Proactive Personality, Online Interaction, and Learning Outcomes in Blended Teaching: Implications for Higher Education Administration

Aili Zhang[1,a], Juan Li[2,b,*]

{Ailizhang321@163.com[a], 306673110@qq.com[b]}

Lyceum of the Philippines University, Muralla Street, Intramuros,1002 Manila city, Philippines[1],
Lingnan University, 8 Castle Peak Road, Hong Kong, China[2]

Abstract. This study utilized quantiative surveys and regression analysis to analyze data collected from a blended teaching course in a university in Guangzhou, China, exploring the relationship between proactive personality and online interaction with learning outcomes in the blended teaching/learning. A mediation model was performed to evaluate the research hypotheses. The research results indicate that proactive personality can positively predict online interaction in blended learning, and at the same time, online interaction positively predicts learning performance. Online interaction plays a mediating role in proactive personality and blended learning outcomes. The study results reveal that in a blended learning environment, proactive personality and online interaction behavior can effectively enhance student learning outcomes. Implications for higher education administration in China are discussed.

Keywords: Proactive Personality, Online Interaction, Blended Learning, Learning Outcome

1 Introduction

In higher education, the integration of technology and innovative pedagogical approaches has redefined the traditional learning environment. Blended teaching, which combines face-to-face instruction with online learning components, has emerged as a prominent model in higher education [1]. The influence of blended learning has rapidly increased in the post-MOOC era in China. In response to the development of the times, various universities have been establishing online teaching platforms, providing abundant high-quality resources and communication spaces for blended learning [2]. With the widespread application of blended learning models, research on learning performance in the field of higher education has gradually unfolded. Previous studies have found that compared to pure online learning and face-to-face learning, blended learning can increase students' learning enthusiasm and lead to better learning outcomes [2][3].

Within this context, the interplay between individual characteristics, online interaction, and learning outcomes has become an area of increasing interest and significance. Among these individual characteristics, proactive personality has garnered attention for its potential impact on engagement and performance in blended learning settings [4][5]. Understanding the influence of proactive personality and online interaction on learning outcomes holds

substantial relevance for higher education administration and pedagogical practices. However, few studies exmained the relationship between proactive personality and learning outcome in blended learning.

In particular, when exploring the influencing factors of interpersonal interaction, researchers often only focus on external factors such as individual demographic variables and interaction strategies, with little attention paid to the important psychological variable of learners' personality traits [6]. In addition, previous studies often only consider the influencing factors or outcomes of interpersonal interaction in blended learning environments separately, with few studies integrating the antecedents and consequences of interpersonal interaction into a comprehensive model [7][8]. There is a lack of research on the mechanisms that mediating the effect of personality traits on learning outcome in blended learning.

This study aims to investigate the relationships among proactive personality and learning effectiveness within the framework of blended teaching, examining the mediating effect of online interaction. This study offers insights for administrators, educators, and stakeholders seeking to optimize the learning experience in higher education.

2 Literature Review

2.1 The Impact of Proactive Personality and Learning Outcome

Crant and Bateman proposed the concept of proactive personality, which is defined as an individual's stable tendency to take proactive actions to explore new ways to influence the external environment without being constrained by situational pressures [9]. Seibert suggests that individuals with high proactive personality proactively take action to create their environment, often responding positively to challenges and actively making changes in unsatisfactory work environments [10].

Previous research has consistently demonstrated a substantial and positive correlation between proactive personality traits and both work and learning performance [2][5]. Individuals exhibiting a proactive personality tend to display elevated levels of self-efficacy and a heightened learning motivation, ultimately leading to improved learning outcomes. Moreover, empirical evidence suggests that proactive personality traits exert a positive influence on engagement and performance across various domains [3].

Additionally, research findings have underscored the predictive power of proactive behaviors in relation to university students' grade point averages (GPAs), academic involvement, and other pertinent indicators of academic success [7][8]. Furthermore, studies have identified self-efficacy as an intermediary mechanism through which proactive personality impacts learning performance [4]. This indicates that individuals with proactive personalities are more likely to possess a strong belief in their ability to succeed, leading to enhanced academic performance and a greater propensity for engaging in learning activities.

