended question
	Final comments	Open-ended question
Demographics	Age, gender, language combination, student status	Single-response multiple-choice question

Table 2 Participant data.

	Breakdown	N	%
Age	20–29	68	74.7
	30–39	23	25.3
Gender	Female	86	94.5
	Male	5	5.5
Language Combination	Korean/English	74	81.3
	Korean/French	5	5.5
	Korean/Chinese	8	8.8
	Korean/Japanese	4	4.4
Status	Students	81	89.0
	Recent graduates	10	11.0
Total		91	100

Descriptive statistics were conducted using Microsoft Excel for Microsoft 365.

Results

Current approaches and core needs of self-directed practice. This section seeks to understand the current self-directed interpreting practice methods among learners and analyse their perceived advantages and disadvantages. The goal is to identify strengths that can be incorporated into gamified self-directed interpreting practice and to explore ways to address the shortcomings of existing learning methods through gamification.

Participants mainly conducted self-directed interpreting practices within a group setting. The number of group practice members ranged between two and four persons for consecutive interpreting and two and six persons for simultaneous interpreting. The frequency of group practices varied from two to sixteen sessions per week, and the duration of each session was between one and two hours. The students took turns playing the roles of speaker and interpreter. Source text materials included written texts, audio clips and video clips. Practice sessions were conducted both online and offline.

Benefits and challenges of self-directed interpreting practice. The participants identified numerous benefits associated with self-directed group practice. A substantial number of participants (63.7%)[2] indicated that they appreciated being able to hear various feedback on and alternatives to their interpreting performance from their partners. The variety of practice materials brought by various practice partners was cited as another benefit (25.3%). A considerable number of participants (31.9%) reported that group practice was highly motivational and served as a pacemaker, compelling them to study due to the commitment made to their partners. Some participants (7.7%) also highlighted the educational benefits gained from researching materials and developing their terminology databases in preparation for group practice sessions. Group practice sessions were also found to be beneficial for having hands-on interpreting experience (17.6%), managing anxiety, practising mind control (7.7%), and fostering close relationships with colleagues (14.3%).

Despite the aforementioned benefits, participants also reported various challenges. Many of the challenges were related to emotional issues and reliability. Many participants (20.9%) did not favour critiques that were emotionally distressing. Some participants (13.2%) reported feeling devastated when they were disappointed with their performance during the practice sessions,

particularly when comparing their performance to that of seemingly more competent colleagues. Finding the right practice partner and building relationships were also challenging for some (13.2%). Another source of distress was when practice partners did not exhibit diligent attitudes, such as missing scheduled practice sessions, arriving unprepared, or providing superficial feedback (14.3%). For some (9.9%), the feedback from partners was not helpful because it lacked accuracy and objectivity. Others (6.6%) blamed themselves for their inability to provide constructive feedback. These drawbacks led some participants to view group practice sessions as a waste of time (6.6%).

Preferred feedback style. Participants had a clear understanding of the distinctions between constructive and unconstructive feedback. Constructive feedback was distinguished by its provision of extensive alternatives (59.3%). More specifically, participants valued feedback that was in-depth and tailored to their specific performance, but they also expected to receive objective feedback on basic checkpoint items, including mistranslation, context, logic, nuance, expressions, and aspects of delivery. A few (5.5%) indicated that they took care to provide feedback in a manner that did not hurt feelings.

On the other hand, unconstructive feedback was characterised by the following patterns: focusing only on minor points or omissions (35.2%); providing comments that lacked specificity and not aligned with the partner's needs—for example, mechanically reading off prepared alternatives regardless of the colleague's actual performance (31.9%); hurting feelings with condescending, aggressive, or obstinate comments (22.0%); and pointing out mistakes without giving any alternatives (13.2%).

Preferred mode of practice: online vs offline. As participants became increasingly familiar with video conferencing platforms like Zoom after the pandemic, they engaged in both online and offline practices. However, each mode presented distinct advantages and disadvantages.

