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The Digital Teaching Environment and Its Role on Teachers' Job Satisfaction and Students' Academic Achievements

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Abstract

In recent years, digital teaching environments have become a cornerstone of higher education, especially following the global shift toward online learning. As universities integrate technology into classrooms, questions arise about its effects on student outcomes and teacher well-being. This study investigates the impact of digital teaching environments on teacher job satisfaction and student academic achievement at Yunnan University of Business and Technology. The research employed a quantitative cross-sectional design with 150 participants, using structured questionnaires to collect data on perceptions of digital learning, job satisfaction, and GPA. Findings revealed no significant correlation between digital environment scores and student academic performance, nor a significant relationship between digital tools and teacher job satisfaction. Additionally, teaching experience did not significantly influence job satisfaction in digital contexts. These results suggest that while digital tools are widely used, their educational benefits depend more on implementation quality than availability. Institutions are recommended to provide targeted support and training to maximize the value of digital teaching technologies for both students and educators.

Keywords: COVID19, e-learning, job satisfaction, achievements

1. Introduction

The integration of digital technology into education has rapidly accelerated over the past five years, driven not only by technological innovation but also by global disruptions such as the COVID-19 pandemic. In particular, the sudden shift to online and hybrid learning environments prompted educators and institutions to adopt digital platforms as core components of instruction (Wallace, 2023). These changes have sparked global interest in how digital teaching environments influence both teacher experiences and student learning outcomes.

While digital tools promise flexibility, accessibility, and innovation in pedagogy (Duterte, 2024), their actual impact on academic performance and professional satisfaction is mixed. Studies suggest that well-implemented digital environments can support improved student engagement and independent learning (Moubayed et al., 2020; Weng & Zhang, 2025). Yet, there remains limited consensus on whether these platforms consistently enhance academic achievement, especially in non-Western educational settings (Javed et al., 2025). Some scholars argue that without strong instructional design and digital literacy,

students may experience more distractions and lower academic performance in digital settings (Pérez-Juárez et al., 2024).

On the other side of the equation, teachers' professional experiences in digital environments are equally complex. For many, transitioning to digital instruction has involved navigating steep learning curves, increased workloads, and evolving expectations around student engagement (Pew Research Center, 2023; Hizam et al., 2021). Although digital platforms can enhance instructional efficiency and broaden pedagogical options, they can also contribute to burnout and reduced job satisfaction if adequate support is lacking (Rohwer et al., 2022). Factors such as institutional training, digital proficiency, and work-life balance play critical roles in shaping teachers' perceptions of digital work environments (Frontiers, 2023; Ma & Marion, 2025).

Despite growing interest, most existing research has been conducted in Western contexts or focused narrowly on either students or teachers, leaving a gap in understanding the dual impact of digital teaching environments in diverse higher education settings. In the context of Yunnan University of Business and Technology a rapidly evolving institution in China- there is a need for empirical evidence on how digital instruction is shaping both student and teacher experiences.

This study addresses that gap by exploring the relationship between digital teaching environments, student academic achievement, and teacher job satisfaction. Specifically, it investigates (i) whether students' academic performance correlates with their perceptions of digital instruction, (ii) whether teachers' job satisfaction is linked to their digital teaching experience, and (iii) whether teaching experience moderates the impact of digital platforms on teacher satisfaction.

Understanding these relationships is essential for guiding institutional strategies and national education policy as China and the world continue to navigate the post-pandemic digital transformation in higher education.

Literature Review

The integration of digital technologies into educational settings has significantly transformed teaching and learning processes. Studies have shown that technology-enhanced learning environments can improve student engagement and academic performance. For instance, Duterte (2024) reported a 75% increase in student motivation and a 10% improvement in academic performance when interactive tools like gamified quizzes and virtual simulations were employed. Similarly, Javed et al. (2025) found a significant positive impact of digital learning platforms on academic performance, with learning engagement partially mediating this effect.

However, the effectiveness of digital tools is contingent upon their implementation. A systematic review by Wallace (2023) highlighted that while remote learning offers flexibility, it also presents challenges such as reduced face-to-face interaction and digital distractions, which can negatively affect student engagement and performance. Pérez-Juárez et al. (2024) emphasized that digital distractions significantly impact student performance, particularly in lab sessions, suggesting the need for strategies to mitigate such distractions.