These insights underscore the significance of proactive personality traits in shaping individuals' educational experiences and highlight the potential for targeted interventions and support mechanisms designed to nurture such traits among students. Therefore, based on the literature review, this study proposes the first hypothesis:

H1: Proactive personality is positivley associated with learning outcome in blended learning

2.2 The Mediating Effect of Online Interaction

Individuals with high proactive personality tend to have a positive orientation, as well as higher problem-solving abilities and stronger interpersonal competence. They take active measures to change and influence their environment. Therefore, studies have shown that proactive personality increase a person's likelihood of interaction with others [4][5]. Past studies have shown a significant positive correlation between an individual's proactive personality and learning performance [11]. Proactive personality also has a significant positive impact on team members' innovation. Existing research indicates that proactive personality has a significant positive impact on learners' engagement in online learning, and learning engagement is a predictor of learners' academic achievement [6]. Thus, it can be inferred that proactive personality may have an impact on learning performance.

In addition to possessing proactive personality traits, learners must actively engage across diverse learning platforms and environments to facilitate their learning progression and participate in knowledge sharing. Research suggests that high-performing learners demonstrate a proclivity for engaging in more intricate knowledge interactions and interpersonal exchanges within their learning activities [7][8]. This behavior signifies that successful learners involved in collaborative learning settings do not merely passively consume information but actively contribute to discussions and dialogue.

Furthermore, high-performing learners show a preference for communication as a means of enhancing their learning experience and understanding [4]. Actively participating in conversations, sharing perspectives, and seeking clarification through communication, these learners are able to deepen their understanding of the subject matter and benefit from diverse viewpoints [2]. Prior findings on the importance of interaction and communication underscores the importance of social engagement and collaborative learning in fostering academic success and promoting a dynamic and enriching learning environment for all learners involved [1][4][9]. Therefore, based on the literature review, this study proposes the second hypothesis:

H2: Online interaction mediates the relations of proactive personality and learning outcome in blended learning.

3 Research Methods

3.1 Data Collection

This study collected data from a blended learning course offered by a university in Guangzhou. The sample consists of 283 students. The students' ages range from 18 to 20 years old, with an average age of 18.98. The course in this study adopts a blended learning mode, with online learning mainly supported by the online teaching platform designed by the university. The data collection lasted from October to November 2023.

3.2 Measurement

Learning Outcome. Following prior studies [2][4], this study uses 7 items to measure learning outcome. The responses are rated on a 5-point Likert scale (1 for "strongly disagree" to 5 for "strongly agree") to measure the participants' learning performance in the blended learning environment. The alpha of this scale is 0.893 in this study.

Proactive Personality. In this study, the Personality Proactivity Scale (PPS) was used to measure the personality traits of college students [8]. The scale consists of 11 items. The responses are rated on a 5-point Likert scale (1 for "strongly disagree" to 5 for "strongly agree") to assess the levels of learners' proactivity personality. The alpha of this scale is 0.820.

Online Interaction. This study utilizes a 6-item scale to measure online interaction used in prior studies [3]. The measurement considers both interaction between students and interaction between student and the lecturer. The responses are rated on a 5-point Likert scale (1 for "never" to 5 for "always"). The alpha of this scale is 0.835.

Control Variables. This study controlled for demographic variables which are gender and age.

3.3 Data Analysis

The data collected from the questionnair survey were analyzed using SPSS 21.0. Descriptive analyses and regression analyses were performed. Mean, standard deviation, minumum and maximum were calculated. Further, a mediation model was performed and analyzed using SPSS to test the research hypotheses.

4 Results

4.1 Descriptive Analysis

The descriptive results are summarized in Table 1, presenting the mean, standard deviation, minimum, and maximum values for each variable. The mean learning outcome score was 21.412, with a standard deviation of 12.912. Fpr proactive personality, the mean is 29.234, accompanied by a standard deviation of 19.035. The mean score of online interaction was 16.129, with a standard deviation of 14.102.

