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Effect of Teachers' Transformational Leadership on Student Engagement: Self-Efficacy as a Mediator

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Abstract:

This study aims to explore the effects of transformational leadership exhibited by teachers on student engagement as a mediator of student self-efficacy. The research sample comprised 1,034 students from five Chinese higher vocational education (HVE) colleges, including four public and one private institution. Furthermore, this study delves into the mediating role of self-efficacy in these relationships. We used a quantitative cross-sectional design to gather data through an online survey, which was subsequently analyzed using SPSS and AMOS software. This analysis involved descriptive statistics, correlation, regression, and structural equation modeling (SEM). A Bootstrapping technique further examined the mediation effect. The results reveal a notable link between teachers' transformational leadership behaviors and student engagement, with self-efficacy as a partial mediator. These insights enhance the extant literature by presenting a more holistic understanding of how transformational leadership theory from a business lens is incorporated into the concept of teacher leadership in higher education and its influence on student engagement through the mediating role of self-efficacy. Moreover, the findings furnish crucial insights for educators, practitioners, and policymakers interested in tutor-teacher leadership training programs to amplify teaching quality in HVE colleges.

Keywords: teachers, transformational leadership, students, engagement, self-efficacy.

教師變革型領導對學生參與的影響：自我效能作為中介

摘要：

本研究旨在探討教師所展現的變革型領導作為學生自我效能感的中介對學生參與的影響。研究樣本包括來自五所中國高等職業教育學院的1,034名學生，其中包括四所公立院校和一所私立院校。此外，這項研究也

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深入探討了自我效能感在這些關係中的中介效果。我們採用定量橫斷面設計透過線上調查收集數據，隨後使用統計軟件和阿莫斯軟體進行分析。此分析涉及描述性統計、相關性、迴歸和結構方程模型。自舉技術進一步檢驗了中介效應。結果揭示了教師變革型領導行為與學生參與度之間的顯著聯繫，自我效能感作為部分中介因素。這些見解透過更全面地理解商業視角下的變革型領導理論如何融入高等教育教師領導力的概念及其透過自我效能的中介作用對學生參與的影響，增強了現有文獻。此外，研究結果為對導師-教師領導力培訓計劃感興趣的教育工作者、從業者和政策制定者提供了重要的見解，以提高高等職業教育學院的教學品質。

关键词： 教師、變革型領導、學生、參與、自我效能。

1. Introduction

The Chinese government has initiated policies aimed at elevating the standard of teaching in higher vocational education (HVE) colleges, notable among which is the "National Vocational Education Reform Implementation Plan" (STATE COUNCIL, 2019). These measures underscore the pivotal role that teachers play and the caliber of their instruction in advancing the quality of higher vocational education. Importantly, student engagement is not just a metric—it has been closely linked to high-caliber learning outcomes, indicating the overarching quality of education at the tertiary level (Balwant et al., 2019). In recent times, an increasing body of empirical research has illuminated the profound impact teachers wield in molding students' academic journeys.

Teacher leadership's role in enhancing effective teaching and learning has gained heightened importance. The research conducted by Öqvist & Malmström (2018) suggests that teachers exuding prominent leadership qualities can nurture a vibrant learning atmosphere, stimulate academic motivation, and advance student outcomes. Recognizing this, the Chinese Ministry of Education incorporated teacher leadership into its "National Training Program" for 2020, with an ambition to fortify the core tenets of primary education and empower teachers' leadership capacities (MINISTRY OF EDUCATION, 2021). Yet, a conspicuous void remains: China lacks a specialized training initiative tailored to elevate the leadership acumen of college educators. Many Chinese vocational instructors neither perceive themselves as classroom torchbearers nor are they adept at manifesting leadership roles (Tan, 2020). With teacher leadership playing such a pivotal role in the quality of higher vocational education in China, research pinpointing strategies to hone teaching prowess and foster teacher leadership in Chinese institutions is imperative. Numerous scholars, including Calderone et al. (2018) and Balwant (2016), advocate for transformational leadership as a superior leadership archetype, particularly given its potential to usher in exemplary educational results. Given this backdrop, our study aspires to integrate transformational leadership principles into pedagogical contexts, probing pathways to enhance teaching quality across Chinese colleges.