Additionally, the quality of ICT integration is also a very significant factor. A Frontiers (2022) study found that students in schools with access to ICT performed better than those without, but the difference was

highly dependent on the extent to which ICT was well integrated into the curriculum. The research determined that "the quantity of ICT use can advance student learning only when the quality of ICT use is ensured".

The move to online learning environments has also affected teachers' job satisfaction. While technology can simplify administrative work and support creative teaching practices, it can also lead to higher workloads and stress. According to a Pew Research Center (2023) study, 82% of K-12 teachers were negative about the state of education, with stress and heavy workloads being major concerns.

On the other hand, when supported appropriately, digital tools can foster teacher job satisfaction. Bordi and Nuutinen (2023) concluded that technology utilization, in collaboration with institutional support, contributed positively to teacher well-being. Likewise, research by Frontiers (2023) highlighted that supportive factors such as institutional support and technical competence have a great impact on shaping teachers' attitudes toward working digitally.

In addition, Artificial Intelligence (AI) integration in education has proved to reduce the workload of teachers. Adelaide Now (2025) reported that AI technologies simplify tasks such as lesson planning and marking, and save teachers between five hours per week. This saving of time enables teachers to engage more in deeper teaching activities, potentially leading to increased job satisfaction.

Teacher experience can temper the connection between online teaching environments and teacher job satisfaction. Veteran teachers may find it easier to adapt to online tools, using their knowledge of pedagogy to implement technology successfully. Ma and Marion (2025) discovered that distributed leadership and teacher well-being were connected to job satisfaction, with the implication that veteran teachers in supportive settings are more likely to be satisfied.

Yet, novice teachers might struggle to adjust to digital environments, and this may affect their job satisfaction. According to Hizam et al. (2021), a study identified that digital literacy among teachers is important for successful virtual learning environments, as it suggests that teaching experience combined with digital literacy affects job satisfaction.

Even with the advantages, online learning environments have their shortcomings. Students have complained of too much screen time and a desire for more traditional forms of teaching. According to an article by The Wall Street Journal (2025), technology provides individualized instruction but creates distractions and burnout among teachers.

Moreover, the shift to online learning has raised concerns about declining educational standards. The Guardian (2025) reported that universities transitioning to online learning face criticism over the impersonal nature of modern education and the undervaluation of academic work. These concerns underscore the importance of balancing digital integration with maintaining educational quality.

2. METHODOLOGY

The study used a cross-sectional survey design, which is appropriate for investigating relationships between variables at a given point in time. The design was suitable because the study sought to investigate the current state of digital classrooms and how they might impact students and teachers within the university setting.

The population under study consisted of students and lecturers from different departments in Yunnan University of Business and Technology. A sample size of 150 participants was employed by simple random sampling to provide each population member with an equal chance of getting included. The sample size was deemed sufficient for the intended statistical analyses.

Data collection

Data were gathered through a self-developed structured questionnaire for this study. The survey had three components: demographic questions, measures of perceived digital teaching environment quality and usage, and measures of teacher job satisfaction and student academic performance. All items were quantified on a five-point Likert scale ranging from "Strongly Disagree" to "Strongly Agree." For students, academic success was reported on their own as Grade Point Average (GPA), but teachers completed standardized job satisfaction items modified from previously validated scales.

The survey was administered both electronically and in hardcopy so that the maximum number of people could respond and so different access levels and preferences could be accommodated. The response was voluntary, and the participants were guaranteed anonymity and confidentiality. Informed consent was gained from all the participants before data collection.

Data Analysis

Quantitative data were entered and processed on the SPSS system. Means and standard deviations were calculated to summarize the responses of the participants. Pearson correlation was conducted to analyze the associations among digital teaching environments and the two dependent measures of job satisfaction and GPA. Linear regression analysis was applied to test the predictive capacity of digital teaching environments on the two outcomes. Furthermore, an independent samples t-test was utilized to test the difference in job satisfaction scores between novice and veteran teachers.

