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From Digital Play to Intercultural Belonging: International Students' E-Sports Participation and Social Integration in Chinese Universities

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ABSTRACT: *As digital communities increasingly shape university social life, e-sports has become an overlooked site where international students may enter peer networks and negotiate belonging. This study examines how international students in Chinese universities participate in e-sports communities, develop intercultural relationships, and negotiate identity across digital and campus spaces. Based on semistructured interviews with twelve international students, thematic analysis revealed three interconnected processes that were synthesized as adaptive cross-cultural engagement (ACE): collaborative participation through digital play, interpersonal recognition through collaborative usefulness, and negotiated visibility. Drawing on communities of practice, sense of belonging, and identity negotiation theory as sensitizing lenses, the ACE emerged from the analysis rather than from a predefined framework. It explains how e-sports*

participation can develop into social integration when access becomes meaningful recognition and cultural difference remains visible within shared practice. This movement remained conditional, as language barriers, unequal feedback, and exclusion could interrupt the transition from participation to belonging.

Keywords: International students, E-sports communities, Intercultural belonging, Identity negotiation, Adaptive cross-cultural engagement

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INTRODUCTION

International students now form important parts of university populations across many regions, and their adaptation is shaped by formal educational structures as well as informal peer interactions. Prior research shows that belonging and social integration influence academic performance, well-being, and adjustment (Ivanova et al., 2025; Zhang et al., 2025; Vander Tavares, 2024). However, this work pays less attention to how international students enter voluntary, interest-based communities in host universities, even though such spaces may provide concrete practices through which they cooperate with peers and build social ties (Kelly et al., 2024; Mohamad & Manning, 2024). Digital environments and e-sports have created new settings for collaboration, socialization, knowledge exchange, and identity formation, but their role in intercultural interaction and university life remains underexplored (Karakaya et al., 2026; Zhong et al., 2024; Gul & Yurtsizoglu, 2025). Cross-cultural digital spaces can also support identity negotiation while reproducing exclusion, yet existing studies often examine single platforms or user groups separately. In comparison, the gap is not only whether international students participate in digital communities but also how national and institutional settings shape their movement from participation to belonging and identity negotiation (Zhang & Shen, 2025; Jin & Gong, 2026).

To address these gaps, this study investigates how international students participate, develop social integration, and negotiate identity within e-sports communities in Chinese universities. In this study, e-sports refers to organized, rule-governed competitive video gaming mediated through digital systems, including university clubs, team practices, tournaments, and coordinated online matches, but excludes solitary recreational or casual gaming (Hamari & Sjöblom, 2017). Participants reported playing Honor of Kings and League of Legends, primarily in multiplayer team formats rather than individual play. These formats required role allocation, communication during play, strategic coordination, feedback, and shared outcomes, making peer learning, recognition, and belonging observable within clearly bounded e-sports practices. Chinese universities provide an analytically important host setting because these online practices extend into campus relationships while students navigate language, institutional,

peer, and platform environments. A qualitative study of 12 purposively selected students is appropriate for this process-focused aim: rather than claiming statistical representativeness, it uses information-rich accounts to compare recurring mechanisms and negative cases across varied backgrounds. Three complementary lenses connect the gaps in the analysis: Communities of Practice explains movement from peripheral to fuller participation through shared practice (Lave & Wenger, 1991); the belongingness hypothesis and Strayhorn's higher-education model distinguish access from feeling accepted, valued, and supported (Baumeister & Leary, 1995; Strayhorn, 2018); e-sports research provides an empirical context rather than the framework itself (Karakaya et al., 2026; Zhong et al., 2024; Gul & Yurtsizoglu, 2025); and identity negotiation theory explains security vulnerability and inclusion differentiation in intercultural interaction (Ting-Toomey, 2005), whereas recent digital studies offer contextual applications rather than the foundation of the theory (Zhang & Shen, 2025; Jin & Gong, 2026; Haq & Kwok, 2024). The three theories were used as sensitizing lenses rather than being combined into a predefined framework. Analysis across the themes subsequently led to adaptive cross-cultural engagement (ACE), an emergent concept explaining how collaborative participation, interpersonal recognition, and negotiated visibility connect conditionally. This integrated process is what prior studies examining platforms, populations, or outcomes separately have not shown. The research questions guiding this study are as follows: RQ1) How do international students participate in e-sports communities within Chinese universities? RQ2) How does e-sports participation mediate their intercultural relationships and campus belonging? RQ3) How do they negotiate inclusion, exclusion, and identity within these digital social spaces?

LITERATURE REVIEW

This review is organized around the three research questions and develops the theoretical foundation for the later synthesis of adaptive cross-cultural engagement (ACE). First, this paper uses communities of practice to examine how international students enter e-sports communities through shared practice, peer learning, and social apprenticeship through digital play. Second, this paper uses sense of belonging theory to determine when this access becomes recognition, mattering, and belonging to a campus. Third, this paper uses identity negotiation theory to examine how recognized participants manage adaptation, cultural expression, inclusion, and exclusion. The relationship suggested by the literature is mainly sequential but not automatic: shared practice may create access, access may make recognition possible, and recognition may open space for identity negotiation. The processes can also overlap or become tense when participation remains peripheral, recognition is uneven, or acceptance depends on limiting cultural expression. Thus, the review does not treat the ACE as a prior analytical model. It establishes the theoretical conditions that the findings later synthesize into ACEs.

From Social Entry to Shared Practice: E-Sports Communities as Communities of Practice

Research across national settings shows that international students need meaningful peer relationships to enter university social life, yet studies from the United States, Japan, the United Kingdom, and other host contexts explain mainly general campus participation, loneliness, wellbeing, and exclusion rather than the situated practices through which students enter interest-based digital peer groups (Ivanova et al., 2025; Zhang et al., 2025; Vander Tavares, 2024). Communities of Practice provide the first sensitizing lens because Lave and Wenger (1991) treat learning as participation in a social world rather than individual skill acquisition alone. Legitimate peripheral participation explains how newcomers learn by observing competent members, attempting valued tasks, receiving feedback, and moving toward fuller participation. Wenger (1998) further specifies communities of practice through mutual engagement, joint enterprise, and shared repertoire, drawing attention to the routines, language, tools, stories, and standards through which membership becomes recognizable. In organized e-sports, these elements appear in role allocation, strategy talk, team practice, mentoring, demonstration, imitation, postmatch reflection, and group chat routines. Empirical work in higher education similarly shows that video game participation can strengthen communication, resourcefulness, adaptability, social ties, and continued engagement (Barr, 2017; Gul & Yurtsizoglu, 2025; Karakaya et al., 2026; Mariano & Cordova, 2022; Park & Mahony, 2024; Zhong et al., 2024). Players also negotiate roles, status, competence, affiliation, social capital, peer knowledge sharing, and perceived competence (Luguterah, 2025; Ribeiro et al., 2023; Tang et al., 2024; Mariano & Cordova, 2022). Accordingly, social apprenticeship through digital play is the process through which newcomers learn valued game practices together with the communicative and relational routines of social entry. In terms of the first research gap, this lens explains access through shared practice while leaving open whether access becomes recognition or belonging.

