Correlation of University Lecturer Leadership Styles, Students Satisfaction, and Learning Outcomes During the COVID-19 Pandemic

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ABSTRACT

Online English teaching has become more important in China. During the COVID-19 pandemic, researchers began to focus on the research of university lecturers’ online leadership styles in helping improve students’ English learning. As there is a lack of systematic research and educational practices of lecturers’ online leadership styles, the need arises to study the lecturers’ leadership styles perceived by the students from an international perspective using quantitative approach. Through a correlational analysis, this study revealed that lecturers’ online leadership styles affected students’ English learning and lecturers exhibited more transactional and transformational leadership styles moderately in online learning. There was a strong correlation between lecturers’ leadership styles and students’ learning satisfaction but there was no statistically significant relationship between students’ satisfaction and learning outcomes. Further research was suggested to explore the influence of the leadership styles in other sub-disciplines of higher education in China.

KEYWORDS

Bronfenbrenner’s Ecological System Theory, COVID-19 Pandemic, Leadership Style, Learning Outcomes, Online English Teaching, Student Satisfaction

INTRODUCTION

With the rapid growth of globalization and internationalization of higher education, English learning has become an integral part of education in China (Yu & Yu, 2019). Currently, due to the sudden outbreak of the global Newcastle pneumonia epidemic, more online courses have been introduced in China to answer the call of the Chinese Ministry of Education, and English language teaching is gradually shifting from offline to online teaching. However, online education brings new requirements and challenges, and online English courses also face challenges such as “passive learning,” “insufficient communication between instructors and students,” and “lack of English learning atmosphere” (Wang, 2017; Yu, 2015). Research found that the overall evaluation of online teaching effectiveness during the pandemic is average (Wang, et al., 2022). Research
surveyed with questionnaires on students’ satisfaction with the conditions of online classes and online teaching; results showed that lecturers’ leadership in the learning progress through online teaching platform can be of great help (Shen et al., 2022).

Chinese English learners are usually very passive learners. Further, Chinese students are always challenged by rote learning, silence, and passivity in online English learning. Studies show that the effect of online learning is also related to lecturers’ leadership. Hence, exploring the influence of online teaching during the epidemic of coronavirus (Jiang, 2020; Wang & Zhu, 2019; Wang et al., 2022) is necessary, currently, and how to improve English lecturers’ teaching quality to enhance classroom learning is becoming increasingly important. Among them, research on lecturers’ leadership styles in improving teaching quality is in full swing. Through investigation and research, the author concludes that the main problems that lecturers back in online education is the lack of affinity, influence, communication and motivation in leadership.

As early as 2008, the impact of leadership styles on students’ nonacademic achievement was explored, and the results concluded that different leadership types had different effects on nonacademic achievement. Based on this, some scholars explored the roles of different leadership styles of principals and educators, and research showed that lecturers and students would be motivated by lecturers’ leadership styles. Leadership research has gradually been shifted to university teaching, and lecturers’ leadership research began in the United States of America in the 1980s as the result of educational reform and lecturers’ professional development. The university classroom serves as a place where lecturers interact with students by exercising their leadership skills, in order to promote students’ learning experiences and learning outcomes (Keiler 2018; Leal-Rodriguez & Albort-Morant, 2019). Through effective leadership behaviors, students are encouraged and motivated to achieve the common goal of effective learning outcomes (Bush et al., 2020). According to the research, lecturers in the classroom, as leaders, will use their leadership skills to help develop students’ critical thinking skills which inspire students and will definitely create a good and harmonious classroom environment for them. On the one hand, the different leadership skills demonstrated by lecturers have a different impact on students’ achievement and it is believed that it is possible to improve the consistency of the lecturer efficiency level by creating conditions to improve students’ learning outcomes (Heck & Hallinger, 2014). On the other hand, lecturers play an important role in the success of learning (Annisa, 2022). Hence, leadership is considered to be one of the key determinants of student achievement (Supriyanto et al., 2020) and leadership plays an important role in students’ achievement and quality of teaching and learning. However, the research on the impacts of different leadership styles on affecting students’ achievement is a question that still needs to be addressed due to the limitation of the research related to the higher education in China.