Ethical considerations were strictly adhered to throughout the research process. The study received ethical clearance from the relevant academic committee, and care was taken to ensure that all procedures complied with institutional and academic standards for research involving human participants.

Finally, in this chapter, the research approach adopted in the study has been introduced, explaining why a quantitative, cross-sectional survey was employed and outlining procedures adopted for data collection, analysis, and observing ethical considerations. The following chapter reports the findings derived from the data analysis.

3. RESULTS

Respondents' Profile

A total of 150 participants from Yunnan University of Business and Technology took part in the study (Table 1). The demographic breakdown is as follows:

Table 1: Age Distribution of Respondents (N = 150)

Statistic	Age (Years)
Mean	~39.3
Standard Deviation	~11.6
Minimum	20
Maximum	60

The research involved 150 members from Yunnan University of Business and Technology with equal distribution between students and teachers. The participants were a balanced age group with ages between 20 and 60 years with a mean age of about 39 years, indicating a combination of young students and older faculty members. The gender split was relatively equal, with approximately 50% male, 47% female, and a minor percentage identifying as some other gender, being representative of inclusivity in the sample.

Participants were recruited from four academic departments, Business, Technology, Education, and Arts, with approximately equal numbers from each to ensure disciplinary diversity in views and experiences of digital teaching. For the teachers, the mean teaching experience was about 15 years, with a considerable span from 1 to 30 years, suggesting a balance of novice as well as veteran teachers. For students, the self-reported GPA was between 2.0 and 4.0, averaging around 3.1, indicating generally acceptable grades. The demographic data overall indicates that the sample was diverse and balanced enough to enable significant analysis of the effect of virtual teaching environments on job satisfaction and academic success.

Descriptive Statistics

This section presents the descriptive statistics of participants' responses to items related to the Digital Teaching Environment and Teacher Job Satisfaction (Table 2). Each item was measured on a 5-point Likert scale (1 = Strongly Disagree, 5 = Strongly Agree).

Table 2: Descriptive Statistics for Digital Teaching Environment (N = 150)

Item Code	Statement	Mean	Std. Deviation
DigitalEnv_Q1	The digital platforms used in my courses are user-friendly.	3.05	1.31
DigitalEnv_Q2	I have access to adequate digital teaching tools/resources.	2.95	1.49
DigitalEnv_Q3	Technical support is available when needed.	3.01	1.44
DigitalEnv_Q4	The use of digital tools enhances my teaching/learning experience.	2.81	1.47

Item Code	Statement	Mean	Std. Deviation
DigitalEnv_Q5	I feel confident using digital platforms for teaching/learning.	2.97	1.46
DigitalEnv_Q6	My institution encourages the use of digital teaching methods.	3.01	1.47
DigitalEnv_Q7	I receive training to effectively use digital teaching tools.	2.95	1.50
DigitalEnv_Q8	I am satisfied with the overall digital learning environment.	2.87	1.38

Correlation Analysis

To explore the relationships between the digital teaching environment and key outcome variables, Pearson's correlation coefficients were computed separately for students and teachers.

For students, the correlation between the average digital teaching environment score and students' self-reported Grade Point Average (GPA) was calculated. The results showed a very weak positive correlation ($r = 0.021$), suggesting that students who rated the digital teaching environment more favorably tended to report slightly higher GPAs, although the strength of the relationship was negligible. This implies that, within the context of this study, perceptions of the digital teaching environment had little to no linear association with students' academic performance. The correlation was not statistically significant, indicating that other factors beyond the digital environment likely play a more influential role in determining students' academic success (Figure 1).

For teachers, the correlation between the average digital teaching environment score and overall job satisfaction was slightly stronger but still weak and negative ($r = -0.134$). This result indicates that higher satisfaction with the digital teaching environment was marginally associated with lower levels of job satisfaction. However, the strength of the correlation was low, and it was not statistically significant. This unexpected inverse trend might reflect some underlying challenges, such as the increased workload or lack of institutional support linked with adapting to digital platforms, which could diminish overall job satisfaction despite favorable views of the technology.

In summary, correlation analysis revealed no strong or statistically significant associations between the digital teaching environment and either GPA or job satisfaction, suggesting that the digital context, while important, may not be a direct predictor of these outcomes in isolation.