From Participation to Valued Membership: Sense of Belonging Theory

Sense of Belonging Theory provides the second lens because the study's central distinction is not between participation and isolation but between access and valued membership. Baumeister and Leary (1995) define belonging as a need for frequent, positive, and enduring interpersonal bonds, which means that contact becomes meaningful only when interaction is stable, supportive, and affectively significant. Hagerty and Patusky (1995) sharpen this distinction by linking a sense of belonging to valued involvement and fit, showing that individuals need to feel both accepted within a setting and important to it. Strayhorn (2018) applies this logic to higher education by emphasizing support, connectedness, mattering, and feeling cared about and valued, especially for students in marginal positions. These works establish that being present in a diverse group does not itself result in belonging. Belonging depends on whether students experience their presence, contributions, and cultural identity as being genuinely recognized rather than merely tolerated. This distinction aligns with evidence that meaningful participation supports engagement, motivation, and institutional attachment

(Kelly et al., 2024; Mohamad & Manning, 2024). Belonging is also shaped by peers, faculty, institutions, culture, ethnicity, socioeconomic position, and university spaces (Allen et al., 2024; Cohen & Viola, 2022; Wong, 2024). Classroom practices can foster relatedness (Cohen & Viola, 2022), whereas communities, mentors, peer support, clubs, and extracurricular networks can strengthen confidence, resilience, relationships, and identity development (Dost, 2024; Dost & Mazzoli Smith, 2023; Ivanova et al., 2025; Zhang et al., 2025). Physical, digital, relational, and structural spaces influence opportunities for participation (Wong, 2024). Gaming studies identify learning, social ties, and continuing participation but do not establish when international students in a host society become able to gain membership (Karakaya et al., 2026; Zhong et al., 2024; Gul & Yurtsizoglu, 2025). This lens therefore addresses the second gap by theorizing about belonging as recognition, mattering, emotional attachment, and valued contribution while also showing why identity negotiation must be examined next.

From Intercultural Contact to Negotiated Visibility: Identity Negotiation Theory

Identity negotiation theory provides the third lens because it treats identity as communicatively confirmed, challenged, and revised in intercultural encounters. Ting-Toomey (1993, 2005) explains that people seek identity security, inclusion, differentiation, and validation while managing vulnerability in interactions. This focus complements Berry's (1997) acculturation framework, which shows that cross-cultural adaptation involves different relationships between host-society participation and heritage-culture maintenance, and Tajfel and Turner's (1979) social identity theory, which explains how group boundaries shape belonging, comparison, and exclusion. These perspectives are not added as separate frameworks for the study. Rather, they strengthen the theoretical basis for examining why international students may gain access to an e-sports team while still needing to manage cultural expression, group positioning, and recognition. The comparative studies reviewed here are not treated as direct equivalents to e-sports in Chinese universities. Rather, they clarify how digital spaces make identity negotiation more visible by linking self-presentation, platform norms, peer recognition, and exclusion. Studies in South Korea and Taiwan show that digital media shape transnational identity differently across political and social environments (Lee, 2025), whereas research in Germany shows how digital exclusion can affect refugee integration and identity negotiation (Berg, 2025). Research on mainland Chinese immigrants in Hong Kong further shows that people move between integrative, confronting, collaborative, and avoidance strategies across physical and digital settings (Zhang & Shen, 2025), and work on international students in the United States shows how religious, gender, and linguistic identities are negotiated under host-society expectations (Hassan, 2025). Other studies show that digital spaces can support agency, transcultural connection, empathy, hybrid identification, and cultural representation while also reproducing discrimination, echo chambers, and othering (Liu, 2025; Jin & Gong, 2026; Haq & Kwok, 2024; Yao, 2025; Zhang & Mohamad, 2025). Taken together,

these studies indicate that digital identity negotiation depends less on the platform alone than on how users are recognized, misunderstood, included, or constrained within specific social settings. In Chinese university e-sports, this means that students negotiate identity through game roles, team communication, language choices, humor, tactical authority, and peer validation. This lens therefore addresses the third gap by theorizing on negotiated visibility as a microlevel process in which students manage how much cultural difference can be expressed without becoming socially risky. Students adapt language, tone, and interactional routines enough to cooperate while also seeking recognition for culturally specific strategies and humor, expertise, and communication styles as legitimate contributions.

Across the three subsections, the literature shows why the lenses need to be read together without being collapsed into a predefined model. Communities of Practice explain how shared practice opens entry but not whether newcomers feel valued. Sense of Belonging Theory explains recognition and mattering but not how culturally different participants decide when to adapt or remain visible. Identity Negotiation Theory explains this adaptive and expressive work while also showing why belonging may remain fragile. These lenses therefore prepare the analysis to examine conditional movement among access, recognition, and negotiated visibility. ACE was developed only after the empirical themes showed how these movements connected in participants' accounts.

METHOD

Research Design

This study adopts a semistructured interview design to examine how international students participate in e-sports communities; develop intercultural relationships; build a sense of campus belonging; and negotiate inclusion, exclusion, and identity in Chinese universities. This method was appropriate because it allowed participants to describe their lived experiences in depth while ensuring that key topics related to RQ1, RQ2, and RQ3 were consistently addressed across interviews. Compared with surveys or unstructured interviews, semistructured interviews offer both comparability and flexibility, especially for exploring sensitive experiences of discrimination, belonging, adaptation, and hybrid identity formation (Liang et al., 2025). The three theories were used as sensitizing lenses rather than as a fixed coding template. Communities of Practice informed questions about mentoring and shared practice; sense of belonging theory distinguished group access from feeling valued; and identity negotiation theory guided prompts about adaptation, cultural expression, inclusion, differentiation, and validation. The three lenses shaped broad interview topics, but social apprenticeship through digital play was not a coding category or fixed pathway. Themes remained grounded in participants' accounts. ACE was not used to design the interview guide or initial coding and was developed only after relationships, overlaps, and tensions across the final themes had been identified.

