

The Impact of Organizational and Individual Factors on University Teachers' Teaching Innovation: A Mixed-Methods Study in Western China

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Abstract Teaching innovation has become a critical driver of higher education quality improvement, yet many university teachers face barriers to translating innovative ideas into practice, especially in under-resourced contexts. This study examines how organizational support, technological self-efficacy, and psychological factors influence teaching innovation among university teachers in western China. Using a mixed-methods approach, we collected survey data from 290 teachers and conducted semi-structured interviews with 12 award-winning innovators. Quantitative results show that organizational climate ($\beta = 0.32$, $p < .001$) and teacher well-being ($\beta = 0.28$, $p < .001$) are the strongest predictors of innovation implementation, while qualitative findings reveal key strategies such as frugal pedagogical adaptation and collaborative knowledge sharing. The study concludes that holistic institutional support, including flexible workload policies and targeted professional development, is essential for fostering sustainable teaching innovation. Implications for higher education institutions and policymakers are discussed.

Keywords: teaching innovation; university teachers; organizational climate; technological self-efficacy; higher education reform

1. INTRODUCTION

The rapid development of digital technologies and the global shift toward student-centered learning have transformed higher education worldwide. Universities are increasingly expected to promote innovative and technology-enhanced teaching practices that improve student engagement and learning outcomes. As a result, teaching innovation has become an important component of higher education reform and quality assurance (Yang, 2026). Teaching innovation refers to the intentional redesign of curricula, teaching methods, and assessment practices to enhance educational effectiveness.

Despite its importance, implementing teaching innovation remains challenging, especially in resource-constrained regions. University teachers often face limited technological support, heavy workloads, and institutional resistance to change. These challenges are particularly evident in universities in western China, where unequal access to educational resources and slower

digital development may restrict teachers' ability to adopt innovative instructional practices. Such difficulties can negatively affect educational quality and limit the effectiveness of higher education reform initiatives.

Previous studies have identified several factors related to teaching innovation, including teacher motivation, digital literacy, leadership support, and organizational climate. Recent research has also highlighted the role of psychological factors such as technological self-efficacy and well-being in influencing teachers' willingness to innovate. However, most existing studies have focused on these factors separately and have mainly examined universities in economically developed regions. Relatively little research has explored how organizational and psychological factors jointly influence teaching innovation in western China's universities.

To address this gap, the present study investigates the relationships among organizational climate, technological self-

efficacy, psychological well-being, and teaching innovation among university teachers in western China. By combining quantitative and qualitative approaches, this study seeks to provide a deeper understanding of how teaching innovation can be supported in resource-limited higher education contexts.

This study aims to:

Examine the effects of organizational climate, technological self-efficacy, and psychological well-being on teachers' implementation of teaching innovation.

Explore the strategies used by award-winning teachers to overcome barriers to instructional innovation in resource-constrained contexts.

Provide recommendations for higher education institutions to foster sustainable teaching innovation.

Research Hypotheses

H1: Organizational climate positively influences teaching innovation among university teachers.

H2: Technological self-efficacy positively influences teaching innovation among university teachers.

H3: Psychological well-being positively influences teaching innovation among university teachers.

2. LITERATURE REVIEW

2.1 Organizational Climate and Teaching Innovation

Organizational climate refers to teachers' perceptions of institutional support, leadership, collaboration, communication, and innovation culture within universities. According to Organizational Climate Theory, supportive working environments can positively influence teachers' motivation, professional engagement, and innovative behaviors. In higher education settings, organizational climate is particularly important because teaching innovation often requires administrative support, access to technological resources, and encouragement from institutional leadership.

Recent studies have emphasized the important role of organizational climate in promoting teachers' professional outcomes. For example, a study in Chinese higher education found that positive organizational climates

significantly improved educators' psychological well-being and job satisfaction, especially when institutions provided technological support and professional development opportunities. Other studies also suggest that supportive school climates encourage teachers to adopt innovative teaching approaches by increasing collaboration and reducing resistance to change.