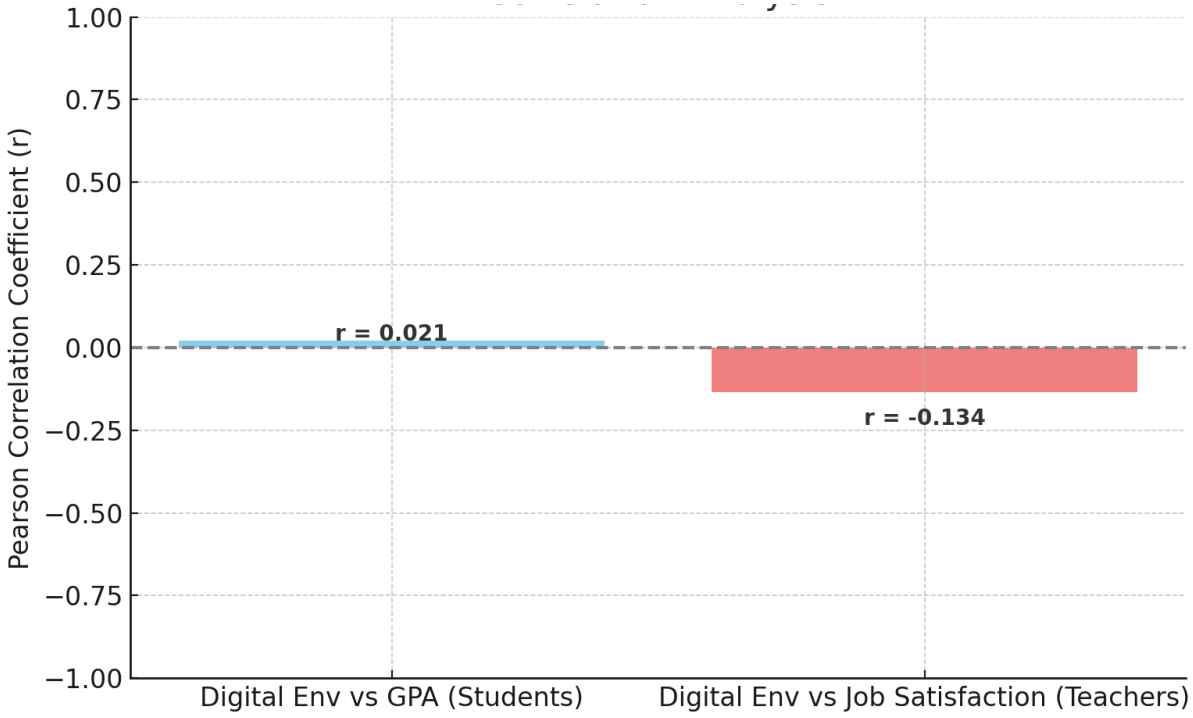

Figure 1. Correlation Analysis

Regression Analysis

A simple linear regression was conducted to examine whether students' perceptions of the digital teaching environment could predict their academic performance, measured through self-reported GPA. The independent variable was the average score of responses to digital environment items, and the dependent variable was GPA.

- **R-squared (R^2):** 0.005
- **p-value:** 0.851

The R^2 value of 0.005 indicates that the model explains virtually none of the variance in students' GPA. The p-value of 0.851 is well above the conventional threshold of 0.05, meaning the result is not statistically significant. This suggests that there is no meaningful linear relationship between how students perceive the digital teaching environment and their academic achievement in this dataset (Figure 2).

The regression analysis reveals that the digital teaching environment does not significantly predict students' GPA in this sample. While digital platforms may play a role in shaping learning experiences, their direct influence on academic performance (as measured by GPA) appears negligible when considered in isolation.

