The Role of Feedback and Interaction in Online Learning Platform Adoption: A Mixed-Methods Study of Chinese University Students

Mingzhu Huang*, Nurliza Haslin Binti Muslim
ALFA University College, 47600 Subang Jaya, Selangor, Malaysia

Abstract: Online learning platforms have become very popular in Chinese higher education. It is, however, an important challenge to understand the social and interactive factors that explain how students sustain their online learning practices. This mixed-methods study examines the role of feedback and interaction in inducing undergraduate students' adoption of the Chaoxing Online Learning Platform (COLP). Based on Vygotsky's scaffolding theory and the Community of Inquiry framework, we adopted a sequential explanatory design for our research: first, a quantitative survey of 452 students from five universities in Guangzhou; then semi-structured interviews with 14 purposively sampled students. The quantitative results show that Feedback & Interaction significantly predicted Self Efficacy ($\beta = 0.22$, $p < 0.001$), Behavioural Intention to use COLP ($\beta = 0.24$, $p < 0.001$), and that those effects were partially explained by self-efficacy.Qualitative findings identify five key mechanisms: (1) timely and specific feedback constitutes a source of motivation and direction; (2) delayed or generic feedback erodes motivation and"app use interest"; (3) peer communication stimulates learning, affiliation, and empathy-driven confidence building; (4) instructor excitement primes effective app use; and (5) social dynamics, FOMO and evident peer use champions enhance or moderate app use adoption. These findings encapsulate quality feedback and interaction effects on online learning in a way that may provide practical guidance for instructors, administrators and platform developers interested in making students feel engaged and drawn to continuous platform use.

***Keywords*:** feedback, peer interaction, online learning platform, self-efficacy, Community of Inquiry, Chaoxing, Chinese higher education

1. Introduction

As online learning platforms explode in China's higher education, the teaching and learning environment has undergone a fundamental transformation. Platforms such as Chaoxing (COLP) offer a holistic digital ecosystem to support course management, resource sharing, evaluation and communication, etc. (Wang & Chen, 2024). However, having a platform on the market does not mean it effectively engages students. One main challenge of online education is high dropout and low continuous engagement, especially for platforms that are mandated to be used rather than one that students choose to use (Zhang & Liu, 2023).

Among all the many factors affecting online learning engagement, feedback and interaction have a distinctive status. Vygotsky's scaffolding theory suggests that learning is essentially a social activity and knowledge is created through interaction with the more knowledgeable other (Vygotsky, 1978). In online learning, feedback from instructors and other students is primary scaffolding for students to explore novel content and internalize their capability for autonomous learning. In a similar fashion, the Community of Inquiry (CoI) model highlights the importance of the interplay between cognitive presence, social presence and teaching presence, to generating meaningful learning experiences in the online environment (Garrison et al., 2000). Feedback and interaction are essential to each of the three presences: they contribute to the learning of cognitive presence, to the building of social presence, and to teaching presence.

Although feedback and interaction have theoretical significance, empirical studies on their specific roles in online learning platform adoption, especially in the Chinese higher education environment, remain rare. Most existing studies considered feedback to be a part of general constructs such as information quality or service quality and never recognized its distinct effect on platform adoption (Henderson et al., 2022). This study is different from these findings by exploring how feedback and interaction affect students' self-efficacy and intention to use COLP, through a mixed methods approach to understanding not only the statistical patterns but also students' felt lives.

2. Theoretical framework

2.1 Vygotsky's scaffolding theory

Unlike the idea of the Zone of Proximal Development in Vygotsky's theory, a Zone of Proximal Development describes the gap between what a learner can do alone and what a learner can do with a more knowledgeable other. Scaffolding is temporary support for closing that gap and it is the support needed for learning and development (Vygotsky, 1978). In online learning environment, feedback from instructor and peer is a form of digital scaffolding, the support that the students need to move from dependent knowledge to autonomous knowledge. Course knowledge is the foundation for course class interaction in which interaction is both the construction of and output of knowledge. Through the iterative construction and output of knowledge, students obtain cumulative learning effect (Zhang & Yao, 2020).