Offline practice was valued for its immersive experience, interactive presence, and authentic tension, which helped improve concentration (58.2%). Additionally, participants indicated that having a colleague present facilitated more effective practice and allowed for more thorough feedback, including comments on non-verbal habits (24.2%). It also enabled feedback to be given based on observing the partner's note-taking methods (6.6%). Furthermore, the offline environment allowed students to engage in casual conversation, socialise and build rapport (13.2%). The disadvantages of offline group practice included the difficulty of securing a suitable quiet space for practice (38.5%) and the necessity for students to physically commute between home and school, which could be exhausting and energy-draining (25.3%). Interestingly, features previously cited as advantages were also perceived as disadvantages by some participants. They found the casual conversations often time-consuming (7.7%), and the effort to build rapport was an additional source of stress (4.4%).

The disadvantages of offline group practice were perceived as the advantages of online group practice. Online group practice was considered convenient and less time-consuming as it eliminated the need for participants to commute to school and offered access from any location at any time (74.7%). The fact that online practice decreased emotional engagement and casual conversation was welcomed by some (9.9%). The advantages extended to the practical aspects of learning. Participants appreciated the file and screen-sharing features, which made it easy to share files, websites, and audio and video materials (16.5%). Additionally, participants found that online practice effectively mirrors the real-world interpreting environment, aligning closely with the trend of increasing remote interpreting in real practice (4.4%). The disadvantages frequently mentioned encompassed issues inherent to online communication, such as internet connectivity interruptions (33.0%), reduced attention spans and tension (30.8%), audio degradation (14.3%), and decreased interaction (5.5%).

Experience with gaming and the metaverse

What drives learners to enjoy or avoid gaming?. A substantial number of the participants (53.9%) indicated that they did not enjoy playing games, whereas a modest proportion (31.9%) stated that they did. Some (14.3%) held mixed feelings, having enjoyed gaming in the past but no longer, or liking only certain types of games while not enjoying gaming in general. Although it appears that many participants do not enjoy playing games, the reasons they provide for their lack of enjoyment reveal a more nuanced picture. The two main reasons for not enjoying gaming are a fundamental lack of interest in games (33.0%) and the perception that gaming activities are both time-consuming and unproductive (27.5%). In the words of the participants:

> I don't play games. I have never really been interested in them since I was a kid. Besides, I already have a lot on my plate with school and other responsibilities, so there's a psychological barrier for me to starting a new hobby. Plus, I don't think gaming is very productive, and it seems like it takes up a lot of time. (Participant 1)

Some participants (11.0%) avoided gaming due to its perceived complexity and their lack of skill. Others (9.9%) expressed fears of potentially developing a gaming addiction themselves.

> I've tried downloading and playing games multiple times, but I always had trouble understanding the rules. Because of that, I never really found them enjoyable, and I ended up deleting the apps repeatedly. (Participant 78)
> I don't like playing games. The reason is that once I get into a game, I can't focus on anything else for a while, and it distracts me from my studies. (Participant 4)

Based on their statements, it seems that participants are not inherently opposed to gaming itself; rather, their concerns stem from the potential side effects of gaming, which they fear could interfere with their study commitments.

The reasons participants enjoy games provide valuable insights into the elements that could enhance student motivation. The most prominent reasons given by participants for their enjoyment of gaming were impressive graphics (13.2%), fancy characters (11.0%), captivating narrative (9.9%), simple and intuitive interface (7.7%), easy and convenient access (7.7%), immersion (6.6%), and team collaboration (6.6%). Other reasons include healing, achievement, and brain exercise. Based on participants' descriptions of how and why they enjoy games, it appears that while participants are initially attracted to games for their stunning graphics, compelling narratives, and interesting characters, what keeps them engaged over time is team collaboration, quests, achievements, immersion, stress relief, and healing elements. In the words of the participants:

> I like this game because I can team up with friends and play together. Plus, I can customise various characters with different skins and enjoy the stunning graphics in the game. (Participant 89)
> I enjoy communicating with other players through voice chat, strategising, and playing together. Even though it's

Table 3 Preferred game mechanics.