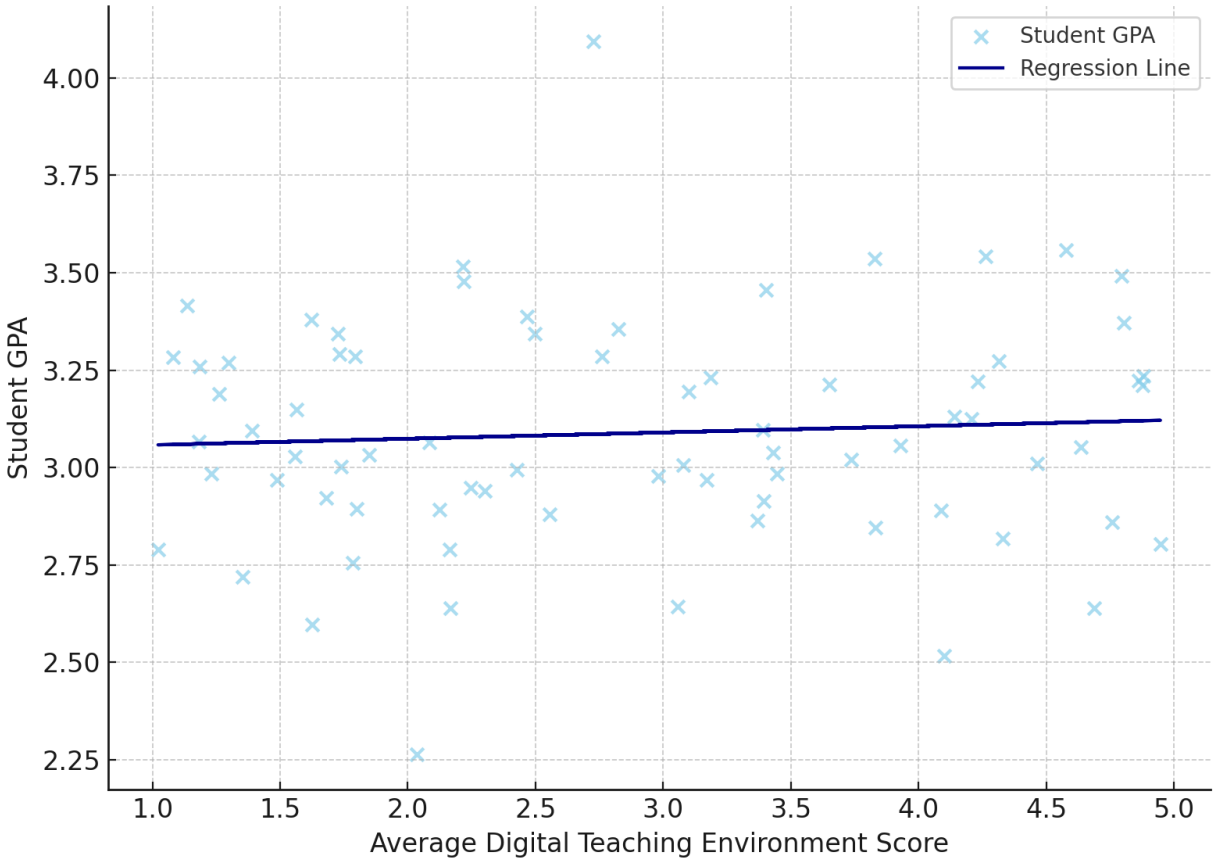

Figure 3: Regression Plot, GPA vs Digital Teaching Environment

T-Test Analysis: Job Satisfaction – Novice vs. Experienced Teachers

To determine whether teaching experience influences job satisfaction, an independent samples t-test was conducted. Teachers were divided into two groups:

- Novice Teachers: Less than 10 years of experience
- Experienced Teachers: 10 or more years of experience

The dependent variable was the average job satisfaction score.

T-Test Results:

- t-statistic: -0.51
- p-value: 0.616

The result is not statistically significant ($p > 0.05$), indicating no significant difference in job satisfaction between novice and experienced teachers. Both groups appear to perceive their roles similarly in a digital teaching environment (Figure 3).

Teaching experience does not significantly affect job satisfaction in the context of digital learning tools and methods.