Participants, Sampling Criteria, and Sample Size

For the study, a total of 12 international students studying at Chinese universities were chosen through purposive sampling. As noted above, the sampling strategy ensured that participants were able to provide rich and relevant data for answering each of the three research questions (see Table 1). Participants needed to be enrolled at the time of the interviews in undergraduate or postgraduate courses, as that would allow for continuous immersion in campus social life and participation in informal events. In addition, participants needed at least six months of experience in organized e-sports communities, including online or offline clubs, competitions, team practices, or coordinated online matches, rather than solitary recreational or casual gaming. This criterion ensured that participants could reflect on collaborative work, peer learning, communication routines, and social interaction within the study's defined e-sports context. To address RQ2 in particular, participants needed to engage in regular interactions with peers representing various cultures not only in the realm of e-sports but also in other aspects of campus life. Finally, as part of addressing RQ3, all participants needed to have already experienced various situations of being included or excluded from certain digital or campus groups, thus being able to comment on the process of negotiating their social identities. Diversity in terms of gender, nationality, and academic level, as well as the length of time lived in China, would help provide a wider perspective of how international students interact in their e-sport communities. Twelve interviews were sufficient for analytical depth rather than statistical generalization because the focused eligibility criteria yielded information-rich cases and enabled the comparison of recurring patterns and counterexamples across participants.

Table 1. Participant Demographics and Selection Criteria

Participant ID	Gender	Nationality	Academic Level	Duration in China	E-sports Engagement	Intercultural Interaction	Inclusion/Exclusion Experience
P1	Female	Malaysia	Undergraduate	2 years	Club & online	High	Experienced minor exclusion
P2	Male	Singapore	Undergraduate	1 year	Online only	Medium	Experienced inclusion & exclusion
P3	Female	Thailand	Postgraduate	3 years	Club & tournament	High	Experienced inclusion
P4	Male	Malaysia	Undergraduate	2 years	Tournament only	Medium	Experienced minor exclusion
P5	Female	Singapore	Postgraduate	1.5 years	Club & online	High	Experienced inclusion
P6	Male	Thailand	Undergraduate	2 years	Online only	Medium	Experienced inclusion & exclusion
P7	Female	United States	Undergraduate	1 year	Club & online	High	Experienced minor exclusion
P8	Male	Thailand	Postgraduate	3 years	Club & tournament	High	Experienced inclusion
P9	Female	Malaysia	Undergraduate	2 years	Online only	Medium	Experienced exclusion
P10	Male	Thailand	Undergraduate	1 year	Club & online	High	Experienced inclusion & exclusion
P11	Female	Singapore	Postgraduate	2.5 years	Tournament only	Medium	Experienced inclusion
P12	Male	Malaysia	Undergraduate	2 years	Club & online	High	Experienced minor exclusion

Data collection

Data were collected through individual semistructured interviews with selected international students from April to May 2026, as shown in Figure 1. The literature review was developed before the interviews around the three sensitizing theoretical lenses and was subsequently checked during manuscript revision to clarify the status of recently published or forthcoming studies. These updates did not alter the interview guide, coding procedure, or thematic development. Each interview lasted approximately 45 to 60 minutes and was conducted face-to-face or through a secure online platform according to participant availability. Before the interviews, participants received an information sheet explaining the research aims, confidentiality, and voluntary participation. The interviews were transcribed verbatim, anonymized, and securely stored following ethical guidelines. The interview guide was organized around the three research questions. Participants identified their primary games, access platforms, and

participation formats before describing peer interaction, mentoring, teamwork, and skill sharing within those settings. They were also invited to discuss intercultural collaboration, conflict, campus belonging, emotional attachment, and team identification. Finally, they reflected on experiences of exclusion, adaptation, identity maintenance, and strategies for asserting personal or cultural perspectives within e-sports communities.

3.3 Data Collection: International Student Interviews

- Researcher interview in a quiet university office with natural light for face-to-face
- Researcher faces: International option student



Figure 1. Data collection process

Data Analysis

The interview data were analyzed using a six-step thematic analysis approach to ensure a systematic, transparent, and rigorous interpretation of the participants' experiences (shown in Figure 2). The analysis began with familiarization, during which time the researchers repeatedly read the transcripts and listened to the recordings to capture overall patterns related to e-sports participation, intercultural relationships, campus belonging, and identity negotiation. During initial coding, descriptive codes were generated to capture significant statements, including those concerning collaborative skill development, informal social bonding, cross-cultural collaboration, affective attachment, adaptive identity strategies, and resistance or assertion of identity. In the search for themes stage, related codes were clustered into potential subthemes, such as peer-mediated learning, social bonding, cross-cultural coordination, and identity adaptation, reflecting broader patterns of engagement, inclusion, and socioemotional dynamics. The review step involved cross-checking the subthemes with the transcripts to confirm that the data within each subtheme were coherent, distinct, and accurately represented the participants' perspectives. During the definition and naming stage, the three themes, Social Apprenticeship through Digital Play, From E-Sports Participation to Intercultural Belonging, and Negotiated Visibility in Cross-cultural Digital Spaces, were clearly specified and linked to supporting codes and participant excerpts to maintain interpretive transparency. Finally, in the reporting phase, the themes were synthesized into a coherent narrative aligned

with the three research questions, highlighting how structured and informal practices, emotional attachment, and strategic identity work collectively shape learning, belonging, and cross-cultural integration. Codes were retained when they were recurrent across participants or were rich in contextual detail. Within each subtheme, convergent and contrasting accounts were compared to identify how similar forms of participation produced different outcomes under conditions such as mentoring, communicative access, recognition, and responses to cultural expression. Interpretive claims developed after multiple excerpts and counterevidence were considered together. After the themes had been established through these comparisons, relationships across them were synthesized.