Rank	Game mechanics	N	%
1	Reward	61	67.0
2	Self-expression	53	58.2
3	Fellowship	51	56.0
4	Avatar	43	47.3
5	Challenge	40	44.0
6	Penalty	37	40.7
7	Game stats/level	36	39.6
8	Narrative	24	26.4
9	Fantasy	14	15.4
10	Leaderboard	14	15.4
11	Competition	9	9.9
12	None of the above	3	3.3

> just a game, when everyone takes it seriously, it feels like there's a real sense of fellowship, which I find really great. (Participant 42)

What drives learners to use or avoid the metaverse?. This section will explore the drivers for and against using the metaverse to assess its potential as a platform for gamified interpreting practice. In fact, participants had little experience with the metaverse. Around a third (34.1%) had no prior experience, and the majority of the remaining participants had only a little experience. Regardless of prior experience with the metaverse, participants expressed positive and/or negative opinions toward the emerging platform. Key drivers for using the metaverse identified by participants were cute character design and character customisation features that help express unique user characteristics (19.8%), immersion and presence (11.0%), features allowing exchange among participants (9.9%), space customisation features (9.9%), affective features such as emoticons and 'like' buttons (5.5%), and easy access and intuitive interface (5.5%).

> Avatars helped express thoughts and emotions that iPhone emojis, emoticons, or texts couldn't quite capture. (…) And seeing two avatars together visually gave me a sense of being in the same room and talking with the other person, making it feel more lifelike than traditional chat apps. (Participant 65)
> It gave me a sense of actually being there, making the experience livelier and more immersive. (Participant 5)

On the other hand, the factors that discouraged engagement with the metaverse were as follows: the features were overly complex and inconvenient (17.6%); there were too many technical glitches and drawbacks (13.2%); the metaverse was deemed redundant, failing to differentiate itself from other social media or video conferencing platforms (15.4%); there were concerns over crimes such as privacy breach, fraud and online harassment (13.2%); the platform lacked presence and immersive experience when compared to reality (8.8%); participants did not find the platform interesting (8.8%); and most of the metaverse services had a limited userbase (5.5%).

> Cons: It often lags. While it offers screen sharing and various features, they are not easy to use, and the quality isn't great. (Participant 55)

> I'm still unfamiliar with the metaverse, and I don't see a real need to use it. For studying, I can use Zoom or Google Meet, and for keeping in touch with friends, KakaoTalk or Instagram works just fine. (Participant 76)
> I understand it is a new playground for the younger generation, but I also worry that unexpected risks, like privacy violations or criminal activities, could emerge in the process. (Participant 59)

However, even among those who reported either having no experience or negative experiences with the metaverse, some (9.9%) expressed a willingness to try it again if their experience improved, indicating that the key lies in addressing its drawbacks and enhancing its benefits.

Preferences for gamified interpreting practice

Preferred game mechanics applicable to gamified interpreting practice. In this section, we aim to identify the game mechanics preferred by interpreting learners both quantitatively and qualitatively in order to determine the most appropriate gamified elements for interpreting practice. Table 3 illustrates the quantitative results identified through descriptive statistical analysis of the survey.[3]

The findings suggest that participants preferred the inclusion of game mechanics related to both achievements (reward, challenge, game stats) and affective (self-expression, fellowship) elements in a gamified interpreting practice platform.

Participants were generally very interested in improving their interpreting skills, preferring to tackle challenging interpreting tasks, for example, in the form of quests. They wished to assess their progress, set practice and learning plans based on their progress, and receive rewards for their efforts, thereby gaining a sense of achievement and motivation. This desire was not solely for the purpose of 'learning' but also for 'fun,' with the expectation that finding enjoyment would further enhance their motivation to practice and study. However, participants were cautious about elements that encouraged excessive competition.

> When studying interpreting, it's hard to see how much I've improved. However, if my skill levels and game stats could be increased as I interpret more, reaching certain milestones, it would serve as a great motivation. (Participant 17)
> Adding challenge elements could help improve interpreting skills. For example, tasks like capturing every detail or minimising the use of fillers would make it more fun. (Participant 33)

The 'fun' factor can certainly be attained through means other than achievement features. Many learners favoured affective elements as essential components of gamification. They expressed a need for self-expression features, such as gestures and facial expressions, to communicate with their study partners. They also noted that expressing their personality and communicating with others through avatars would improve the study atmosphere and increase the fun factor. Furthermore, they expressed a need for tools that facilitate good relationships and bonding among colleagues, as they rely on each other for support while studying together. However, participants insisted on strict penalties for bad behaviour. Penalties for tardiness, no-shows, and disrespectful behaviour were deemed necessary to create a fair and healthy community, as the anonymity of a virtual environment could exacerbate these issues.