Table 1. Descriptive Analysis (N = 283)

Variable	Mean	SD	Min	Max
Learning Outcome	21.412	12.912	7	35
Proactive Personality	29.234	17.035	11	55
Online Interaction	16.129	9.102	6	30
Age	18.98	0.342	18	20
	Number	Percent		
Gender				
Female	131	46.29		
Male	152	53.71		

4.2 Inferential Analysis

From table 2, we can see the substantial positive influence of both proactive personality and online interaction on learning outcome in blended learning among the sample students. In the model predicting gree online interaction, the coefficient of proactive personality is 0.024, with a p-value lower than 0.001. This statistically significant relationship is evident. In the model predicting learning outocme, but proactive personality' and online interaction are positively significant at 0.001 level. The result of the mediating model shows that the coefficient of the proactive personality→online interaction→learning outcome path is 0.132, which is significnat at the 0.001 confdience level.

Table 2. Regression Analysis (N = 283)

Independent Variable	Online Interaction		Learning Outcome	
	Coeff	S.E.	Coeff	S.E.
Proactive Personality	0.024***	0.071	0.032***	0.010
Online Interaction			0.439***	0.107
Gender	0.235*	0.113	0.329**	0.129
Age	0.012	0.131	0.018	1.002

Note: *, **, *** represent significance at the 0.05, 0.01, and 0.001 confidence levels respectively.

5 Conclusion

Blended teaching, characterized by the integration of traditional face-to-face instruction with online learning components, has become increasingly prevalent in higher education settings, particularly in China. This research study aimed to explore the relationship between proactive personality traits, learning outcomes, online interaction, and the mediating effect of online interaction in the context of blended teaching in China. The findings shed light on the complex interplay between these variables and their implications for higher education administration.

The analysis of the data revealed significant relationships between proactive personality traits, learning outcomes, and online interaction in the context of blended teaching. The results indicated that individuals with higher levels of proactive personality traits tended to exhibit more positive learning outcomes. Additionally, online interaction played a mediating role in enhancing the relationship between proactive personality traits and learning outcomes, suggesting that active engagement in online platforms can amplify the impact of proactive behaviors on academic achievements.

The implications of these findings for higher education administration in China are multifaceted. Understanding the relationship between proactive personality traits and learning outcomes is crucial for higher education administrators in developing targeted interventions to cultivate proactive behaviors among students. For instance, administrators may implement workshops or seminars focused on enhancing students' initiative by encouraging them to take ownership of their learning process and seek out opportunities for growth [2][10]. Persistence can be fostered through mentorship programs or structured interventions that provide support and guidance to students facing challenges. Setting goals and monitoring progress towards them can be integrated into academic curricula to instill a sense of purpose and direction

among students. Designing initiatives that promote proactive behaviors, administrators create a conducive learning environment where students are empowered to take initiative, persevere in the face of obstacles, and work towards achieving their academic goals [1][3][11]. This proactive approach not only enhances students' academic performance but also equips them with valuable skills and mindset for success in their academic and professional pursuits.

Moreover, the mediating effect of online interaction underscores the importance of leveraging digital platforms in blended teaching settings to optimize student engagement and academic performance [8]. Higher education institutions can invest in technology-enhanced learning tools and virtual communication platforms to facilitate meaningful interactions among students and instructors, promoting collaborative learning experiences and knowledge exchange [2]. Recognizing the pivotal role of online interaction in mediating the relationship between proactive personality traits and learning outcomes highlights the need for comprehensive strategies that integrate both face-to-face and online components in blended teaching approaches [7]. Administrators can implement hybrid pedagogical models that leverage the strengths of traditional classroom instruction and online resources to create dynamic learning environments that cater to diverse learning styles and preferences [11]. Specifically, Administrators should collaborate with educators to design a curriculum that seamlessly integrates both traditional and online resources. This includes identifying key learning objectives and selecting appropriate content delivery methods for each. For instance, certain topics may be best suited for in-person discussions or hands-on activities, while others could be effectively covered through online modules or interactive simulations. Instructors can also facilitate opportunities for peer interaction and collaboration both in-person and online. Encourage teachers to use discussion forums, group projects, and virtual study groups to promote student engagement and teamwork [3][11]. This process can involve parents and guardians in their child's learning journey by providing regular updates on progress, hosting virtual parent-teacher conferences, and soliciting feedback on the effectiveness of the blended learning approach [3][11].