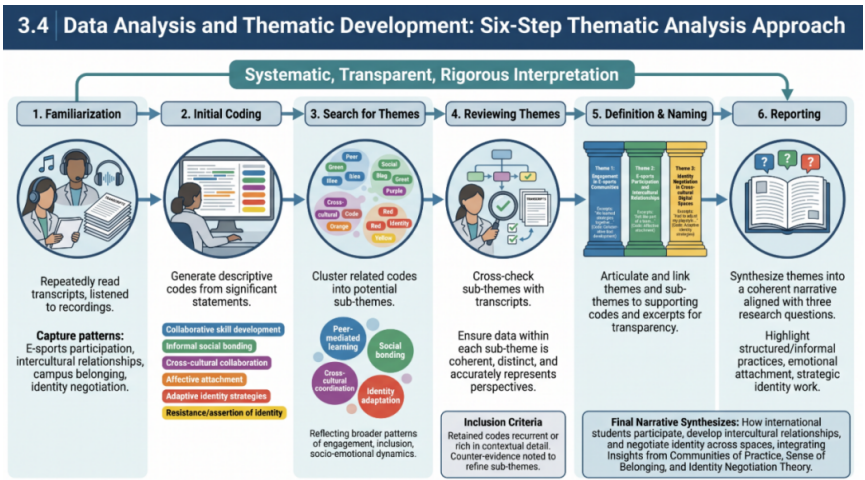


Figure 2. Six-step thematic analysis

Theme Validation

To enhance the reliability and credibility of the analysis of the themes, certain measures were taken to validate the results obtained. First, peer debriefing was used as one of the means for validating the research data (Liang et al., 2025). This implies that the results of the analysis of coded data, subthemes, and themes were assessed by two independent researchers to ensure that there was no subjectivity or other flaws. The next step involved using member checks, where the researcher informed participants about the themes discovered in his/her analysis and ensured that they accurately represented participants' experiences. Triangulation of evidence entailed selecting excerpts from different participants that would represent recurring experiences to ensure that the themes truly reflected what international students feel when they take part in e-sport activities and interact through those activities with other people from diverse cultures. Finally, counterevidence was considered to eliminate biases and inaccuracies in defining subthemes and developing themes.

RESULTS

The findings show that e-sports participation was not merely entertainment but also an informal pathway into peer networks, intercultural relationships, campus belonging, and identity negotiation. Students first enter these communities through skill learning, mentoring, advice, teamwork, and informal conversations. As participation deepened, gaming interactions created opportunities for cross-cultural collaboration, emotional attachment, recognition, and belonging. However, integration remained conditional because language barriers, unequal recognition, exclusion, and resistance to culturally specific expression could weaken participation. The three themes trace this negotiated movement from community engagement to intercultural relationship-building and identity negotiation (Table 2). Within each theme, participants' accounts are placed in relation to one another to explain why similar forms of participation led to different integrative outcomes.

Table 2. Theme & subtheme

Theme	Subtheme
Theme 1: Social Apprenticeship through Digital Play	Subtheme 1.1: Collaborative Skill Development
	Subtheme 1.2: Informal Social Bonding
Theme 2: From E-sports Participation to Intercultural Belonging	Subtheme 2.1: Cross-cultural Peer Collaboration
	Subtheme 2.2: Affective Attachment to the Community
Theme 3: Negotiated Visibility in Cross-cultural Digital Spaces	Subtheme 3.1: Adaptive Identity Strategies
	Subtheme 3.2: Resistance and Assertion of Identity

Social Apprenticeship through Digital Play

This theme shows how e-sports communities provided international students with an accessible entry point into campus social life. For many participants, gaming was the first setting in which they could interact with peers regularly without the pressure of formal academic communication. Through mentoring, observation, shared practice, error analysis, and informal chatting, students gradually moved from being peripheral participants to being more active community members. In this sense, e-sports participation improved not only gaming competence. It also taught students how to communicate, cooperate, ask for help, offer support, and understand the unwritten norms of peer interaction. Theme 1 therefore explains the first stage of social integration: students became socially visible through collaborative learning and informal bonding.

Collaborative skill development refers to learning game skills, strategies, and teamwork through shared practice and peer guidance. It reveals whether technical

participation also gives newcomers access to the community's communicative routines and expectations.

“Throughout the tournament week, there were two senior members who mentored me and provided advice on strategy and coordination in the game. This feedback was very valuable for learning about the mechanisms of gameplay as well as effective communication between teammates” (P1, Female, Malaysia).

“In practice, I tend to watch more experienced players and try to use the same tactics when playing against others. Additionally, we analyze our errors together, and this not only improves my skills but also helps improve the performance of the whole team” (P3, Female, Thailand).

P1 and P3 identify two routes into shared practice: direct mentoring and observation combined with collective error analysis. Both made learning relational rather than individual. P4 tests this pattern by showing what occurred when experienced members withheld guidance.

“There were some seniors who were preoccupied with their strategies and did not give advice at all. Therefore, I had to rely on myself, which significantly slowed down the learning process” (P4, Male, Malaysia).

Taken together, the accounts identify peer guidance as the mechanism linking technical learning with community entry. P1 received strategic and communicative support, whereas P3 learned through observation and collective reflection. P4 remained a participant but lacked social apprenticeship, leaving learning more individually and slowing progress. Collaborative skill development therefore supported integration only when knowledge and interaction were made accessible.

Informal social bonding refers to conversations, humor, advice, and support surrounding online and offline play. It shows whether task-based participation extends into familiarity, trust, and continued involvement.

“During practice sessions, there is a lot of informal communication going on between us, such as jokes, advice, and helpful tips, which make us feel comfortable and motivate us to voice our opinions” (P4, Male, Malaysia).

P2 and P4 describe connected but distinct routes into this social layer. Postmatch conversation sustained contact beyond gameplay, whereas humor and

advice during practice made contributions easier. P9 tests the limits of both routes because informal interaction remained socially closed.

“Most of our communication happens during practice before or after training sessions, and since I do not know most of the other participants, I tend to feel left out during such informal discussions” (P9, Female, Malaysia).

Across the accounts, bonding depended not on the presence of casual talk but on access to it. P2 became more willing to return, and P4 became more comfortable with voicing opinions. P9 encountered similar interactions from the margins and felt excluded. Informal bonding therefore connected participation with belonging only when everyday conversation widened the social boundaries of the team.

From E-Sports Participation to Intercultural Belonging

This theme explains how e-sports participation moved beyond community entry and became a mechanism for intercultural relationship-building. Once students became involved in team practices, tournaments, and online discussions, they were required to communicate across language, cultural, and tactical differences. These repeated interactions created opportunities for trust, mutual adjustment, and emotional attachment. For many participants, belonging emerged not from formal university programmes but from being needed by teammates, receiving support, contributing to shared goals, and feeling that their presence mattered. Theme 2, therefore, captures the second stage of social integration: e-sports communities help students convert repeated collaboration into intercultural recognition and campus belonging.