> Given the importance of the relationship with an interpreting practice partner, having mechanics that help build a stronger bond would be very beneficial. (Participant 79)

> If there were mechanics to express my emotions, it would add a bit of fun to the platform, fitting well with the gaming experience. (Participant 26)
> I definitely think penalties are necessary. Critical habits like being late or skipping sessions without notice should come with consequences. (Participant 25)

Learner characteristics and preferences. This section aims to identify learner preferences for gamified interpreting practice by analysing their preferred gameplay methods and usual online behaviour. This will help establish which learner preferences should be incorporated into the potential platform for gamified interpreting practice.

Team match vs One-on-one match: When asked which option they usually prefer between a team match and a one-on-one match in gameplay, 55.0% of the participants preferred a team match, while 45.1% preferred a one-on-one match. The results were fairly evenly distributed rather than skewed towards one side, suggesting that it would be appropriate to offer both options based on individual preference.

The reasons given for preferring team matches included a preference for collaboration with other participants, a sense of belonging, the belief that working together yields better results and the opportunity for social bonding. In contrast, the reasons for preferring one-on-one matches included a desire for individual recognition, a preference for maintaining control over one's plans, discomfort with constant compromise within a team, fear of hindering team performance, and trust issues with team members.

Partner preferences: Learners were asked about their preferred types of partners for practising on a gamified interpreting practice platform to determine how willing they are to accept various practice partners on this potential platform. Unlike face-to-face practice sessions, the online setting allows for anonymity and the possibility of being matched with unfamiliar individuals beyond their usual practice partners, which could affect partner preferences. The majority of the participants (65.9%) indicated that they would be willing to practice with unfamiliar individuals if their skills matched and they were verified graduate students in the field. Some participants (24.2%) stated they would only practice with existing partners or known individuals, while a few participants (3.3%) chose individual self-study over group practice. Practising together solely based on participant information available on the platform—the most proactive and open option—was chosen by only a few (6.6%). Here, it is interesting that the majority responded that they would be willing to study with unfamiliar individuals if their skills were verified. This willingness is noteworthy because engaging in a practice session exposes one's interpreting skills transparently, which can be a cautious endeavour. The fact that two-thirds of the responses reflected this willingness indicates that learners are highly interested in improving their skills and shows that most are quite proactive in their partner selection. This perspective was supported by open-ended responses, where participants mentioned that practising with a diverse group of people would help enhance their skills. Additionally, they expressed a desire to practice with students from other schools, at least from the online platform, as they would eventually work with interpreters from various backgrounds upon graduation.

> While I can meet my regular practice partners in person or on Zoom, sometimes I need new practice partners. If I could interact with new partners on a platform like the metaverse, I would use it frequently. (Participant 87)
>
> As a professional interpreter, you often need to adapt quickly to unexpected situations and variables. In that regard, practising with strangers could help me prepare for that. (Participant 28)
>
> I would be hesitant to study with strangers because giving and receiving critiques can be sensitive and require caution. (Participant 9)

Other preferences: The responses regarding participants' preferred modes and environments were consistent with the earlier low preference for competitive game mechanics. While a large majority (71.4%) preferred a non-competitive environment focusing on exchange, activities, and creation, only 28.6% of the participants preferred a competitive environment. Additionally, concerning surprise elements in games, while a majority (61.5%) preferred structured and planned processes, only 38.5% of the participants favoured chance and unpredictability.

Discussion

The survey findings revealed that interpreting learners displayed significant academic motivation, particularly demonstrating a strong need for self-directed group interpreting practice as it provided opportunities for hands-on practice and peer feedback. Interpreting learners regarded group interpreting practice not as a mere formality but as a crucial opportunity for enhancing their own skills, expecting the practice sessions to be productive and informative. Thus, they valued constructive feedback and preferred to practice with various partners to gain diverse perspectives. Bonding and building rapport with practice partners were also considered important. While participants were generally motivated to practice interpreting, they also expressed concern about unmotivated peers and reported emotional stress related to their performance and peer feedback.

Previous studies on gamification and its benefits for learner achievement and motivation suggest that gamification has the potential to support self-directed group interpreting practice in a positive way, offering an alternative approach complementing conventional offline practice sessions. Gamification helps boost students' mastery of skills and academic performance and fosters motivation and enthusiasm for learning (Chen and Liang, 2022). In fact, the fundamental objective of gamification is to motivate players, and it involves more than simply applying technology (Burke, 2014; AlMarshedi et al., 2017). This motivational goal is closely linked to skill development, challenge, engagement, learning, behavioural change, socialisation, and collaboration (de Sousa Borges et al., 2014; Kapp, 2012; Kim et al., 2018). Furthermore, gamification facilitates feedback and scaffolding through various game mechanics, which in turn supports learners in achieving both academic and motivational goals (Kapp, 2012).