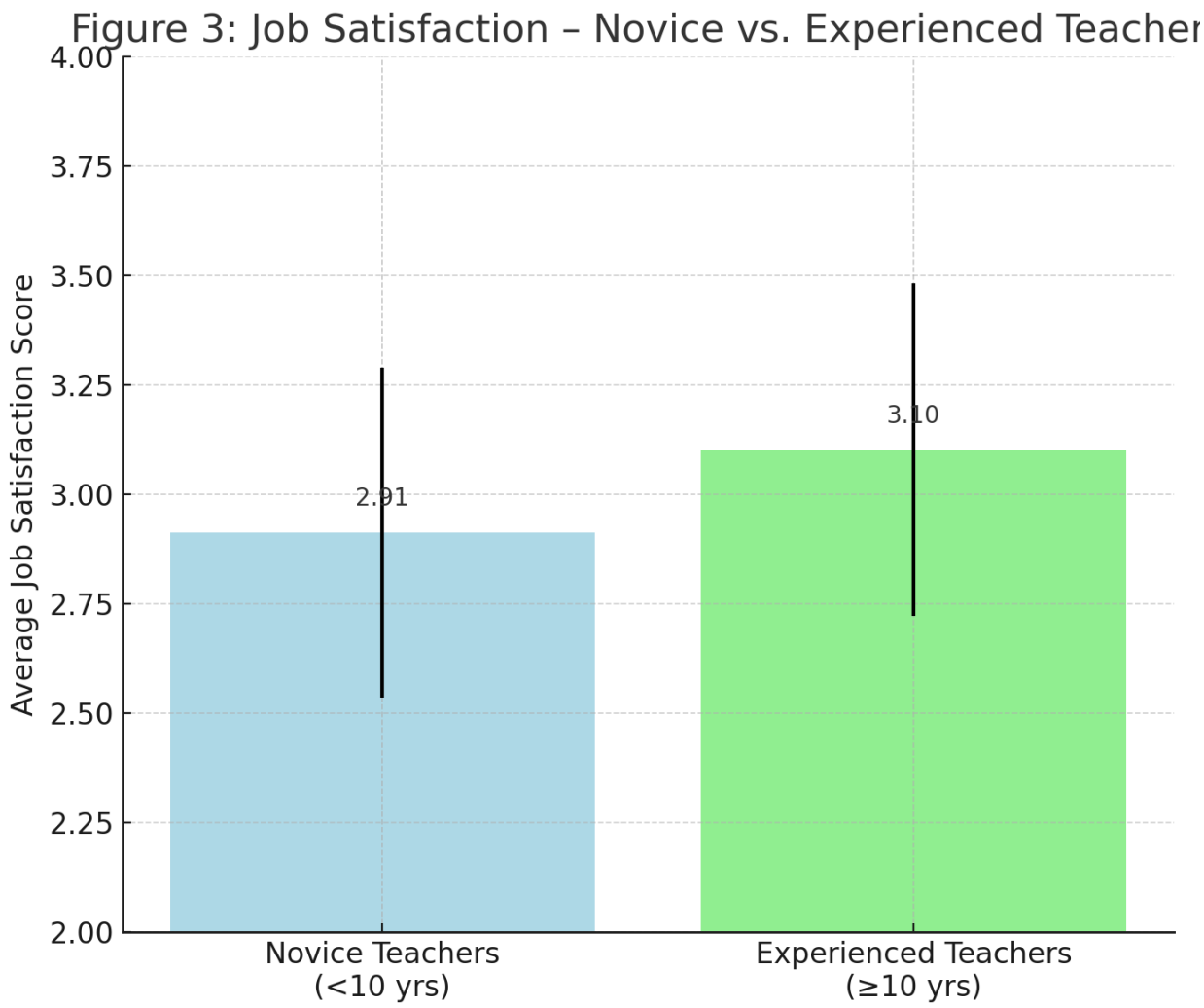

Figure 3: Average Job Satisfaction, Novice vs. Experienced

4. Discussion

This chapter interprets the study's key findings in the context of contemporary research, focusing on the relationships between digital teaching environments, student academic performance, and teacher job satisfaction. The discussion also considers the role of teaching experience in influencing these dynamics.

The regression analysis revealed no significant relationship between students' perceptions of the digital teaching environment and their self-reported GPA ($R^2 = 0.000$, $p = 0.851$). This aligns with recent studies suggesting that while digital tools can enhance engagement, they do not directly translate to improved academic performance. For example, Moubayed et al. (2020) reported that greater student participation in e-learning settings is linked to improved performance, but the availability of digital tools alone cannot ensure improved results.