Cross-cultural peer collaboration refers to joint role allocation, strategy formation, problem solving, and knowledge exchange across cultural and linguistic differences. It reveals whether shared tasks generate mutual adjustment or preserve communicative inequalities.

“During each weekly practice, I cooperated with fellow team members from other countries. We allocated roles and created strategies, which helped me comprehend their point of view. Even after each practice session, we kept talking about the game in the chat and exchanging our experience. Thus, despite the cultural difference, we managed to create a strong bond” (P5, Female, Singapore).

“In our team, there are players from Malaysia, Thailand, and Singapore. Our approach to the game differs, but we try to communicate efficiently and adjust our language to include everyone in the conversation. All of that made me feel as if I was an integral member of the group” (P10, Male, Thailand).

P5 and P10 linked collaboration to stronger relationships through different mechanisms. P5 emphasized continued exchange across practice and group chat, whereas P10 emphasized deliberate language adjustment. P6 exposes the tension within these practices because the same communication on which collaboration depended could exclude members through slang and speed.

“At times, I refrain from expressing my ideas because of some difficulties in communication with my teammates. They use slang or speak faster than I do, making me feel left out during the discussion process” (P6, Male, Thailand).

Together, the accounts show that intercultural understanding arose from inclusive coordination rather than contact alone. Continued exchange helped P5 build bonds, and language adjustment made P10 feel integral to the team. P6’s withdrawal shows that shared tasks without communicative access did not provide equivalent recognition. Collaboration advanced belonging only when teams distributed both practical responsibility and opportunities to speak.

Affective attachment to the community refers to the emotional connection that sustains participation and makes community membership personally meaningful. The accounts distinguish attachment from enjoyment by showing whether achievement, support, and feedback made students feel that their presence mattered.

“Winning a tournament together provided me with a great sense of accomplishment and belonging. Being part of the team, whose effort counts, was something that I was proud of. Such positive experiences motivate me to engage further in teamwork and socialization with peers from different backgrounds” (P3, Female, Thailand).

“It did not matter that I had difficulties applying some strategy in the game. My peers always supported me and were ready to share tips on how to act during such situations. Thus, my feeling of acceptance was growing, and I became increasingly eager to collaborate and interact socially” (P8, Male, Thailand).

P3 and P8 reached attachment through related but distinct experiences. Collective achievement gave P3 pride in contributing, whereas support during difficulty gave P8 a growing sense of acceptance. P2 provides a critical contrast because frequent participation without feedback produced invisibility rather than connection.

“I often take part in games; however, I do not receive any feedback, so I can feel rather invisible for other members. Owing to this issue, I am not eager to socialize and discuss things with my fellow players” (P2, Male, Singapore).

The comparison shows that attachment was generated by recognition embedded in interaction. Success mattered to P3 because it was shared, and support mattered to P8 because peers responded to his difficulty. P2 participated regularly without comparable acknowledgment and became less willing to socialize. Belonging therefore depended less on participation frequency than on evidence that effort and presence were noticed.

Negotiated Visibility in Cross-cultural Digital Spaces

This theme identifies negotiated visibility as the process through which students decide how much of their cultural and personal identity can be made visible inside e-sports communities. Social integration was not simply a matter of adapting to others. As students became more involved, they judged when to adjust their language, tone, and behavior; when to withhold culturally specific expression; and when to assert their own strategies or communication styles. They wanted to be recognizable enough to receive peer validation but not so culturally different that their contributions became socially risky. These practices show that e-sports communities are not culturally neutral spaces. They were social arenas in which international students balanced cooperation, recognition, and cultural self-expression.

Adaptive identity strategies refer to adjustments in language, tone, behavior, and self-presentation used to participate in community norms. They reveal both students' agency in seeking inclusion and the unequal burden placed on newcomers to maintain interaction.

“When joining a new gaming team, I would look at how the group communicates, adapt my communication style, and fit in fast. In case of differences, I would focus on common goals and not differences” (P2, Male, Singapore).

“I often change my language tone when communicating with international teammates in order to align our interactions. Even small changes can make me included easily. Through adapting myself, I feel accepted and respected in the process of communication both digitally and physically” (P6, Male, Thailand).

P2 and P6 reduced communicative distance in different ways. P2 prioritized common goals, whereas P6 adjusted tone and language. Both connected adaptation with acceptance. P9 complicates this relationship because conformity to group norms was met with continued disregard.

“Despite changing my language and following the established norms, some members chose to ignore my proposals. It was very disappointing to determine that despite making efforts, I have failed to be included” (P9, Female, Malaysia).

Together, the accounts separate adaptation from assimilation and from guaranteed inclusion. P2 and P6 adjusted situationally to sustain interaction, indicating strategic agency rather than the abandonment of identity. P9 made comparable efforts but remained unheardful, exposing a tension between fitting established norms and being recognized as a contributor. Adaptation facilitated access only when the community responded reciprocally.

Resistance and assertion of identity refer to efforts to preserve cultural or personal authenticity by introducing distinctive tactics, communication norms, and viewpoints. This subtheme examines whether membership allows participants to influence shared practices rather than merely adapt to them.

“Although there were established methods of play on the team, I often offered different tactics on the basis of what I knew. They took my input seriously, which helped me establish my identity and contribution. Defending my position sometimes led to disagreements, but they helped them better understand me and my culture” (P7, Female, United States).

“I always tried to incorporate some aspects of my communication norms into our virtual meetings even though it felt odd at first, but slowly, the other members adjusted to me, helping me stay authentic in that space” (P1, Female, Malaysia).

P7 and P1 illustrate different forms of successful assertion. P7 defended alternative tactics despite disagreements, whereas P1 maintained familiar communication norms until teammates adjusted. P11 encountered the opposite response, showing that culturally grounded contributions could be dismissed before they became negotiable.

“When I tried to propose ideas based on my culture, some members found no sense in them, which forced me to doubt my ability to share myself with this group” (P11, Female, Singapore).

The contrast identifies negotiated visibility as both an opportunity and a risk. Recognition allowed P7’s tactical difference to become a contribution and enabled P1’s communication style to enter group routines. Rejection led P11 to question whether cultural self-expression was welcome. Assertion therefore supported integration when difference could reshape shared practice but weakened it when difference was treated as irrelevant.