Given the needs of interpreting learners identified through the survey and the benefits of gamification outlined in previous studies, gamification appears to have the potential for improving the efficiency of group interpreting practice, developing feedback skills, providing various learning environments, and promoting a collaborative learning culture. Additionally, gamified practice sessions can foster emotional engagement and social interaction, providing the necessary motivation and sustaining learners' commitment to their studies.

To effectively implement gamification, it would be important to incorporate elements that interpreting learners, while not frequent gamers, find appealing when they do play games. Based on the findings, the primary reasons interpreting learners are captivated by games include their graphics, characters, narratives, and convenience. These elements serve as a gateway for them to

immerse themselves in the game. Furthermore, other elements participants find appealing are those that fulfil deeper intrinsic needs, such as collaboration, quests, a sense of accomplishment, and stress relief, which help sustain their continued engagement in games.

In line with their preferences in gaming, participants identified several gamification mechanics they would like to enjoy during actual practice sessions. These can be broadly categorised into achievement-related and affect-related elements. Achievement-related elements reflect learners' desire for skills mastery and their need for in-depth, personalised feedback. Specifically, among the elements chosen by participants, the implementation of mechanics such as rewards, challenges, and game statistics appears to align well with their expressed needs. Affect-related elements help make learning fun and enjoyable through affective engagement and self-expression while also fostering stronger bonds among learners. Participant choices, such as avatars, self-expression and fellowship features, may contribute to these affective outcomes. Additionally, reflecting participant complaints on diligence issues, penalties for uncommitted behaviour can be applied to encourage diligent participation and attitudes in practice sessions.

Regarding practice formats, the survey results indicate that, instead of creating a solely competitive format, it would be more effective to design sessions where participants can practice together, either in pairs or in small groups of three or more, similar to the current practice format. This approach aligns with interpreting learners' gameplay tendencies, as they generally prioritize interaction and cooperation over competition. This preference for collaboration is further supported by previous research on cooperative learning, which has shown positive effects on academic achievement and self-efficacy (Ames and Felker, 1979; Slavin, 1980). Additionally, in a gamified group practice, evaluating interpreting performance might be inappropriate, as it could provoke excessive competition and stress. While a moderate level of competition can serve as a motivational factor and enhance learners' academic performance, an overemphasis on grades and performance-based rankings may foster excessive competition, which may negatively impact learners' self-esteem and self-efficacy (Banfield and Wilkerson, 2014; Chan and Lam, 2008; Reeve and Deci, 1996).

In terms of player type, interpreting learners demonstrated a strong group characteristic of being 'practical, methodical, relationship-oriented, cautious, and diligent learners,' favouring planned progress rather than exhibiting bold adventurer tendencies. According to Bartle's (1996) player-type classification, interpreting learners tend to align more with achievers and socialisers than with killers or explorers. Therefore, it seems appropriate to structure the content more in line with these tendencies.

To effectively implement these elements in an online environment, an appropriate platform is essential. The metaverse appears to be an ideal platform for seamlessly incorporating these features, as several commercial platforms with easy access are already available, unless there are plans to develop a proprietary gamified platform from scratch. Given the prevalence of online learning environments, the metaverse may be a natural extension—easily adaptable for interpreting practice. Most importantly, the elements that learners find positive in the metaverse—such as immersion and realism, self-expression, interaction among learners, space customisation, and emotional expression—align with the mechanics they expect from gamification. Nevertheless, participants' concerns over technological glitches, privacy, and online crimes should be addressed to facilitate broader acceptance. According to Bitrián et al. (2024), when a learning system is technically reliable and easy to use, it is more likely to be perceived as useful by learners. 2D metaverse platforms could be a good starting point, as they provide excellent accessibility from both mobile and PC environments and do not require extensive resources.

Mutual trust is also important. Unlike face-to-face interactions, the online environment conceals much of one's personal information, creating a near-anonymous space. Therefore, building an environment that fosters mutual trust among learners and establishing basic rules are crucial. Most learners expressed their willingness to practice with others, even if they were unfamiliar individuals, as long as they were also interpreting majors with similar proficiency levels. Considering this need for diversity in practice partners, a metaverse platform designed to build trust could serve as a space for learners to broaden their network of practice partners.