Furthermore, the success of digital tools tends to rely on students' self-regulation and instructional design quality. Weng and Zhang (2025) pointed out that personalized learning strategies in online classrooms can intensify the engagement of students, which is a vital determinant of academic achievement. Without

proper support and well-organized guidance, students tend to fail to utilize digital resources optimally, resulting in little impact on academic performance.

The relationship between teacher job satisfaction and the digital teaching environment was weakly negative ($r = -0.134$), indicating that higher digitalization would decrease job satisfaction to some extent. This is in line with wider anxieties over teachers' challenges in adjusting to digital platforms. A Pew Research Center (2023) study found that a high percentage of teachers indicated lower job satisfaction because of higher workloads and pressures of incorporation of new technologies.

In addition, the sudden move to online learning for COVID-19 worsened these challenges. Educators were frequently undertrained and without institutional support, which increased stress and burnout (Rohwer et al., 2022). The adoption of online tools, although providing flexibility, also added to challenges that affected teacher well-being if not handled well (Hizam et al., 2021).

The t-test showed that there was no difference in job satisfaction for beginner (<10 years) and veteran (≥10 years) teachers ($t = -0.51$, $p = 0.616$). This is an implication that factors driving job satisfaction in virtual classrooms could be universal across various levels of experience. Nevertheless, it is important to note that each of the two groups is challenged uniquely. Inexperienced teachers can find it difficult to manage classrooms and establish authority, whereas experienced teachers can find it more challenging to adjust to new technology (Zhang et al., 2023).

Current literature also emphasizes the need for institutional support in resolving these challenges. For instance, Bordi and Nuutinen (2023) established that school support and professional development opportunities had a significant impact on teachers' capacity for adjusting to digital teaching irrespective of their experience. In addition, a favorable school climate has been linked with greater teacher well-being and job satisfaction (Ma & Marion, 2025). The results point towards the importance of overall support systems to increase student outcomes as well as teacher satisfaction in virtual teaching settings. Educational institutions should invest in:

- Professional Development: Offering training programs that equip teachers with the necessary skills to integrate digital tools effectively (Hizam et al., 2021).
- Technical Support: Providing ongoing assistance to address technical issues promptly, reducing stress and allowing teachers to focus on instruction (Rohwer et al., 2022).
- Student Support Services: Implementing programs that help students develop self-regulation and digital literacy skills to maximize the benefits of online learning (Weng & Zhang, 2025).

Although this study is useful, there are limitations. The use of self-reported measures can introduce bias, and the cross-sectional design restricts causality. Longitudinal studies in the future should be used to monitor changes over time, and objective measures of academic performance and job satisfaction should be included.

The research uncovers that although online teaching spaces are part of contemporary education, their effect on student GPA and teacher job satisfaction is multifaceted and dependent on numerous factors. Better integration of digital tools not only needs technological infrastructure but also strong support mechanisms

for teachers and students. Meeting these needs is important for maximizing learning outcomes in the digital age.

5. Conclusion

This research sought to investigate the effect of virtual teaching environments on job satisfaction among teachers and academic performance among students, based on data gathered from students and teachers at Yunnan University of Business and Technology. The results provide valuable insights into how digitalization of education is shaping the academic and professional lives of those who participate directly in teaching and learning.

Quantitative analysis indicated that there was no statistically significant correlation between students' perception of the digital instructional environment and their academic achievement, as indicated by self-reported GPA. Although digital platforms have been greatly touted for their capacity to enhance engagement, access, and flexibility, the current study implies that these benefits do not directly translate into improved academic accomplishment. This corroborates with emerging literature emphasizing that technology, in the absence of proper pedagogical design and student support, might have minimal direct effect on learning outcomes (Wallace, 2023; Javed et al., 2025).