2.2 Community of Inquiry Framework

However, Community of Inquiry (CoI) conceptualises three interdependent presences needed for effective learning in a meaningful online environment (Garrison et al., 2000). Cognitive presence is the degree to which learners construct and confirm meaning through sustained reflection and discourse. Feedback that seeks reflection, challenges assumptions, and guides inquiry are components of cognitive presence. Social presence refers to an individual's ability to project their socio-emotional self "as 'real people'" in the community. Peer support, peer processes and helpful feedback, all enhance social presence. Teaching presence refers to the design, facilitation and direction of cognitive and social processes. Quality instructor feedback is one expression of teaching presence. When the three presences are fostered by quality feedback and interactions, students are more likely to find the platform valuable and persist in using it (Wallace & Costello, 2023).

2.3 Feedback and Self-Efficacy

Bandura's Social Cognitive Theory argues that social persuasion—encouragement and credentialed feedback from others—is a primary source of self-efficacy beliefs (Bandura, 1997). Helpful feedback, that is, timely, specific, supportive feedback, can have a positive impact on students' confidence that they can succeed. On the other hand, feedback that is delayed, generic, or overly critical can diminish confidence and foster avoidance. In online learning, the quality of the feedback from the online platform affects students' self-efficacy beliefs, and this in turn affects students' engagement and persistence (Henderson, Wirth, Dabbish, Kelly, & Pfetsch, 2022).

3. Methodology

3.1 Research Design

for this study we used a sequential explanatory mixed-methods design (QUAN → qual). In the quantitative part of this study, 452 undergraduate students from five universities in Guangzhou who were using COLP for at least one semester were sampled from a cross-sectional survey. The survey measured Feedback & Interaction (instructor feedback quality, peer interaction quality), Self Efficacy, Behavioural Intention to Use, and control variables. The quantitative data were analysed with Structural Equation Model (SEM) in AMOS 27.0. In the qualitative part of this study, semi-structured interviews with 14 purposively selected interviewees representing heterogeneity of CO users (e.g. enthusiastic champion users, anxious adopter users, previously disenchanted but obliging users) were done. The interviews were subject to reflexive qualitative thematic analysis (Braun & Clarke, 2023).

3.2 Measures

Feedback & Interaction was measured by two subscales: Instructor feedback quality (4 items, $\alpha = 0.87$), which measures the timeliness, specificity, and encouragement of feedback; and Peer interaction quality (3 items, $\alpha = 0.84$), which measures discussion forum participation, peer review quality, peer collaborative learning quality. Self efficacy was measured by 5 items ($\alpha = 0.91$); behavioral intention to use was measured by 4 items ($\alpha = 0.89$); all scored by Likert scale of 7-point response levels.

4. Quantitative Findings

4.1 Descriptive Statistics and Correlations

Feedback & Interaction showed significant positive correlations with Self Efficacy ($r = 0.49$, $p < 0.01$) and Behavioral Intention to Use ($r = 0.52$, $p < 0.01$). Instructor Feedback Quality ($r = 0.45$, $p < 0.01$) and Peer Interaction Quality ($r = 0.41$, $p < 0.01$) were both significantly correlated with Behavioral Intention.

4.2 Structural Model Results

Our structural model had a good fit: $\chi 2/df = 2.12$, CFI = 0.96, TLI = 0.95, RMSEA = 0.050, SRMR = 0.042. Feedback & Interaction significantly predicted Self Efficacy ($\beta = 0.22$, $p < 0.001$) and Behavioral Intention to Use ($\beta = 0.24$, $p < 0.001$). The bootstrapping analysis confirmed that Self Efficacy partially mediated Feedback & Interaction → Behavioral Intention (indirect $\beta = 0.08$, CI [0.04, 0.13] (95%)).