DISCUSSION

The discussion is organized around three processes that gave rise to ACEs: collaborative participation, recognition through collaborative usefulness, and

negotiated visibility. These processes were identified through synthesis after the three themes were established. Each theoretical lens explains one part of the process, but none fully explains the conditional movement among the parts. Communities of Practice explains how shared practice creates access, Sense of Belonging Theory explains when access becomes recognition and mattering, and Identity Negotiation Theory explains how culturally different students manage adaptation and self-expression. ACE adds a relational explanation connecting these movements. It shows why participation may remain peripheral without recognition, why recognition may remain fragile when cultural expression is constrained, and why integration depends on the recurring alignment of access, valued contribution, and legitimate difference. This is also the basis for analytical transferability because the concept identifies a process that may recur across settings while remaining shaped by local institutional, cultural, and platform conditions.

Collaborative Participation and Social Entry

For many international students in this study, e-sports participation was not a leisure activity added after they had already become socially integrated into university life. Rather, it was one of the first spaces through which they began to enter university society. Previous studies have shown that international students often face loneliness, weak peer connections, and difficulty developing a stable sense of belonging, whereas informal social participation can improve their levels of engagement, motivation, and adaptation (Ivanova et al., 2025; Zhang et al., 2025; Kelly et al., 2024). The participants' accounts support that argument, but the analysis extends it by specifying how the first steps of integration appeared in everyday practice. Students did not become socially included through abstract "participation." They entered the community by watching senior players, receiving tactical advice, discussing mistakes after matches, helping newer members, and remaining in group chats where jokes, tips, and daily life conversations continued after the game ended. Interpreted through communities of practice, these practices can be understood as learning that also functioned as social entry. Learning how to play was also to learn how to speak, listen, ask, respond, and become recognizable within a peer group. The microlevel process interpreted here is therefore not simply peer learning but social apprenticeship through digital play. E-sports gave international students a low-pressure route to campus social life because competence, contribution, and repeated interaction became more important than nationality, language background, or initial unfamiliarity. At the same time, the counterexamples qualify this interpretation by indicating that this pathway was fragile. When mentoring was absent or informal conversations were inaccessible, students remained on the edge of the group even if they were technically present. Therefore, in response to RQ1, participants described e-sports participation through structured collaboration and informal relational routines, and the analysis interprets these routines as transforming gaming from an activity of play into an early mechanism of social integration within Chinese university life.

Collaborative recognition and intercultural belonging

The second interpretive movement drawn from the findings is that e-sports did not merely place students inside a diverse group; under certain conditions, it helped them develop belonging across cultural differences. Existing studies report that higher-education e-sports can support communication, strategy-making, motivation, social interaction, and affective engagement (Karakaya et al., 2026; Zhong et al., 2024; Tang et al., 2024), but these outcomes should not be treated as belonging by themselves. Baumeister and Leary's (1995) account of belonging emphasizes recurring positive interactions within stable relationships, whereas Strayhorn (2018) stresses students' perceptions of support, mattering, and being cared about and valued. Read through these theories, inclusion refers to access to the group, whereas belonging requires felt evidence that one's presence, ideas, and emotional contributions are meaningful to others. Participants developed belonging when collaborative problem solving produced interpersonal recognition: teammates listened to their ideas, waited for them, offered feedback, relied on their contributions, and shared the emotional consequences of victory and defeat. The analysis interprets this pattern as recognition through collaborative usefulness. This explains why students could move from being present in a gaming group to feeling that their presence, cultural identity, and contributions mattered within it. The negative cases sharpen this distinction. When communication was dominated by faster speakers, slang, silence, or absent feedback, students could remain formally included in the roster while still lacking recognition. Therefore, in response to RQ2, participants' accounts indicate that e-sports participation mediated intercultural relationships and campus belonging only when repeated collaboration enabled them to feel seen, needed, and valued.

Negotiated Visibility and Conditional Integration

In the final interpretive movement, after students gained access and began to develop belonging, integration still required continuous identity negotiation. From Ting-Toomey's (1993, 2005) perspective, this was not a smooth movement from outsider to insider but a balancing act between identity security and vulnerability, inclusion and differentiation. The participants adjusted their language, tone, and behavior to sustain cooperation; however, they also asserted culturally specific ideas, communication norms, humor, and strategies when they wanted their difference to be recognized as contributing. This pattern challenges the assumption that e-sports communities operate as culturally neutral spaces. The gaming setting reduced some barriers because shared goals and performance mattered, but team communication, peer validation, slang, feedback, and tactical authority still carried cultural expectations. Integration therefore did not mean the disappearance of difference. It depended on whether difference could remain visible and legitimate within shared practice. The analysis interprets this process as negotiated visibility. Counterexamples qualify this interpretation: some students adapted but were still ignored, while others asserted themselves and encountered resistance. In response to RQ3, social integration depended not only on students' willingness to adjust but also on whether peers recognized culturally different ways of contributing as part of the shared practice.

Contribution and Novelty

This study makes three interrelated contributions to the primary theoretical lenses engaged in the review. First, it extends Lave and Wenger's (1991) account of legitimate peripheral participation and Wenger's (1998) emphasis on mutual engagement, joint enterprise, and shared repertoire by showing that, in e-sports communities, movement toward fuller participation involves not only skill learning but also social apprenticeship through digital play. International students entered university social life through watching, asking, coordinating, receiving feedback, making mistakes, and engaging in informal conversations. Second, the study contributes to Baumeister and Leary's (1995), Hagerty and Patusky's (1995), and Strayhorn's (2018) accounts of belonging by showing that recurrent interaction became belonging only when students experienced valued involvement, fit, and mattering. Students felt that they belonged when their tactical ideas, emotional support, cultural identity, and team contributions were recognized as meaningful rather than merely tolerated. Third, it develops negotiated visibility as a conceptual contribution within Ting-Toomey's (1993, 2005) identity negotiation theory. Informed by acculturation and social identity perspectives, negotiated visibility explains how students calibrated adaptation and cultural expression by adjusting language, tone, and behavior enough to cooperate while seeking recognition for culturally specific ideas, communication norms, and personal strategies (Berry, 1997; Tajfel & Turner, 1979). Taken together, these extensions define integration as recognition of difference within shared practice: explaining how participation, recognition, and negotiated visibility connect or become interrupted in participants' accounts.