Therefore, how to promote lecturers’ development and improve their leadership in an online education environment, so that they can affect class more effectively, is a problem that relevant investigations are addressing, currently. After analyzing the current situation, problem, and developing trend of the lecturers’ leadership in the online learning environment, the author proposes several goals to improve the lecturers’ leadership. Based on empirical studies, the author uses the findings to support lecturers’ leadership development to make them meet students’ needs in the big-data-driven era.

Online education is a process in which lecturers and students interact with learning resources in a learning environment (Yu, 2022). The online classroom, where most interactions occur, plays a critical role in college students’ learning satisfaction in the daily interactions with their instructors. Developing and cultivating lecturers’ leadership in online learning environments can play an important role in lecturers’ professional development, students’ academic success, and the development of the university as a whole. However, research on lecturers’ leadership in the field of online environments in China is still in the developmental stage; besides, studies need to emphasize empirical research and focus on lecturers’ leadership based on intelligent environments (Ren Miao Miao, 2022). In addition, empirical research is in its infancy, relatively new compared to Western countries, and has not developed a systematic theory, yet (Wang & Yu, 2022; Xu, 2011).
In brief, scholars’ latest research on the concept and connotation of leadership is richer. Future research should focus on the impact of leadership on teaching quality and students’ achievement in the online classroom, and more research needs to be conducted on school education in today’s pandemic (Yu et al., 2022). Therefore, in this paper, the author investigates the relationships between online leadership behaviors and students’ satisfaction and students’ achievement in the context of the COVID-19 pandemic. It is of great significance to deepen the theoretical aspects of university lecturers’ online leadership, and it is of great practical significance to provide some suggestions for the future improvement of online education and leadership in a discipline, and the sustainable development of discipline construction.

LITERATURE REVIEW

Leadership Style

Leadership-related theory was first introduced more systematically by Burns (1978) and defined as an approach to leadership that leads to changes in individuals and social systems, whose main purpose is to increase leaders’ and followers’ motivation and moral level, in order to help achieve the common goals of a given group. Leadership styles are divided into three main forms, namely transformational leadership, reciprocal leadership, and permissive leadership (Chukwusa, 2018). Transformational leadership is one of the most accepted leadership styles; it refers to encouraging the ministry to enhance their goals and motivation and stimulate their intelligence to have a high level of analysis and vision to achieve self-actualization, including the four leadership styles of charisma, motivational inspiration, intelligent inspiration, and individual care (Toste et al., 2020). Through this style, followers will be inspired, motivated, and encouraged by transformational and changeable forms (Northouse, 2019). Reciprocal leadership is the process of mutual fulfillment of a common agreement between leaders and their subordinates in exchange for something of value. Its main purpose is to activate their higher-level needs and encourage them to pursue the organization beyond their own interests (Coun et al., 2019). It also internally includes power change payoffs and intervention management, so as to ensure that tasks can be effectively achieved. In addition, laissez-faire leadership has also been classified as a new type of leadership style, in which the leader avoids or lacks leadership, has almost no function, and does not use any transactional behavior to influence the members of the organizations, which is named as passive avoidance leadership (Kindarto et al., 2020). According to Northouse (2019), leadership as a process exerts influence on individuals in a group and is always used as a tool to obtain common goals in a given group. The way a person influences others is expressed in the form of everyday behaviors known as leadership style (Annisa, 2022). Instead, lecturers who are instructional leaders will have a unique pattern of behavior in influencing students, which is known as lecturers’ leadership style. Leadership style is a pattern of behavior of a leader who constantly influences their subordinates, so that they are happy to do their work to achieve their goals (Thoha Miftah, 2010). Burnley and Nawaz (2010) state that educational leadership should provide an environment that can effectively promote learning.