4.3 Comparative Analysis of Factor Effects

Among the four antecedent factors covered in the broader study, Feedback & Interaction was the second strongest antecedent of Behavioral Intention to Use ($\beta = 0.24$) (after Technological Attributes, $\beta = 0.27$) and third strongest of Self Efficacy ($\beta = 0.22$) (after Individual Characteristics, $\beta = 0.31$; Technological Attributes, $\beta = 0.29$). These positions highlight the importance, albeit not dominant, of interactive factors to the adoption process.

5. Qualitative Findings

Thematic analysis of the interview transcripts uncovered five major themes that highlight ways that feedback and interaction change platform adoption.

5.1 Theme 1: Feedback as a Source of Motivation and Direction

Participants all mention how useful this type of timely, specific feedback motivated them to spend more time learning both the course and the platform itself. Lily, our enthusiastic champion, said, 'When my professor writes specific comments about my assignments on COLP, it means that he/she really cares about my learning. It motivates me to do better in my next assignment.' Ming concurred, 'I like to get feedback the best, that is, from one professor, who uses the annotation tool to comment on my paper. She highlighted certain sentences and gave me specific comments on what works and what to improve. That was much more useful than a grade and a general comment.'

Specificity of feedback was particularly important. Participants said that they wanted feedback that let them know precisely what needed improvement and precisely what to do better. Generic feedback such as 'good job' or a simple grade with no explanation were all described as "useless" and demotivating. For example, Fang, a social-oriented user, wrote: "Sometimes teachers just say 'good job' or write a mark without commenting. This is totally useless for me. I don't know if I did anything well or wrong."

5.2 Theme 2: The Frustration of Delayed or Generic Feedback

By contrast, delayed or generic feedback was a major frustration that disrupted motivation and sense of platform usefulness. Hao, a frustrated expert, complained: "I've even had assignments where I get no feedback on until weeks after I turn the work in. And by then, I had already moved on to the other topics. Feedback was really irrelevant because I couldn't do anything with it that I was doing currently." This temporal dimension of feedback quality was especially salient to online learners where the lack of face-to-face teaching intensifies students' need for prompt direction. Participants who received delayed feedback felt abandoned or invisible, which undermined their confidence and lowered their desire to use the platform.

5.3 Theme 3: Peer Interaction as a Source of Learning and Belonging

Peer interaction through COLP discussion forums and tools for collaboration was also valued not only in terms of academic support, but also in helping people feel part of a community and sense of belonging. Fang described: "The discussion forum is actually very helpful. Whenever I cannot work something out, I can post a question and sometimes get a reply from classmate in hours. I feel like I am part of the community of learning." Ming, an enthusiastic champion of COLP, underlined the value of collaboration tools: "Group project in COLP is very cool. You can share documents, have a video conference, see progress of the group all in one place. It is much more comfortable than planning in a team by email or WeChat."

Nevertheless, not all peer interactions were positive. Rong, one of the anxious adopters, wrote: "I sometimes find the discussion forums scary. Everyone seems so confident and so eloquent, and I worry that my posting will be stupid. I usually just read what other people are posting and never comment unless I have to." This ambivalence also speaks to the need for instructors to create psychologically safe environments for peer-to-peer discussions, especially for students with high technology anxiety.

5.4 Theme 4: The Role of Instructor Enthusiasm

All participants commented on how their attitude about COLP was shaped by their instructor's attitude and competence. Mei noted, "If my professor is excited to use COLP and knows all of COLP's features, I am excited to use COLP too. But if

my professor is clueless about COLP and complains about it, I feel unhappy as well. Their attitudes are contagious."

This finding is consistent with the social influence construct in technology acceptance models and underlines the role of an instructor as an important "keystone species" in the classroom ecology. An instructor's enthusiasm models good platform usage, affirms student comfort, and indicates that the platform is a critical and valuable part of the course.