Adaptive cross-cultural engagement (ACE) is an empirically derived process through which collaborative participation, interpersonal recognition, and negotiated visibility become connected in e-sports communities. It is an emergent analytical concept rather than a fourth theory or a predefined framework. Communities of Practice accounts for entry through shared activity, Sense of Belonging Theory clarifies when participation becomes mattering, and Identity Negotiation Theory explains how students adapt while expressing cultural difference. ACE adds an explanation of the transitions and interruptions that these theories illuminate only separately. It captures a conditionally sequential relationship: participation can create access, reciprocal recognition can make that access socially meaningful, and negotiated visibility can sustain integration by allowing difference to remain legitimate within shared practice. The processes may also overlap and feed back into one another because identity expression can alter team practice, and recognition can encourage further participation. Integration becomes more likely when interactions are repeated and interdependent, contributions receive reciprocal acknowledgment, and cultural expression is accommodated. It may stall when access remains peripheral, communication hierarchies prevent recognition, or acceptance depends on cultural restraint. The ACE therefore explains why participation may not become a belonging and why belonging may remain fragile. Comparisons with research from the United States, Japan, the United Kingdom, Hong Kong, South Korea,

Taiwan, and Germany suggest that these processes may extend beyond China, while language practices, platform use, institutional arrangements, and peer norms remain context dependent (Ivanova et al., 2025; Zhang et al., 2025; Zhang & Shen, 2025; Lee, 2025; Berg, 2025). In future research, ACEs can be operationalized through three observable processes: repeated and interdependent participation, reciprocal recognition of contributions, and accommodation of culturally distinct communication or strategies.

The findings also have practical implications for staff and students who organize campus e-sports. International student offices and student affairs units can treat e-sports clubs as informal integration spaces by supporting mixed teams, newcomers, and clear communication norms. Club advisers, captains, and peer mentors can make collaborative participation more inclusive by pairing new international students with experienced players, explaining team routines, and inviting tactical input during practice. They can strengthen recognition by rotating roles, providing feedback that acknowledges contribution, and monitoring whether group chats exclude slower speakers or newcomers. They can support negotiated visibility by allowing culturally different communication styles, humor, and strategies to become part of team routines. This follows the conditional logic of ACE because access alone is insufficient; integration depends on whether participation becomes recognition and recognition leaves room for visible difference.

Conclusion

This study examined international students' e-sports participation, intercultural relationship-building, and identity negotiation in Chinese universities. The results of the twelve semistructured interviews reveal that e-sports communities can function as informal infrastructures of social integration. Students entered peer networks through tournaments, training, role allocation, tactical discussion, mentoring, group chats, humor, and daily life sharing. These practices turned digital play into social apprenticeship because learning to play also meant learning to communicate, cooperate, ask for support, and become recognizable within a peer community. As participation deepened, repeated collaboration produced intercultural belonging through emotional recognition. Students felt included when their ideas were heard, their contributions were useful, and their teammates offered support. However, this process remained conditional, as language barriers, dominant communication styles, limited feedback, and informal exclusion could weaken attachment. Identity negotiation formed the final stage of integration. Students adjusted their language, tone, and behavior to fit team norms while also adopting culturally specific ideas and personal strategies. Taken together, these findings revealed adaptive cross-cultural engagement as an emergent concept linking collaborative participation, interpersonal recognition, and negotiated visibility. The ACE was not used as a predefined framework and does not replace the three theories. It explains the conditional relationship identified across the themes: participation often enabled recognition, recognition shaped identity negotiation, and all three processes could overlap or become tense. Future studies

may examine whether these connections recur in other cultural and institutional contexts.

Limitations and Future Directions

This study has several limitations. First, the sample included twelve international students at Chinese universities; thus, the findings should be understood as analytically transferable rather than statistically generalizable. Second, the study focused on students who had already participated in e-sports communities, which means that the experiences of nonparticipants or students who left these communities remain less visible. Third, the research focused on Chinese university contexts, where institutional culture, language environments, peer relations, and platform practices may shape e-sports participation in specific ways. Future research could include larger and more diverse samples across countries and other interest-based digital communities. Longitudinal and comparative designs could be used to examine whether the relationships identified by ACEs recur in other settings, while transferability could be treated as the possible recurrence of participation, recognition, and negotiated visibility rather than direct replication of the Chinese case.

Ethical Approval

This study was approved by the ethics committee of the institution, ensuring that the privacy and rights of all participants were fully protected.

Informed Consent

All the participants signed informed consent forms before the start of the study, clearly understanding the purpose, process, potential risks, and voluntary nature of their participation.

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In the preparation of this manuscript, we utilized artificial intelligence (AI) tools for content creation with the following capacity:

- ☒ *None*
- ☐ *Some sections, with minimal or no editing*
- ☐ *Some sections, with extensive editing*
- ☐ *Entire work, with minimal or no editing*
- ☐ *Entire work, with extensive editing*

We have disclosed any use of artificial intelligence (AI) tools in the manuscript's Materials and Methods section and acknowledge full responsibility for the integrity of the content and compliance with ethical standards, per COPE guidelines and the Journal of International Students

REFERENCES

- Allen, K., Slaten, C., Hong, S., Lan, M., Craig, H., May, F., & Counted, V. (2024). *Belonging in higher education: A twenty-year systematic review. Journal of University Teaching and Learning Practice*, 21(5).
- Baumeister, R. F., & Leary, M. R. (1995). The need to belong: Desire for interpersonal attachments as a fundamental human motivation. *Psychological Bulletin*, 117(3), 497–529.
- Berg, M. (2025). Refugee integration in Germany: The interplay of othering, digital exclusion, and identity negotiation. *Journal of International Migration and Integration*, 26(2), 23.
- Berry, J. W. (1997). Immigration, acculturation, and adaptation. *Applied Psychology*, 46(1), 5–34. <https://doi.org/10.1111/j.1464-0597.1997.tb01087.x>
- Barr, M. (2017). Video games can develop graduate skills in higher education students: A randomized trial. *Computers & Education*, 113, 86–97. <https://doi.org/10.1016/j.compedu.2017.05.016>.
- Cohen, E., & Viola, J. (2022). The role of pedagogy and the curriculum in university students' sense of belonging. *Journal of University Teaching & Learning Practice*, 19(4).
- Dost, G. (2024). Students' perspectives on the 'STEM belonging' concept at A-level, undergraduate, and postgraduate levels. *International Journal of STEM Education*, 11, 12.
- Dost, G., & Mazzoli Smith, L. (2023). Understanding higher education students' sense of belonging: A qualitative meta-ethnographic analysis. *Journal of Further and Higher Education*, 47(6), 822–849.
- Gul, O., & Yurtsizoglu, Z. (2025). Development and validation of the scale for analyzing the consumption behaviors of e-sports players. *SAGE Open*, 1–21.
- Hamari, J., & Sjöblom, M. (2017). *What is eSports and why do people watch it? Internet Research*, 27(2), 211–232.
- Haq, S. U., & Kwok, R. Y.-K. (2024). Encountering “the other” in religious social media: A cross-cultural analysis. *Social Media + Society*, 1–16.
- Hassan, S. (2025). Female Arab international students negotiate their identities. *Journal of International Students*, 15(3), 203–220.
- Hagerty, B. M. K., & Patusky, K. (1995). Developing a measure of sense of belonging. *Nursing Research*, 44(1), 9–13. <https://doi.org/10.1097/00006199-199501000-00003>
- Ivanova, P., Sun, Y., Li, W., & Bista, K. (2025). International students' loneliness and social engagement: Narratives from the United States and Japan. *Journal of International Students*, 15(4), 1–20.