As online technologies continue to present themselves, the study of leadership is imperative and necessary (Matkin, 2022). Indeed, leadership styles play important roles in the implementation and success of online learning objectives, while in-school education facilitates the transition of the instructional model from a physical lecturer environment to a virtual learning environment or a blend of both (Nworie, 2012). This allows to enhance education with minimal resources and infrastructure (Aldholay et al., 2019). For leaders to effectively advance and sustain distance education, scholars set out to explore which attributes and competencies are more important (Beaudoin, 2015), with online leaders using simple language to deliver a large number of positive and concise words compared to traditional education (Johnson et al., 2015). Metal (2019) argues that the overall quality of education is positively impacted through transformational leadership in actual use. Gomez (2013) explored individual differences in leadership development in a study on PhD students, and concluded that
leadership was positively associated with online academic retention completion. The findings above evidence that online learning creates a progressive and evolving learning environment where lecturers will demonstrate their personal charisma in their interactions with students, generating a variety of influential leadership behaviors to unite students, effectively motivate them to achieve their teaching goals, and take care of their personal needs. In this way, the lecturer’s leadership not only enriches and develops the lecturer’s professional quality, but also positively influences the students’ learning outcomes. In the online university classroom, the instructor’s leadership style can encourage and motivate students to achieve academic success. Thus, leadership in the online classroom can help students and lecturers achieve their goals (Annisa, 2022).

Students’ Satisfaction
Lecturers’ online leadership styles could play a key role in enhancing students’ satisfaction with their learning experience and teaching quality in college classroom settings. All the findings indicate that the students’ satisfaction plays an important role in their outcomes, including academic achievements (Astin, 1993). The leadership style, teaching effectiveness, and students’ satisfaction are considered to be the key to enhancing effective teaching-learning experience in an educational setting (Adhikary, 2017). The relationship between university lecturers as leaders in online classroom and students as their followers was positively related to students’ achievement, and would eventually influence students’ satisfaction with their college experience and teaching quality (Komarraju et al., 2010; Lovett, 2018; Wenner & Campbell, 2017). Students’ satisfaction with their college life experience is an important factor to influence their academic achievement and is one of the key factors to meet students’ expectations. To satisfy students’ needs more efficiently (Yu & Deng, 2022), improve teaching quality, and ultimately enhance students’ satisfaction and learning effectiveness, it will be vital to help students improve their satisfaction in online classrooms by inspiring and stimulating them.

Learning Outcomes
Learning outcomes can be predicted, measured, and represented by the term of learning effectiveness. The most usual way to assess the learning effectiveness is often determined by the score result at the end of each term. Research showed that transformational leadership style, particularly charismatic leadership, is considered as a catalyst for enhancing the results of students, and there is a positive link between lecturers’ charismatic leadership style and students’ achievement (Radhwan, 2020). In addition, based on Brofenbrenner’s (2005) ecological system theory, in an online education environment, lecturers are the innermost system, that is one of the most influential factors that will impact students’ learning experience and performance in the class ecological system. As in online classrooms the correlation between lecturers’ leadership styles and students’ learning outcomes is very limited in literature, in this study the author investigated the relationship between them, so that lecturers could adjust their own leadership behaviors in online environment to help meet students’ needs and improve their learning experience.

Brofenbrenner’s Ecosystem Theory
According to Bronfenbrenner’s ecological system theory, school is like a living organism composed of smaller ecosystems; biological and environmental factors influence human development. The ecosystem theory includes five systems: The microsystem, the mesosystem, the exosystem, the macrosystem, and the chronosystem (Bronfenbrenner, 1979, 2005; Eriksson et al., 2018). The chronosystem works for all living organisms and the environment; also, it works well for the school, since teachers, students, classrooms, and schools are components of the ecology. The online learning environment is composed of interactive factors such as lecturers, students, and learning atmosphere. Online classrooms can function as an open ecological system, and lecturers’ leadership is an important part within it. Lecturers’ leadership not only promotes students’ academic growth, but also enhances lecturers’ relationship with students to maintain a better, healthy, and more harmonious
class environment, within which students can make academic achievement and personal development. Hence, classroom environment is regarded as a small ecosystem, and lecturers’ leadership styles are a critical factor of the ecosystem that impacts students’ development at school.