5.5 Theme 5: Social Dynamics—FOMO and Visible Champions

Social dynamics, such as fear of missing out (FOMO) and influence of visible peer champions, reinforced or weakened the influence of feedback and interaction. "I check COLP more than once a day, for fear of missing announcements or schedule changes," said Rong. "I do not like to use COLP. I do not like it. I just don't want to miss anything by not checking it."

Visible champions—peers who were particularly good and enthusiastic about COLP—were powerful transformers. Lily remarked: "There is one student in my class who always posts interesting posts on the discussion board and shares interesting resources. She makes the discussion board very interesting and lively. She inspires many students to participate in COLP actively." And Peng, himself a champion, said: "I am the person when my friends have some questions regarding COLP. I think that I can encourage others to use COLP more boldly because I use COL and focus too."

6. Integration and Discussion

6.1 The Transformative Power of Quality Feedback

Quantitatively, Feedback & Interaction was a significant predictor of both self-efficacy and behavioural intentions. Qualitatively, participants articulated how: quality feedback—particular feedback given quickly—provides direction and motivation; poor quality feedback—delayed or generic feedback—hits confidence and motivation. The empirical phenomena and the lived phenomena mesh nicely together, validating the findings and offering practical recommendations for application. The finding that instructor feedback quality is especially important aligns with Vygotsky's notion of scaffolding, where the more able others are the power-house for learning and moving learners' learning in the zone of proximal development. In online learning, feedback is scaffolding, and quality of feedback determines how a student can become autonomous and learning-adults or continue dependent and poor engagement in learning.

6.2 Peer Interaction as a Source of Vicarious Experience

Qualitative finding that peer interaction builds confidence from vicarious experiences resonates with Bandura's notion that vicarious experience is a source of self-efficacy. Students see their peers surmounting the challenge of the platform and contributing critically to discussions, and developing confidence that they can do the same. Nonetheless, the finding that some students find discussion forums intimidating calls for considered attention to facilitation and the creation of psychologically safe contexts for participation.

6.3 The Dual Role of Social Dynamics

Identification of FOMO and visible champions as influencers of social dynamics contributes to knowledge about how social influence operates in online learning settings. In technology acceptance models such as UTAUT, social influence is a construct that technology acceptance models include but not specify how social influence operates. This study's qualitative results suggest that social influence operates in negative motivation mechanisms (FOMO—anchoring towards the avoidance of the negative consequences of not participating) and in positive motivation mechanisms (emulation of visible champions). Both mechanisms have implications for platform design and pedagogy.

7. Conclusion and Implications

It is shown by this mixed-methods study that feedback and interaction indeed account for a substantial part of the reasons that undergraduates choose to use Chaoxing Online Learning Platform. Feedback & Interaction substantially predicted both self-efficacy and behavioural intention, with self-efficacy partially mediating the effect. Qualitative findings uncovered the mechanism: timely and specific feedback motivates and inspires learning; delayed and generic feedback erodes frustration and detachment; peer interaction facilitates learning and community sense; instructors' enthusiasm exemplifies effective use; peer social dynamics amplify and attenuate these effects.

Practical implications: For educators, these findings point to the importance of providing promptly, specific and encouraging feedback through the platform. Use of annotation tools, audio feedback and video feedback can enhance the social presence and personal connection of feedback (Henderson et al., 2022). For administrators, investing in faculty professional development for effective feedback practices is not optional but required for encouraging wide use of the

platform and student engagement. For platform developers, the tools for giving high-quality feedback (for example, annotation tools, rubric-based grading tools, peer grading tools) should be emphasized. Limitations and future research: Our cross-sectional design limits causal arguments. Future research should use longitudinal designs to study how feedback and interaction effects change over time. We have focused in this article on undergraduate students; future research on faculty perspectives would complement the understanding of feedback in online learning.

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