While past research has explored the link between

teachers' transformational leadership and student engagement (Balwant et al., 2019; Černe et al., 2013), further insight is necessary into the specific mediating mechanisms underpinning this relationship. This study focuses on students and teachers in Chinese HVE colleges, a demographic typically experiencing a dip in learning engagement. Yet, it is vital to emphasize that deploying potent teaching strategies can substantially counteract this trend (Yi et al., 2021). At its core, this research aims to bolster teaching quality in Chinese HTVE institutions by examining the potential integration of teacher leadership with the organizational paradigm of transformational leadership within higher education settings. It seeks to ascertain if such a leadership approach can positively influence student engagement. Additionally, the study will probe the interplay of student self-efficacy within this dynamic.

This research is anchored in robust theoretical foundations, including the Social Cognitive Theory from Bandura et al. (1999), which posits self-efficacy as a significant predictor of behaviors, and the Transformational Leadership Theory from Bass and Riggio (2006), which offers insights into how leaders, in this case, teachers, can effectively inspire and motivate their followers—here, the students. Adopting a quantitative approach, this study uses surveys to gauge the prevalence of teachers' transformational leadership, student self-efficacy, and student engagement. The study employed respected measurement tools such as the Multi-Factor Leadership Questionnaire (MLQ 5X, 45 items) developed by Bass & Avolio (2000) to assess transformational leadership, along with the University Student Engagement Inventory (USEI) introduced by Maroco et al. (2016). Prior academic research has attested to the validity and relevance of these scales in similar study contexts.

Self-efficacy is hypothesized to significantly influence the relationship between faculty transformational leadership and student engagement in learning. The outcomes of this research promise value to a wide array of stakeholders. Educators can acquire a deeper comprehension of impactful teaching strategies through the lens of transformational leadership, furnishing them with actionable takeaways. For policymakers, the findings offer empirical backing for formulating professional development initiatives centered on teachers' leadership approaches.

Additionally, scholars can enrich the extant academic discourse, plugging the knowledge lacuna concerning student engagement and leadership in China's higher education milieu. At its heart, this study seeks to amplify our understanding of the nuanced interplay between teachers' leadership methodologies, student self-efficacy, and engagement.

2. Literature Review

2.1. Teacher Leadership

Teacher leadership, as a concept, remains fluid, without a universally accepted definition. Different scholars prioritize various aspects of the role: some underscore the influence of teachers in refining their peers' instructional practices (York-Barr & Duke, 2004), while others zoom in on the direct student-teacher classroom interactions (Pounder, 2014). The trajectory of teacher leadership's development unfolds across four discernible phases (Silva et al., 2000). The first phase centered on formal roles, like that of principals. The subsequent phase pivoted toward informal capacities, especially that of curriculum leaders. The third broadened the scope, recognizing any teacher who fosters a constructive school atmosphere as a leader. The fourth, introduced by Pounder, foregrounded the importance of teachers guiding fruitful student interactions. Though perspectives differ, a shared sentiment acknowledges teacher leadership as an evolving endeavor aimed at enhancing pedagogical practices and learning climates, rather than a stagnant role defined by title or hierarchy. This research adopts Balwant (2016) definition that accentuates the deliberate impact teachers have on students, mirroring the study's focus on higher education.

2.2. Transformational Leadership

Transformational leadership transcends routine instructional obligations, emphasizing the inspiration and motivation of followers to achieve elevated performance and personal development (Burns, 1978). This leadership paradigm encompasses four principal elements: idealized influence, inspirational motivation, intellectual stimulation, and individualized consideration (Webber, 2021). Extensively researched within leadership studies, transformational leadership consistently emerges as a potent leadership approach (Lowe et al., 1996; Wang et al., 2011). The comprehensive meta-analysis by Wang et al. (2011) and Lowe et al. (1996), which evaluated the efficacy of this leadership style across a vast sample, further consolidates its effectiveness. Within varied organizational environments, including educational domains, transformational leadership stands out as a pivotal influencer.