The online leadership rating system was constructed, followed by a questionnaire the researchers distributed to the study participants who met the criteria regarding their perceptions and satisfaction with the three leadership styles of the instructor. Each variable was also carefully organized and measured based on the respondents’ data. Participants were asked to respond to questions about personal and background information through a demographic survey. Participants responded to the Multifactor Leadership Questionnaire (MLQ) and student evaluation of educational quality (SEEQ) questionnaire. Then, the researchers processed and analyzed all the data using the statistical software SPSS, based on the students’ responses to the MLQ and SEEQ questionnaire, and organized the participating students’ English course grades, previous semester course grades, and students’ teaching quality ratings. After ensuring the reliability and consistency of the findings, descriptive analysis was used to examine correlates such as age, enrollment status, gender, and ethnicity, and to conduct empirical correlation analysis. The Spearman correlation analysis was mainly used to analyze the relationship among lecturers’ leadership styles and students’ achievement. The Spearman correlation analysis is a mathematical and statistical method to study the closeness of the relationship between two things, which characteristic is that it does not need to consider, the characteristics of the overall distribution between variables, and the size of the sample size, and is widely used (De Winter, et al., 2016). Finally, the results are interpreted and analyzed.

MATERIALS AND METHODS

The focus of this study was to examine the relationship between lecturers’ leadership styles and students’ online learning satisfaction and outcomes by exploring lecturers’ leadership styles in the online environment. The author examined three leadership styles displayed in the online classroom, specifically the transformational leadership style, which is the most accepted leadership style in education. The author also examined the impact of leadership style on college students, students’ satisfaction with their learning experience, and the quality and effectiveness of instruction through perceived learning experience and ratings of the quality and effectiveness of instruction.

Literature Research Method

Literature sources of this study are mainly of three kinds:

1. Books related to theory and practice of educational leadership; the content is more systematic, mature, comprehensive, reliable, and helpful for the author to acquire the knowledge in this field comprehensively and systematically.
2. Journals related to educational leadership whose content is up to date and updated quickly, and that reflect current levels of the test value.
3. Network literature resources, which the author collected through Google, Baidu, other research engines such as CNIK, and some literature retrieval tools.

Sample and Population

As one of the important online education universities in China, Qufu Normal University started early in online education, and has introduced the course of educational leadership. The lecturers and students of the school have a certain understanding of the online leadership style. In the study, according to the students’ responses to lecturers’ online leadership styles, the author conducted a simple test; if the understanding was qualified, the results of the test could become the research object. All the students participating in the survey had an overall evaluation of GPA no less than A. Final voluntary
participants were 100 second-year undergraduate students, from 18 to 20 years old, who are enrolled in Qufu Normal University in China, in different colleges. The number of male and female students was 38 and 62, respectively.

**Instrumentation**

*The Multifactor Leadership Questionnaire*

Bass and Avolio (1995, 2004) developed the MLQ to examine leadership styles, including transformational leadership style, transactional leadership style, and laissez-faire leadership style. The validity and reliability of MLQ has been proved to be effective (Field, 2013; Garman et al., 2003). The SEEQ questionnaire is one of the most acceptable multidimensional measurements for students to evaluate teaching quality (Coffey & Gibbs, 2001). Pounder (2008) confirmed the reliability and validity of the MLQ, which indicated the effectiveness of MLQ in classroom leadership research. The MLQ has 45 items, which include nine full-range leadership factors, five of which are transformational, three of which are transactional, and one of which is laissez-faire. “The nine key leadership factors are: Idealized influence (attributes), idealized influence (behaviors), inspirational motivation, intellectual stimulation, individualized consideration, contingent reward, management-by-exception (active), management-by-exception (passive), and laissez-faire measures” (Avolio & Bass, 2004; Northouse, 2017). The participants used nearly fifteen minutes to complete 45 questions in the survey, which used a 5-point Likert scale to determine how frequently the statements fit lecturers’ behaviors in online classes perceived by students. The level ranges from 0 (never), 1 (seldom), 2 (sometimes), 3 (fairly often), and 4 (frequently, if not always). The instrument includes 35 items within the nine factors.