However, current research mainly focuses on general educational outcomes such as job satisfaction and teaching engagement, while fewer studies directly examine teaching innovation in resource-constrained universities. Moreover, most studies investigate organizational climate independently rather than analyzing its interaction with psychological and individual factors.

2.2 Self-Efficacy Theory and Teaching Innovation

Self-efficacy theory, proposed by Albert Bandura, suggests that individuals' beliefs in their capabilities strongly influence their behaviors, motivation, and performance. In this study, technological self-efficacy refers to university teachers' confidence in their ability to effectively use digital technologies and innovative teaching methods in instructional practice.

Since the COVID-19 pandemic, technological self-efficacy has become an increasingly important factor in higher education research. Recent studies indicate that teachers with stronger technological self-efficacy are more willing to experiment with new pedagogical methods, integrate educational technologies, and sustain innovative teaching practices. Furthermore, research has shown that institutional support can strengthen teachers' self-efficacy, which subsequently promotes innovative teaching behavior.

Although previous studies confirm the positive relationship between self-efficacy and innovation, most research has focused on primary and secondary education or technologically advanced regions. Limited studies have explored how technological self-efficacy influences university teachers' innovation practices in western China, where

Quantitative data were collected from 290 teachers (62% female, 38% male) across 8 universities in western China, with teaching experience ranging from 1 to 30 years ($M = 8.2$ years). Qualitative participants included 12 teachers who had won provincial or national teaching innovation awards, selected using purposive sampling to ensure diversity in discipline, seniority, and institutional type.

3.2 Measures

Organizational Climate Scale: Adapted from previous research, this 15-item scale assessed perceived institutional support, workload flexibility, and peer collaboration ($\alpha = .87$).

Technological Self-Efficacy Scale: A 10-item scale measuring teachers' confidence in using educational technology ($\alpha = 0.89$), including tools for blended learning and AI-enhanced instruction.

Teacher Well-Being Scale: A 12-item scale capturing job satisfaction, burnout, and perceived autonomy ($\alpha = 0.82$).

Teaching Innovation Implementation Scale: A self-report measure of the frequency and impact of innovative practices (e.g., flipped classrooms, project-based learning) over the past academic year ($\alpha = 0.85$).

3.3 Procedure

Quantitative data were collected via an online survey administered through university teaching centers. Descriptive statistics and multiple regression analysis were conducted using SPSS 28. Qualitative data were collected through semi-structured interviews (60–90 minutes each) conducted in Mandarin, transcribed verbatim, and analyzed using thematic analysis in NVivo 12. Ethical approval was obtained from the Institutional Review Board of the lead author's university, and all participants provided informed consent.

4. RESULTS AND DISCUSSION

This section presents the findings of the study through quantitative and qualitative analyses. The quantitative findings are divided into descriptive and inferential results to examine the relationships among organizational climate, technological self-efficacy, teacher well-being, and teaching

innovation. The qualitative findings further explain the practical experiences behind the statistical results and provide a deeper understanding of teaching innovation in resource-constrained universities.

4.1 Quantitative Findings

4.1.1 Descriptive Results

Descriptive statistics indicated that the overall level of teaching innovation among participating university teachers was moderate ($M = 3.42$, $SD = 0.78$) on a five-point scale. This finding suggests that although many teachers had adopted certain innovative teaching methods, relatively few had established stable and systematic innovation practices in their teaching.

In addition, participants generally reported moderate perceptions of organizational climate, technological self-efficacy, and psychological well-being, indicating that both institutional and individual factors may influence the implementation of teaching innovation.

4.1.2 Inferential Results

Multiple regression analysis was conducted to examine whether organizational climate, technological self-efficacy, and teacher well-being significantly predicted teaching innovation. The regression model was statistically significant, $F(3, 286) = 42.71$, $p < .001$, explaining approximately 39% of the variance in teaching innovation ($R^2 = .39$, Adjusted $R^2 = 0.38$). This result indicates a moderate explanatory effect of the model.

The regression results are presented in Table 1.