2.3. Teachers' Transformational Leadership

Teacher leadership intrinsically resonates with the traits of transformational leadership, even if teachers might not explicitly identify these characteristics within

themselves. Core tenets of effective teacher leadership mirror those of transformational leadership: building trust, championing professional growth, and exhibiting robust communication. Drawing from Pounder (2006)'s theoretical model, teacher leadership inherently incorporates transformational elements manifesting in various forms: individualized student support, intellectual engagement through problem-solving, motivational strategies targeting learning objectives, and mentorship roles. Other researchers, such as Bolkan & Goodboy (2011), pinpoint charisma, intellectual stimulation, and individual consideration as critical indicators of a teacher's transformational leadership prowess. Some academic critiques argue that these investigations do not completely encapsulate the essence of transformational leadership. In spite of this, there is growing agreement about the importance of further study into how teacher transformational leadership affects student learning results. This study harnesses Pounder's theoretical lens on teacher transformational leadership, focusing on its ramifications in higher education.

2.4. Student Engagement

Student engagement has consistently been recognized as a vital component in effective learning processes and positive educational outcomes. Representing a spectrum of students' cognitive, emotional, and behavioral investment in their learning, engagement is crucial to student achievement, motivation, and overall learning satisfaction. Early conceptualizations of engagement centered on participation in academic and extracurricular activities (Astin, 1984). Over time, the understanding expanded to encompass cognitive, emotional, and behavioral dimensions, reflecting students' holistic involvement in the learning process (Fredricks et al., 2004). This understanding of student engagement provides a foundation for exploring strategies to enhance student engagement. Several strategies have been identified to sustain and enhance student engagement in academic settings. Ghasemi et al. (2020) conducted a narrative review to explore the strategies used by nurse teachers to promote the engagement of nursing students. The review highlighted the importance of creating an inclusive and supportive learning environment, incorporating active learning strategies, and providing timely feedback to enhance student engagement. In the context of the learning process, student engagement is widely recognized as a pivotal element, with teachers assuming a fundamental responsibility in fostering and augmenting student engagement.

2.5. Teachers' Transformational Leadership and Student Engagement

Within the realm of educational contexts, it has been observed that teachers who demonstrate transformational leadership behaviors tend to have a greater likelihood of exerting a positive influence on students' attitudes, motivation, and engagement.

Teachers serve as a source of inspiration for students, encouraging them to establish more ambitious objectives, engage in critical thinking, and actively engage in the educational experience. Numerous scholarly investigations have been conducted to explore the correlation between teachers' implementation of transformational leadership and the level of student engagement. Balwant (2022) conducted a study that revealed a positive relationship between transformational instructor-leadership and student engagement, ultimately resulting in improved academic performance. Thornberg et al. (2020) emphasized the significance of the quality of the teacher-student relationship in fostering student engagement, specifically in terms of affective and behavioral engagement. The results of these studies indicate that the behaviors exhibited by teachers in their role as transformational leaders have the potential to exert a positive influence on student engagement.

Nevertheless, it is essential to acknowledge that certain investigations have failed to establish a substantial correlation between transformational leadership and student engagement. A study by Jeong et al. (2016) revealed that the correlation between transformative leadership and teacher engagement in American schools was not statistically significant. In a similar vein, the study conducted by Song et al. (2012) revealed a lack of statistically significant correlation between teachers' work engagement and principals' transformational leadership. The divergent results suggest that the association between transformational leadership and student engagement can be influenced by contextual variables. Therefore, further study is needed to fully comprehend the connection between transformational leadership and student engagement, particularly in the context of Chinese higher education.