*The Student Evaluation of Educational Quality Questionnaire*

The SEEQ questionnaire is one of the most acceptable multidimensional measurements for students in American higher education institutions to evaluate teaching quality (Grammatikopoulos et al., 2015). The SEEQ questionnaire has nine factors to measure teachers’ enthusiasm, organization/cohesion, learning/value, assignments/reading, group interaction, testing/grading, personal relationships, coverage, and workload/difficulty (Rezaei et al., 2018). The SEEQ tool is used to analyze students’ perceptions of the effectiveness of teachers’ classroom instruction through feedback on students’ engagement and satisfaction. The rationale for using the SEEQ is based on the stability, validity, and reliability of the instrument found in the literature and the underlying the value of the SEEQ. Chinese scholars have also studied its reliability and validity based on surveys and experiments; and the results show that the questionnaire can be a good indicator of students’ evaluation of teachers’ teaching behaviors (Lu et al., 2018). The SEEQ contains 78 specific items that consist of 44 variables from the MLQ (5x-short) and 34 variables of the SEEQ, which were regrouped into 11 calculated variables of the MLQ and 9nine calculated variables of the SEEQ. The tool uses a 5-point Likert-style scale, with each item ranging from 1 (very poor) to 5 (very good). The highest score for each evaluation item is 5 points and the lowest score is 1 point. The questionnaire is completely oriented to students, and it asks questions and evaluates teachers’ classroom teaching effects from the students’ perspective.

**Research Questions**

**Question One:** To what extent do university lecturers’ leadership styles exist in the online English class and which one is the most dominant during the COVID-19 pandemic?

**Question Two:** What is the relationship between the university lecturers’ leadership styles and students’ satisfaction in online learning?

**Question Three:** What is the relationship between lecturers’ leadership styles and students’ learning outcomes in online learning?
Question Four: What is the relationship between students’ learning satisfaction and learning outcomes in online learning?

Research Hypotheses

The hypotheses for the empirical analysis test including three factors were based on leadership theory, Bronfenbrenner’s ecosystem theory, and students’ satisfaction-related theory which affects teaching quality and student achievement. The research hypotheses are proposed below.

Hypothesis One: University lecturers’ leadership styles exist in online learning and the transformational style is a more dominant one.

Hypothesis Two: University lecturers’ leadership styles perceived by participating students are statistically significantly correlated with students’ learning satisfaction.

Hypothesis Three: University lecturers’ leadership styles perceived by participating students are statistically significantly correlated with students’ learning outcomes.

Hypothesis Four: Students’ online learning satisfaction is statistically significantly correlated with students’ learning outcomes predicted by students’ course score.

Data Collection and Analysis

The actual survey was conducted at a college in one of the Northeastern cities in China, in the spring semester. The survey was distributed online to undergraduate students regarding their perception of their lecturers’ three leadership styles and their satisfaction with their instructor’s teaching quality. Participants from one type of university in China participated in the survey questionnaires. The statistical analysis based on participating students’ English course grades, previous semester course grades, and student ratings of teaching quality based on students’ response to the MLQ and the SEEQ questionnaire is conducted to illustrate the correlation clearly.

RESULTS AND DISCUSSION

This study aimed to explore the relationship between English lecturers’ leadership styles and students’ learning satisfaction through a survey in a typical Chinese college, based on participating students’ English course grades and students’ rating of teaching quality based on students’ response to the MLQ 5X and the SEEQ questionnaire. After cleaning and processing of the collected data based on lecturers and students’ responses to the MLQ 5X, a total of 90 valid student questionnaires were analyzed. In addition, most of the participants’ academic performance were rated A or better. No participant failed the course.

Reliability and Validity

As the Table 1 shows, the Cronbach’s alpha coefficient for students was greater than 0.7, indicating that the collected data were reliable and the Cronbach’s alpha coefficient of the MLQ and the SEEQ (student) was 0.823 and 0.981, respectively, which passed the reliability test. The Kaiser-Meyer-Olkin index of the questionnaires was 0.914, which was greater than 0.7 and could be used as an accurate

<table>
<thead>
<tr>
<th>Questionnaire Type</th>
<th>Crosby’s Alpha</th>
<th>N. of Items</th>
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<tbody>
<tr>
<td>MLQ (lecturers)</td>
<td>.868</td>
<td>12</td>
</tr>
<tr>
<td>Seeq</td>
<td>.981</td>
<td>9</td>
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measure of the degree of measurement required; the Bartlett sphericity index was less than 0.05, indicating that the questionnaire was structurally valid (Table 2).