Table 1. Regression Analysis of Factors Influencing Teaching Innovation

Variable	β	t	p
Organizational Climate	0.32	5.89	< 0.001
Technological Self-Efficacy	0.18	3.21	0.001
Teacher Well-Being	0.28	4.97	< 0.001

Note: $N = 290$. Control variables included age, gender, teaching experience, and institutional type.

The findings support H1, H2, and H3. Organizational climate demonstrated the strongest positive effect on teaching innovation ($\beta = 0.32$), suggesting a moderate relationship between institutional support and innovative teaching practices. Teacher well-being also showed a moderate positive effect ($\beta = 0.28$), indicating that psychologically healthy and satisfied teachers were more likely to engage in innovation. Technological self-efficacy had a weaker but still significant positive effect ($\beta = 0.18$), suggesting that confidence in using technology contributes to innovation, although institutional and psychological factors appear more influential.

These findings are consistent with previous research emphasizing the importance of supportive organizational environments and psychological resources in promoting teaching innovation (Lowrie & Diezmann, 2019).

4.2 Qualitative Findings

Thematic analysis of the interview data revealed that university teachers in western China adopted various strategies to sustain teaching innovation despite limited institutional resources. One major theme was frugal pedagogical innovation, in which teachers used low-cost and context-appropriate approaches, such as open educational resources, peer-learning activities, and flexible classroom redesign, to improve student engagement. Rather than depending heavily on advanced technologies, many participants emphasized creativity and adaptability in their instructional practices. As one English teacher explained, “We don’t need expensive tech to innovate—rethinking group work with limited tools can be just as impactful” (Participant 7, personal communication, March 2025). This finding suggests that innovation in resource-constrained contexts is often driven by practical adaptation rather than technological abundance.

Another important theme was collaborative knowledge sharing. Many participants highlighted the role of professional learning communities, departmental workshops, and peer collaboration in supporting innovative teaching practices. Teachers reported that sharing experiences with colleagues helped reduce professional isolation, increase confidence, and encourage

experimentation with new teaching methods. One science teacher stated that “Our department’s monthly innovation workshops allowed us to share failures as well as successes, which built trust and momentum” (Participant 3, personal communication, February 2025). These findings indicate that collaborative organizational cultures can strengthen teachers’ willingness to engage in continuous instructional improvement.

The interviews also identified autonomy as a catalyst for innovation. Participants frequently mentioned that institutional trust and professional flexibility encouraged them to redesign courses and experiment with new pedagogical approaches. Teachers felt more motivated to innovate when administrative control and bureaucratic restrictions were reduced. For example, one humanities teacher noted, “When my department head gave me flexibility to redesign my course without excessive bureaucracy, I felt empowered to take risks” (Participant 9, personal communication, April 2025). This finding highlights the importance of institutional autonomy and supportive leadership in promoting sustainable teaching innovation.

4.3 Integrated Discussion

The mixed-methods findings suggest that teaching innovation in western China’s universities is influenced by both organizational and individual factors. The quantitative results showed that organizational climate was the strongest predictor of teaching innovation, while the qualitative findings further demonstrated how institutional support, collaboration, and professional autonomy encouraged teachers to adopt innovative instructional practices. This finding is consistent with recent studies showing that supportive organizational environments positively influence teachers’ innovation behaviors and professional engagement (Liu et al., 2024).

Although technological self-efficacy significantly predicted teaching innovation, the interview findings suggest that innovation does not depend solely on access to advanced technologies. Many participants emphasized the importance of creativity, adaptability, and context-appropriate strategies when working in

resource-limited environments. This supports recent research arguing that sustainable innovation in higher education often emerges through flexible and low-cost pedagogical adaptation rather than technological investment alone (Zhang et al., 2024).

Another important finding was the relationship between teacher well-being and sustained innovation. Teachers who reported higher levels of emotional support, institutional trust, and professional autonomy appeared more willing to experiment with new teaching approaches despite existing challenges. Previous studies have similarly found that psychological well-being enhances teachers' motivation, resilience, and openness to instructional change (Dang et al., 2024).