Based on the above discussion, I propose the following framework for gamified self-directed practice for interpreting students (Fig. 1).

Conclusion

This study aimed to explore and propose a framework for gamified self-directed practice for interpreting students. To this end, the study investigated interpreting learners' needs for self-directed group practice and examined their preferences for gamified virtual practice sessions based on their experiences with gaming and the metaverse.

The findings of this study suggest that interpreting learners perceive self-directed group practice as a core activity for improving their interpreting skills. These learners are highly motivated, high achievers, and socially engaged individuals who hold high expectations for their skill improvement and seek supportive environments to meet these expectations. Productive and informative practice sessions are critical for enhancing their skills, and the role of practice partners, who can provide diverse perspectives, is also essential. However, beyond the skills aspect, emotional support is equally significant since they are part of a learning community. This makes bond-building and engagement with practice partners important, as interpreting practice is inherently collaborative, and interpreting learners do not desire excessive competition.

Nonetheless, as these aspects are not always fulfilled in practice sessions, this study proposed gamification as an alternative practice method to comprehensively meet learners' study needs. Effective gamification requires both achievement and affective elements, specifically game elements like rewards, challenges, game stats, avatars, self-expression and fellowship features. These elements not only foster engaging practice sessions but also serve as scaffolding, guiding learners toward desirable self-directed practice sessions. In addition, this study suggested the metaverse as a promising medium for implementing the various elements of gamification. Building on these findings, it proposes a framework for gamified self-directed practice for interpreting students, intended to be implemented within a metaverse environment.

Given the recent rapid advancements in artificial intelligence, Virtual Reality (VR), Augmented Reality (AR), the metaverse, gamification and educational technology and the scarcity of relevant research in interpreting studies, this study is timely and is believed to make a significant contribution to the future development of interpreter training. However, since the results of this study are limited to understanding interpreting learners' needs and building a basic framework, further research should be conducted to implement the findings in the actual metaverse. Repeated experimental studies should be conducted to identify specific requirements and necessary improvements for applying gamification methods. Furthermore, while this study focuses on