**Perceived Leadership Styles from Participating Students**

As Table 3 shows, among the three leadership styles, the transformational average was the highest, reaching 2.62, and the lowest was passive avoidant, which was only 1.39. Participating students' responses to the MLQ questionnaires (Table 3) indicated that the most obvious leadership style of their lecturers was transformational leadership style. It was mainly attributable to the fact that students prefer to work with lecturers who adopt transformational leadership styles, which better improve students' self-awareness and constitute a source of inspiration (Trichas & Avdimiotis, 2020). The second most perceived leadership style was a transactional leadership style. Transitional leadership influences students through rewards and punishments by emphasizing learning standards and goals. Passive/avoidant leadership behaviors were perceived to have a lower degree of poor leadership behaviors. Students are more resistant to passive avoidant leadership behaviors, which would not be conducive to improve teaching quality and students' thinking diffusion. Hence, in online classes, lecturers displayed the transformational leadership style moderately often, according to students' evaluation.

The results (Tables 4-5) of students’ assessment through the MLQ are as follows. Of 45 items on the MLQ 5X, 20 items were counted as “transformational,” eight items were “transactional,” eight items were “passive avoidance,” and two items were leadership outcomes. The description results showed that the participating students perceived that most of their lecturers had transformational leadership behavior in their teaching practice, but they did not perceive their lecturers to be more transformational than normal. The lecturers perceived by participating students demonstrated a bit

<table>
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<th>Table 2. Validity test</th>
<th>MLQ (student)</th>
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<tbody>
<tr>
<td>Kaiser-Meyer-Olkin measure of sampling adequacy</td>
<td>.914</td>
</tr>
<tr>
<td>Bartlett’s test of sphericity</td>
<td>Approx. Chi-Square 1300.631 Dr 91 Sid .000</td>
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<th>Table 3. Lecturers’ three leadership styles</th>
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<tr>
<td>Mean</td>
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<tr>
<th>Table 4. MLQ variable data description (transformational scale)</th>
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<tr>
<td>IA or II</td>
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<tr>
<td>Statistic</td>
</tr>
<tr>
<td>Mean</td>
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<tr>
<td>Std. Devi</td>
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<tr>
<td>Skewness</td>
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<tr>
<td>Kurtosis</td>
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</table>
low level of transformational leadership, which showed that lecturers in Qufu Normal University were relatively lacking in transformational leadership and more training needed to be carried out. Comparatively, they did well in intellectual stimulation, but they needed more improvement in other behaviors, especially in individualized consideration. Therefore, all above statistical analysis proved that leadership styles did exist in the online classes and transformational leadership style is more obvious compared with the other two leadership styles in the online class shown by the statistics listed above. This answered question one.

Influence of Lecturers’ Leadership Styles on Students’ Satisfaction and Learning Outcomes

By comparing the means of all the nine variables from Tables 6-7, “overall” got the highest score (3.30), while “learning” and “examination” got the lowest score (3.04), which indicated that participating students presented high level of satisfaction on the lecturers’ overall educational quality. However, the participating students demonstrated relatively low level of satisfaction with their lecturers’ educational quality in learning and examination, which answered the question two. The result showed the correlation between students’ satisfaction and students’ learning outcomes (Table 8) was not so significant, which answered the question four. It shows that students with higher learning motivation will receive better grades through good course teaching quality, and their satisfaction with online course teaching will naturally increase.

Correlation Between Lecturers’ Leadership Behaviors and Participating Students’ Satisfaction

The Spearman’s test (Tables 9-11) was employed to investigate the relationship between lecturers’ leadership behaviors and participating students’ satisfaction, which showed that lecturers’ leadership styles did have impact on students’ satisfaction, even though the relationship is not so significant. Description results (Table 9) showed that the participating students perceived that most of their instructors had transformational leadership behavior in their teaching practice, but they did not perceive their instructors to be more transformational than normal. Due to the important role of transformational leadership, lecturers’ weak transformational leadership may affect students’ learning (Garman & Kwan, 2020). In Table 10, contingent reward reached 2.56, which was higher than the middle of the survey scale (2), and management-by-exception (active) reached 2.38, which was much higher than the ideal scale score (1.5). The means of the variables could reveal that the participating students perceived their instructors to be more transactional than the norm. Almost all students’ perceptions of their lecturers’ transactional leadership behaviors were higher than the median high level (2), which demonstrated that their instructors recognized and clarified the roles and tasks required for students to fulfill their tasks. Table 11 shows that the participating students perceived their lecturers to have passive/avoidant leadership traits in their teaching practice, which was quite low compared with the
Table 6. Description of satisfaction of participating students