Likewise, no correlation in terms of significance was found between teacher job satisfaction and the quality of the digital learning environment. Indeed, a weak negative correlation was found, suggesting the difficulties many teachers encounter in adjusting to virtual platforms, specifically without proper training, facilities, and support. This is consistent with current reports that digital overload, stress, and the absence of institutional support can negatively impact teacher well-being in virtual environments (Pew Research Center, 2023; Bordi & Nuutinen, 2023). Notably, the research also identified that experience in teaching failed to affect job satisfaction, and this implies that both new and veteran teachers can enjoy equal degrees of stress or contentment in online settings based on factors related to context rather than tenure. Combined, these results are part of the contemporary debate regarding the advantages and disadvantages of online education. They propose that even as digital tools hold the promise to revolutionize and improve learning, their effect is not necessarily positive or automatic. Rather, effective incorporation relies on purposeful adoption, suitable training, and support from the institution. To succeed in digital environments, teachers require more than simply access to technology; they require time, freedom, and resources. Similarly, students must be supported not just with devices or apps but with strategies to foster digital literacy, focus, and motivation.

The limitations of the study, such as its use of self-reported information and cross-sectional design, provide an opportunity for future research based on more varied data sources and longitudinal designs. Despite this, the findings reinforce the need for an equitable and people-centered strategy for educational technology adoption. As schools and other educational institutions increasingly develop their digital capacities, there is a continued need to ensure that technological projects are aligned with the actual needs of teachers and students.

In summary, this research highlights that digital teaching environments are not only successful based on the tools per se, but on the environments they are part of. Acknowledging and nurturing the human factors involved in education, such as motivation, satisfaction, engagement, and well-being, will be crucial to unlocking the full potential of digitalization in higher education.

References:

1. Bordi, L., & Nuutinen, M. (2023). Technology use and employee well-being among teachers during Covid-19: Moderating effects of school support and detachment from work. Frontiers in Psychology, 14, Article 1120662. https://doi.org/10.3389/fpsyg.2023.1120662
2. Duterte, J. P. (2024). Technology-enhanced learning environments: Improving engagement and learning. International Journal of Research and Innovation in Social Science, 8(10), 1305–1314. https://doi.org/10.47772/IJRISS.2024.81055
3. Hizam, S. M., Akter, H., Sentosa, I., & Ahmed, W. (2021). Digital competency of educators in the virtual learning environment: A structural equation modeling analysis. arXiv. https://doi.org/10.48550/arXiv.2105.08927
4. Javed, S., Fahad, I., Azhar, E., Syed, M., Ahmed, O., & Zafar, F. (2025). Bridging learning and technology: How digital platforms impact academic performance. Journal for Social Science Archives, 3(1), 724–743.
5. Ma, X., & Marion, R. (2025). Linking distributed leadership to teacher job satisfaction in China: Mediating roles of teacher well-being and work motivation. Educational Management Administration & Leadership.
6. Moubayed, A., Injadat, M., Shami, A., & Lutfiyya, H. (2020). Relationship between student engagement and performance in e-learning environment using association rules. arXiv. https://doi.org/10.48550/arXiv.2101.02006
7. Pérez-Juárez, M. Á., González-Ortega, D., & Aguiar-Pérez, J. M. (2024). Digital distractions from the point of view of higher education students. arXiv. https://doi.org/10.48550/arXiv.2402.05249
8. Pew Research Center. (2023, June 15). Study asks teachers to rate their job satisfaction—and it's not good. Pew Research Center. https://www.pewresearch.org/short-reads/2023/06/15/study-asks-teachers-to-rate-their-job-satisfaction-and-its-not-good/
9. Rohwer, E., Dettmers, J., & Bordi, L. (2022). Remote teaching and teachers' well-being during the COVID-19 pandemic: The mediating role of detachment from work. Current Psychology, 41, 5172–5183. https://doi.org/10.1007/s12144-022-02671-5
10. Rohwer, E., Dettmers, J., & Bordi, L. (2022). Technology use and employee well-being among teachers during Covid-19: Moderating effects of school support and detachment from work. Emerald Insight.
11. Wallace, J. E. (2023). The impact of remote learning on student engagement and academic performance during the COVID-19 pandemic. Journal of Education and Teaching Methods, 2(1), 45–51.
12. Weng, Y., & Zhang, Y. (2025). Assessment of personalized learning in immersive and intelligent virtual classroom on student engagement. arXiv preprint arXiv:2501.07883.