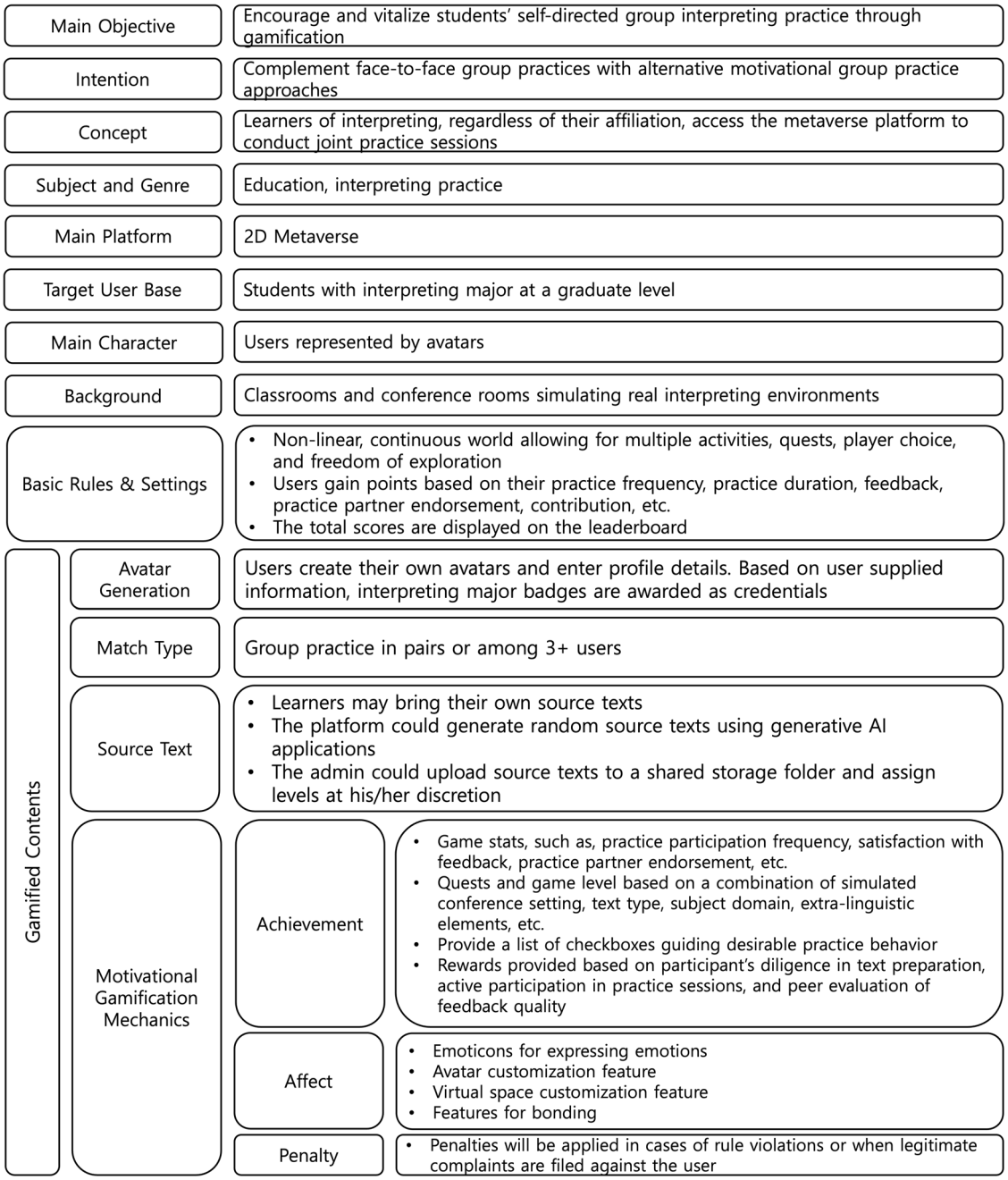


Fig. 1 Framework for gamified self-directed practice for interpreting students.

graduate-level learners, expanding research to include diverse learners across various educational levels is necessary. Extensive research is anticipated to develop gamification and metaverse-based study platforms that enhance in-person interactions, guide learner progress, and facilitate engagement with reliable and diverse partners.

Data availability

The survey instrument and the variable definitions are available in the supplementary files of this article. The datasets generated and analysed during the current study are not publicly available due to the qualitative nature of the data and the potential risk of participant identification within the specialized and small-scale community involved. However, the data that support the findings of this study are available from the author upon reasonable request.

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Notes

1 Apart from a few programmes, such as the Middlebury Institute of International Studies (MIIS) Translation and Localization Management program and the University of Geneva's Master of Arts in Communication and Translation Technology program, most Translation & Interpretation (T&I) programs continue to follow traditional interpretation and translation focused curricula, offering only a few additional courses related to technology literacy or computer-assisted translation (CAT).

2 Percentages represent the proportion of total sample size associated with each point, rounded to one decimal place.
3 Participants provided multiple answers from the given options.

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Author contributions

Jiun Huh was responsible for the conceptualization and design of the study, data acquisition, analysis and interpretation, as well as the drafting and revision of the manuscript. All contributions were made solely by the author.

Competing interests

The author declares no competing interests.

Ethical approval

Approval for this study was obtained from the Institutional Review Board of Ewha Womans University (Date: January 26, 2023; IRB Approval No. ewha-202302-0002-01). All procedures involving human participants were performed in line with the relevant institutional research ethics guidelines and the principles of the Declaration of Helsinki. The scope of the approval covered all aspects of the study including participant recruitment, informed consent, data collection, data analysis, and confidentiality measures.

Informed consent

Informed consent was obtained electronically from all participants by the author between February 18 and March 22, 2023, prior to the survey administration. The scope of the consent covered voluntary participation, the use of de-identified data for analysis, and the publication of the research findings. Participants were fully informed of the research

objectives, the assurance of anonymity, and that their data would be utilised for research purposes to contribute to the advancement of the field. They were also notified of their right to withdraw at any time without disadvantage and that no foreseeable risks were associated with their participation beyond the time and effort required for the survey. The study did not involve any vulnerable individuals.

Additional information

Supplementary information The online version contains supplementary material available at https://doi.org/10.1057/s41599-026-07028-y.

Correspondence and requests for materials should be addressed to Jiun Huh.

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