<table>
<thead>
<tr>
<th>Learning</th>
<th>Enthusiasm</th>
<th>Organization</th>
<th>Group Interaction</th>
<th>Individualized Support</th>
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</thead>
<tbody>
<tr>
<td>Statistic</td>
<td>Std. Error</td>
<td>Statistic</td>
<td>Std. Error</td>
<td>Statistic</td>
</tr>
<tr>
<td>Mean</td>
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<td>0.09</td>
<td>3.17</td>
<td>0.08</td>
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<tr>
<td>95% Confidence Interval for Mean</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Lower Bound</td>
<td>2.78</td>
<td>3.00</td>
<td>2.99</td>
<td>2.88</td>
</tr>
<tr>
<td>Upper Bound</td>
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<td>3.34</td>
<td>3.33</td>
<td>3.23</td>
</tr>
<tr>
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<td>3.04</td>
<td>3.26</td>
<td>3.25</td>
<td>3.14</td>
</tr>
<tr>
<td>Median</td>
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<td>3.00</td>
<td>3.00</td>
</tr>
<tr>
<td>Variance</td>
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<td>0.70</td>
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<tr>
<td>Std. Deviation</td>
<td>0.93</td>
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<td>0.81</td>
</tr>
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<td>Minimum</td>
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<td>0.00</td>
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<td>Maximum</td>
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</tr>
<tr>
<td>Range</td>
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</tr>
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<td>Skewness</td>
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<td>-1.44</td>
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<td>Kurtosis</td>
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<td>0.48</td>
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<th>Overall</th>
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<tr>
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<td>Std. Error</td>
<td>Statistic</td>
<td>Std. Error</td>
</tr>
<tr>
<td>Mean</td>
<td>3.09</td>
<td>0.08</td>
<td>3.13</td>
</tr>
<tr>
<td>95% Confidence Interval for Mean</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>Lower Bound</td>
<td>2.92</td>
<td>2.96</td>
<td>2.96</td>
</tr>
<tr>
<td>Upper Bound</td>
<td>3.26</td>
<td>3.30</td>
<td>3.33</td>
</tr>
<tr>
<td>5% Trimmed Mean</td>
<td>3.17</td>
<td>3.21</td>
<td>3.25</td>
</tr>
<tr>
<td>Median</td>
<td>3.00</td>
<td>3.00</td>
<td>3.00</td>
</tr>
<tr>
<td>Variance</td>
<td>0.68</td>
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<tr>
<td>Std. Deviation</td>
<td>0.82</td>
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</tr>
<tr>
<td>Minimum</td>
<td>0.00</td>
<td>0.00</td>
<td>0.00</td>
</tr>
<tr>
<td>Maximum</td>
<td>4.00</td>
<td>4.00</td>
<td>4.00</td>
</tr>
<tr>
<td>Range</td>
<td>4.00</td>
<td>4.00</td>
<td>4.00</td>
</tr>
<tr>
<td>Intercutting Range</td>
<td>1.25</td>
<td>1.00</td>
<td>1.00</td>
</tr>
<tr>
<td>Skewness</td>
<td>-1.33</td>
<td>0.24</td>
<td>-1.38</td>
</tr>
<tr>
<td>Kurtosis</td>
<td>2.92</td>
<td>0.48</td>
<td>2.80</td>
</tr>
</tbody>
</table>

Table 7. Normality test of students’ satisfaction based on responses to the SEEQ questionnaire

<table>
<thead>
<tr>
<th>Kolmogorov-Smirnov</th>
<th>Shapiro-Wilk</th>
</tr>
</thead>
<tbody>
<tr>
<td>Statistic</td>
<td>Dfe</td>
</tr>
<tr>
<td>Overall</td>
<td>.224</td>
</tr>
</tbody>
</table>
other two styles. The results showed a significant correlation between lecturers’ leadership behaviors and students’ satisfaction, which answered the question three.

**Research Hypotheses Validation**

Based on the above empirical studies, the validation of the research hypotheses was as follows:

**Hypothesis One:** The original hypothesis accepted was that university lecturers’ leadership style is present in online learning and that the transformational style is dominant.
Hypothesis Two: There is a statistical correlation between university lecturers’ leadership style as perceived by the participating students and the students’ learning satisfaction.