- Jin, R., & Gong, Q. (2026). From TikTok exodus to RedNote rituals: A transcultural communication analysis of the “Cat Tax” phenomenon. *Journal of International and Intercultural Communication*.
<https://doi.org/10.1080/17513057.2026.2647142>
- Karakaya, Y. E., Ayçiçek, S. D., Gelbal, S., Devocioğlu, S., Maviş Sevim, F. Ö., Yenen, E. T., & Dikmen, M. (2026). Development and psychometric evaluation of the E-sports Attitude Scale. *International Journal of Assessment Tools in Education*, 13(1), 308–329.
<https://doi.org/10.21449/ijate.1662535>
- Kelly, M. L., Nieuwoudt, J., Willis, R., & Lee, M. F. (2024). Belonging, enjoyment, motivation, and retention: University students’ sense of belonging before and during the COVID-19 pandemic. *Journal of College Student Retention: Research, Theory & Practice*, 28(1), 92–111.
- Lave, J., & Wenger, E. (1991). *Situated learning: Legitimate peripheral participation*. Cambridge University Press.
- Lee, S. H. (2025). From national borders to digital frontiers: Comparing the impacts of social media use on transnational identity negotiation in South Korea and Taiwan. *Journal of East Asian Studies*, 25, 68–97.
- Liu, G. L. (2025). Digital empowerment for rural migrant students in China: Identity, investment, and digital literacies beyond the classroom. *ReCALL*, 37(2), 215–231.
- Luguterah, A. W. (2025). Geopolitical implications of e-sports. *Games and Culture*, 1–27.
- Liang, W., Shamshudeen, R. I., Syed, M. A. M., & Hui, S. (2025). Reverse generative learning: intergenerational learning for global readiness in higher education. *Journal of International Students*, 15(12), 119–140.
- Liang, W., Li, J., Wei, J., Min, Y., & Lam, A. T. Z. (2025). Interdisciplinary situational teaching for postgraduate connotative development: An integrated perspective of scaffolding theory and symbolic interactionism. *Journal of International Students*, 15(10), 153–176.
- Mariano, J. S., & Cordova, S. G. V. (2022). E-sports online learning module amidst COVID-19 pandemic. *Interactive Learning Environments*, 1–11.
- Mohamad, D., & Manning, K. D. (2024). What does it mean to ‘belong’? A narrative literature review of ‘belongingness’ among international higher education students. *Journal of International Students*, 14(1), 21–37.
- Park, S.-H., & Mahony, D. F. (2024). Challenges of e-sports based on big data and qualitative analyses: How should e-sports develop in the future? *South African Journal for Research in Sport, Physical Education and Recreation*, 46(1), 1–21.
- Ribeiro, T., Calapez, A., Almeida, V., & Matsuoka, H. (2023). Understanding the role of sport values on social capital and word-of-mouth on the internet: A case study of esports games. *Simulation & Gaming*, 54(6), 645–679.
- Strayhorn, T. L. (2018). *College students' sense of belonging: A key to educational success for all students (2nd ed.)*. Routledge.

- Tang, Y., Zhang, X., & Zan, S. (2024). Exploring e-sports fans' motivation for watching live streams based on self-determination theory. *Scientific Reports*, 14, 13858.
- Tajfel, H., & Turner, J. C. (1979). *An integrative theory of intergroup conflict*. In W. G. Austin & S. Worchel (Eds.), *The social psychology of intergroup relations* (pp. 33–47). Brooks/Cole.
- Ting-Toomey, S. (2005). *Identity negotiation theory: Crossing cultural boundaries*. In W. B. Gudykunst (Ed.), *Theorizing about intercultural communication* (pp. 211–233). Sage.
- Ting-Toomey, S. (1993). *Communicative resourcefulness: An identity negotiation perspective*. In R. L. Wiseman & J. Koester (Eds.), *Intercultural communication competence* (pp. 72–111). Sage.
- Vander Tavares, V. (2024). Feeling excluded: International students' experience of equity, diversity, and inclusion. *International Journal of Inclusive Education*, 25(14), 1733–1750.
- Wong, B. (2024). Exploring the spatial belonging of students in higher education. *Studies in Higher Education*, 49(3), 546–558.
- Wenger, E. (1998). *Communities of practice: Learning, meaning, and identity*. Cambridge University Press.
- Yao, M. (2025). The study of the effects of digital media applications in cross-cultural communication in the construction of cultural identity. *Acta Psychologica*, 258, 105247.
- Zhang, H., Abbott, N., Waldeck, D., & Holliman, A. (2025). Social interaction, sense of belonging, and psychological wellbeing: A study of Chinese international students in UK higher education. *Frontiers in Education*, 10, 1677348.
- Zhang, L., & Shen, T. (2025). Identity negotiation on the LIHKG platform: A grounded theory study of Mainland Chinese immigrants' adaptation to Hong Kong society. *Frontiers in Psychology*, 16, 1643942.
- Zhang, Q., & Mohamad, D. B. (2025). Mapping identity dynamics in heritage tourism: A bibliometric and theoretical review. *Cogent Social Sciences*, 11(1), 2598726.
- Zhong, Y., Guo, K., & Chu, S. K. W. (2024). Affordances and constraints of integrating esports into higher education from the perspectives of students and teachers: An ecological systems approach. *Education and Information Technologies*, 29, 16777–16811.

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