2.6. Mediation Effect of Self-Efficacy (SZ)

As per the findings of the study conducted by Bandura et al. (1999), self-efficacy can be defined as an individual's cognitive evaluation of their ability to successfully complete a particular task. It plays a crucial role in determining how individuals approach challenges and tasks, as well as their level of persistence and motivation. Self-efficacy beliefs are influenced by external factors, including social interactions and experiences. Recent empirical research indicates that self-efficacy may serve as a crucial mediator in the association between transformational leadership and engagement (Afayori, 2020; Bandura et al., 1999; Jan Prochazka et al., 2017). These results suggest that when teachers exhibit transformational leadership behaviors, they often create an environment that fosters self-efficacy beliefs among students. This enhanced self-efficacy, in turn, positively influences their engagement in the learning process, leading to improved academic outcomes.

While there is an abundance of research on transformational leadership in Western contexts, studies

within non-Western populations, including China, remain limited. In the Chinese educational context, research on transformational leadership predominantly concentrates on formal positions, such as principals in primary or secondary schools (Jiabing, 2021; Zhao & Ko, 2020). There is a dearth of studies looking at how teachers' transformational leadership affects student engagement within the Higher Technical and Vocational Education (HTVE) context in China. Additionally, few studies have delved into the potential mediating effect of self-efficacy in this dynamic. Given this gap, it becomes imperative to delve into whether teachers in Chinese HTVE colleges demonstrating transformational leadership can positively influence student engagement and if students' self-efficacy acts as a mediator in this relationship.

3. Methodology

3.1. Participants

This study seeks to explore the relationship between transformational leadership and student engagement in higher vocational colleges in China. The study utilized a quantitative cross-sectional research design. The sample region chosen for this study was Jiangsu Province, which is located in the eastern part of China. To collect data, a method known as cluster sampling was employed. A total of 879 students from four public colleges and 155 students from a private college within the province were surveyed. The participants in this study were administered a survey comprising items pertaining to their perceptions of teacher transformational leadership and their level of engagement. The participants were instructed to carefully consider the provided answer choices and select the options that most accurately reflected their individual perspectives and personal experiences. The questionnaire consisted of a series of closed-ended questions organized into three distinct sections. When engaging in quantitative research, the use of a survey questionnaire proves advantageous in the identification of individuals' noteworthy emotions, attitudes, and behaviors. The utilization of closed-ended questions can contribute to respondents experiencing a greater sense of comfort and concentration within the established boundaries of the survey instrument (Collis & Hussey, 2013).

3.2. Measures

3.2.1. Multi-Factor Leadership Questionnaire (MLQ)

The researchers utilized a Multifactor Leadership Questionnaire (MLQ) consisting of 20 items, which was initially developed by Bass & Avolio (2000) and subsequently modified by Pounder (2008). This questionnaire was used to assess students' perceptions of their teachers' transformational leadership behaviors. The survey utilized a 5-point Likert scale, encompassing response choices ranging from 1 (Not at

all) to 5 (Always). The MLQ scale comprised of five dimensions, with the cumulative score representing the level of Idealized Influence Attributed (IIA) exhibited by teachers in four items (e.g., "Teacher A's behavior has garnered my respect"), Idealized Influence (Behavior) (IIB) demonstrated in four items (e.g., "Teacher A discusses personal beliefs while teaching"), Inspirational Motivation (IM) reflected in four items (e.g., "Teacher A expresses optimism about the future"), Individualized Consideration (IC) displayed in four items (e.g., "Teacher A shows concern for my individual learning needs"), and Intellectual Stimulation (IS) provided through four items (e.g., "Teacher A encourages me to approach problems from various perspectives"). The assessment of the MLQ Scale's reliability was conducted by calculating Cronbach's α coefficient for each of its various aspects. The internal consistency for each dimension of the MLQ was found to be satisfactory: IIA ($\alpha=0.877$), IIB ($\alpha=0.913$), IM ($\alpha=0.869$), IC ($\alpha=0.897$), and IM ($\alpha=0.933$).