Hypothesis Three: University lecturers’ leadership styles as perceived by the participating students is statistically correlated with the students’ learning outcomes.

Hypothesis Four: Students’ satisfaction with online learning is statistically correlated with students’ learning outcomes, as predicted by their course score.
Summary

Research Question One

Research showed that, during the COVID-19 pandemic, students did perceive leadership styles in the online classes from their lecturers, and students perceived transformational style to be more influential and obvious compared with the other two leadership styles, but instructors did not show or perform their transformational leadership style so frequently in the classroom (Yu, 2021).

Research Question Two

Research showed that participating students perceived most of their instructors in the Chinese college to be more transformational and transactional than the norm, in their teaching practices. The result also showed that leadership styles positively affected students’ overall satisfaction with their instructors’ educational quality.

Research Question Three

Results revealed that university lecturers’ online leadership styles perceived by participating students were correlated with students’ learning outcomes, though it was not so significant.

Research Question Four

Correlation analysis revealed that students’ online learning satisfaction was not statistically significantly correlated with students’ learning outcomes predicted by students’ English course.

LIMITATIONS, IMPLICATIONS, AND FUTURE RESEARCH

A first limitation of this study is that the survey of students’ coverage is too small. Due to time constraints, the study lasted one term, which may not reflect all changes of students’ learning outcomes so completely. Then, due to the differences existing among the participants, there may be unavoidable inaccuracy in responses. The research above suggests that Chinese lecturers need to be aware that leaders-followers relationships do exist in online learning. Also, it is important for lecturers to know about the leadership theory systematically, because this would be beneficial for their professional development. Recommendations for institutions of higher education in China on how to promote students’ academic success and assist their English online learning are that lecturers need to learn and adjust their own online leadership styles in the future to positively affect students’ online learning satisfaction and learning outcomes. Future research on online English teaching should not only highlight students’ individual characteristics and learning needs to provide a rational basis for the design of appropriate learning tasks and activities, but also pay attention to the English lecturers’ online leadership styles in motivating and inspiring students. Future studies should consider expanding the scope of the students to include primary, middle school, and high school students. Moreover, lecturers’ leadership studies should also extend to the subjects of chemistry, mathematics, science, and other subjects, when possible.

CONCLUSION

This study examined the impact of online leadership on student achievement and satisfaction, and considered the implications from the perspective of Brofenbrenners’ ecosystem theory. The results showed that the proposed framework successfully demonstrated the use of a construct of the impact of online leadership on student academic achievement. The study also found that lecturers’ online leadership styles help to improve student learning, enhance communication between lecturers and students, and improve lecturers’ teaching quality in higher education. The lecturers who participated in the study as perceived by the students exhibited leadership styles in their teaching practices and
were often unconsciously adopted by most lecturers, but they did not exert these styles at a high level, especially at a transformation level. Students perceived that their English lecturers performed well in terms of intellectual stimulation and inspirational motivation, but they needed more improvement in the individualized considerations section to accommodate each student’s needs in the online learning environment. The relationship between online leadership and students’ achievement was also significantly mediated. This suggests the relevance of Chinese university lecturers using the MLQ to assess their own leadership behaviors, which would benefit IR professional development. Finally, these findings may provide insights for future research in the Chinese education system. It will be beneficial to enhance the understanding of leadership styles and deepen the understanding of theoretical systems related to geographic context. It is important to create an environment where students are more likely to use online learning to improve their academic professionalism and ultimately their quality of learning.

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CONFLICT OF INTEREST

The authors declare that there is no conflict of interests regarding the publication of this paper.

DATA AVAILABILITY

The details of data used to support the findings are available from the first author upon request.
REFERENCES


Wenwen Cao, born in 1981, was an English teacher in Qufu Normal University. She has worked as a teacher at Qufu Normal University for almost 14 years. She received her Master Degree in 2011 and PhD in 2021. In the past 14 years, she was involved in several research projects and has published more than 5 articles about English teaching. She has a positive attitude towards life, and a strong sense of social responsibility and justice; also, she has been engaged in various public welfare activities. She works hard to learn and improve her professional theoretical knowledge, and strive to learn more about the forefront of English learning and teaching as the main direction to continue her present and future research.