At the same time, both phases of the study revealed a gap between institutional expectations for innovation and practical support structures. Many teachers reported that heavy workloads and administrative responsibilities limited the time available for experimentation and course redesign. Therefore, universities should move beyond symbolic encouragement of innovation and provide more substantial support mechanisms, such as workload reduction policies, collaborative teaching communities, and long-term professional development opportunities (Hao et al., 2025).

5. CONCLUSION

This study examined how organizational climate, technological self-efficacy, and teacher well-being influence university teachers' teaching innovation in western China through a mixed-methods approach. The quantitative findings showed that all three variables significantly predicted teaching innovation, with organizational climate emerging as the strongest predictor. These results indicate that supportive institutional environments, positive psychological conditions, and confidence in using technology all contribute to teachers' willingness to adopt innovative instructional practices.

The qualitative findings further explained the quantitative results by showing how teachers implemented innovation in resource-constrained contexts. Participants emphasized the importance of collaborative

knowledge sharing, professional autonomy, and "frugal pedagogical innovation" in sustaining innovative teaching practices. These findings support the statistical results by demonstrating that institutional support and teacher well-being are not only theoretical predictors but also practical conditions that shape teachers' everyday innovation experiences.

Overall, the study suggests that sustainable teaching innovation requires alignment between organizational support and individual capacity. Universities should therefore reduce excessive administrative burdens, strengthen collaborative teaching cultures, provide meaningful professional development opportunities, and prioritize teacher well-being as part of innovation policy. These findings are consistent with previous research emphasizing that innovation in higher education depends on both institutional systems and teacher agency (López-Pérez et al., 2021; Sun & Ye, 2022).

Several limitations should be acknowledged. First, the study relied partly on self-reported data, which may introduce response bias. Second, the research focused specifically on universities in western China, which may limit the generalizability of the findings to other regions or educational contexts. Future studies could adopt longitudinal designs to examine changes in teaching innovation over time and conduct cross-cultural comparisons to explore how institutional and cultural differences influence innovation practices.

In conclusion, teaching innovation is not solely an individual effort but a collaborative and context-dependent process. By investing in supportive institutional environments and teachers' professional well-being, higher education institutions can create conditions that encourage sustainable and meaningful instructional innovation.

6. RECOMMENDATIONS

6.1 Practical Implications

Based on the findings of this study, universities should strengthen supportive organizational climates to promote sustainable teaching innovation. Institutional leaders should reduce excessive administrative

workloads and provide teachers with greater professional autonomy and flexibility in course design. Establishing collaborative teaching communities, innovation workshops, and peer-learning platforms may also encourage knowledge sharing and reduce teachers' resistance to change. Previous studies have similarly emphasized that supportive institutional environments positively influence teachers' innovation behaviors and professional engagement (Liu et al., 2024).

In addition, universities should provide targeted professional development programs that improve both technological skills and pedagogical creativity. Rather than focusing only on technical training, institutions should support teachers in developing context-appropriate and student-centered instructional strategies. Recent research suggests that technological self-efficacy and collaborative learning opportunities can significantly improve teachers' willingness to adopt innovative teaching practices (Zhang et al., 2024). The findings also highlight the importance of teacher well-being; therefore, universities should create supportive working environments that reduce stress, recognize teaching achievements, and promote work-life balance, as teacher well-being has been found to positively influence instructional innovation and professional resilience (Dang et al., 2024).

6.2 Future Research

Future studies could further explore the long-term relationships among organizational climate, technological self-efficacy, teacher well-being, and teaching innovation through longitudinal research designs. Longitudinal approaches may provide a deeper understanding of how innovation develops over time and how institutional changes influence teachers' innovative behaviors (Hao et al., 2025).

Since this study focused on universities in western China, future research may also conduct comparative studies across different regions or countries to examine how cultural and institutional contexts shape teaching innovation practices. Cross-cultural studies could contribute to a broader understanding of how educational systems support or constrain

innovation in higher education (Sun & Ye, 2022).

In addition, future researchers could include other variables, such as leadership style, digital literacy, or policy support, to develop a more comprehensive understanding of innovation in higher education. Mixed-methods studies involving larger and more diverse samples may also provide deeper insights into how teachers sustain innovation in different educational environments (López-Pérez et al., 2021).

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