However, this study is not without limitations. The current study only exmaines one mediator, future research endeavors could delve deeper into the mechanisms through which proactive personality traits influence learning outcomes in blended teaching contexts, considering additional moderators and mediators that may impact this relationship. Future research in the realm of proactive personality traits and their influence on learning outcomes in blended teaching contexts could explore a myriad of avenues to deepen our understanding of this complex relationship. One promising direction is the examination of additional moderators and mediators that may intersect with proactive traits to shape learning outcomes. For instance, investigating the role of contextual factors such as classroom environment, teaching styles, and institutional support systems could elucidate how these external variables interact with proactive personality traits to impact academic success [2]. Furthermore, exploring the underlying mechanisms through which proactive traits exert their influence on learning outcomes is essential for developing targeted interventions. Future research could delve into cognitive processes, motivational factors, and behavioral strategies that mediate the relationship between proactive personality and academic achievement [9].

In addition, this study is a cross-sectional design, longitudinal studies could provide insights into the sustained effects of proactive behaviors on academic achievements over time, offering valuable implications for educational policy and practice. Longitudinal research offers the

opportunity to track individuals' proactive tendencies over time and examine how fluctuations in these traits relate to changes in learning outcomes. Investigating the sustained effects of proactive behaviors, researchers can provide evidence-based recommendations for fostering continuous academic growth and development.

This research contributes to the growing body of knowledge on proactive personality, learning outcomes, online interaction, and blended teaching in the Chinese higher education landscape. Elucidating the intricate connections among these variables and their implications for higher education administration, this study paves the way for fostering a proactive learning culture that empowers students to thrive in an increasingly digital and interconnected world.

References

[1] Cahyadi, A., Hendryadi, H., and Mais, G.: Perceptions of classroom interactions and students' thriving in hybrid and blended learning: A multi-group analysis. Dinamika Ilmu, 22(2), 495-506, (2022)

[2] Chai, H., Hu, T., and Niu, G.: How proactive personality promotes online learning performance? Mediating role of multidimensional learning engagement. Education and Information Technologies, 28(4), 4795-4817 (2023)

[3] Marin, L. F.: Active and Independent Learning in Blended Learning. An Analysis of Student Characteristics, Trace Data, and Academic Performance, (2021)

[4] Zheng, F., Khan, N. A., and Hussain, S.: The COVID 19 pandemic and digital higher education: Exploring the impact of proactive personality on social capital through internet self-efficacy and online interaction quality. Children and Youth Services Review, 119, 105694, (2020)

[5] Manolopoulos, D., Salavou, H., Papadopoulos, A., and Xenakis, M.: Strategic decision-making and performance in social enterprises: Process dimensions and the influence of entrepreneurs' proactive personality. Entrepreneurship research journal, (0), (2022)

[6] Blume, B. D., Huang, J. L., Wang, Z., and Ford, J. K.: Promoting transfer of hybrid training: Interaction of task-contingent conscientiousness and supervisor support. Human Resource Development Quarterly, 34(3), 265-287, (2023)

[7] Adarkwah, M. A., & Huang, R.: Blended learning for the "multi-track" undergraduate students in Ghana in an adverse era. Scientific African, 21, 01772, (2023)

[8] Tomas, N., and Poroto, A.: The interplay between self-regulation, learning flow, academic stress and learning engagement as predictors for academic performance in a blended learning environment: A cross-sectional survey. Heliyon, 9(11), (2023)

[9] Liao, H., Zhang, Q., Yang, L., and Fei, Y.: Investigating relationships among regulated learning, teaching presence and student engagement in blended learning: An experience sampling analysis. Education and Information Technologies, 28(10), 12997-13025, (2023)

[10] Kuo, T. H., & Tien, H. K.: Enhancing the effects of creativity training for business school students through art-based methods and blended learning. Education+ Training, 64(5), 642-661, (2022)

[11] Liu, I. F., Hung, H. C., and Liang, C. T.: A study of programming learning perceptions and effectiveness under a blended learning model with live streaming: Comparisons between full-time and working students. Interactive Learning Environments, 1-15, (2023)