3.2.2. General Self-Efficacy Scale (GSES)

The study utilized the General Self-Efficacy Scale (GSES) by Schwarzer et al. (1997) to measure participants' self-efficacy. Comprising ten items, including statements like "I find it effortless to achieve my objectives," responses are gauged on a 5-point Likert scale. This scale gauges participants' confidence in facing challenges, with response options ranging from 0 (completely untrue) to 5 (completely true). The General Self-Efficacy Scale (GSES) is a unidimensional instrument that lacks subscales. A greater score is indicative of heightened levels of self-efficacy. The present study found that the General Self-Efficacy Scale (GSES) exhibited a high level of internal consistency, as evidenced by a Cronbach's alpha coefficient of 0.95.

3.2.3. University Student Engagement Inventory (USEI)

The measurement of student engagement levels was conducted through the utilization of the University Student Engagement Inventory (USEI), a 15-item instrument developed by Maroco et al. (2016). The USEI encompasses three dimensions: Behavioral Engagement (BE), reflected in five items such as "I demonstrate attentiveness in teacher A's classroom"; Emotional Engagement (EE), mirrored in items like "I exhibit interest in the assigned task in teacher A's classroom"; and Cognitive Engagement (CE) represented by statements like "I strive to integrate knowledge from various disciplines into my overall understanding". The participants provided ratings indicating their level of agreement with each statement using a 5-point Likert scale, with 1 representing "Not at all" and 5 representing "Always". The reliability of the

instrument was found to be strong, as shown by a Cronbach's alpha coefficient of 0.898.

3.3. Statistical Analysis

Preliminary results were determined using SPSS 26.0 software to conduct descriptive statistics ($M\pm SD$) and correlation analyses. In addition, the researchers employed structural equation modeling (SEM) to construct measurement models for the variables of teachers' transformational leadership behavior, student self-efficacy, and student engagement. Subsequently, the structural model underwent testing through the utilization of maximum likelihood estimation within the AMOS 26.0 Graphics software. To investigate the mediating influence of self-efficacy, the researchers employed a bootstrapping analysis. The mediation or indirect effect is deemed significant if the upper and lower boundaries of the 95% confidence intervals do not include zero. Bootstrapping is a statistical technique that exhibits robustness and versatility because it is independent of assumptions regarding the normality of the sampling distribution (Valente et al., 2016). On the other hand, alternative approaches such as the Sobel test may assume normality and may not be appropriate for analyses involving limited sample sizes.

4. Results

4.1. Preliminary Analyses

Table 1 presents a comprehensive overview of the normality indicators pertaining to the primary variables investigated in this work. These indicators include the data means, skewness, and kurtosis. According to the Table 1, the variables' skewness values were found to vary from 1.26 to 1.63, consistently remaining below the established upper limit of 3. Simultaneously, the observed kurtosis values ranged from 0.503 to 1.52, all of which were found to be below the established threshold of 8. According to the criteria established by Kline (2023), an evaluation of the variables' distribution indicates normality, as evidenced by a skewness value less than 3.0 and a kurtosis value below 8. Hence, the study findings indicate that the variables examined exhibited a distribution that closely approximated a normal distribution. Furthermore, the range of mean scores for the entry level varies from 3.75 ± 0.86 to 3.97 ± 0.84 , suggesting that students generally rated teachers' transformational leadership behaviors positively. In addition, students' overall perception of their own engagement was also rated positively. However, the level of self-efficacy was moderately high.

Table 1. Normality results of the variables (N=1034, $M\pm SD$)

| Variable | Items | Score range | Score | Entry mean | Skewness | Kurtosis |
|----------|-------|-------------|-------------------|-----------------|----------|----------|
| TTL | 20 | 20~100 | 79.45 \pm 16.81 | 3.97 \pm 0.84 | -1.26 | 0.503 |
| Eng | 15 | 15~75 | 57.83 \pm 10.7 | 3.86 \pm 0.71 | -1.542 | 1.52 |
| Sef | 10 | 10~50 | 37.48 \pm 8.57 | 3.75 \pm 0.86 | -1.63 | 1.243 |

Before initiating the modelling procedure, an initial Pearson correlation analysis was conducted to assess the relationships between the three main variables. Findings are presented in Table 2. In general, a correlation coefficient with an absolute value close to 1 signifies a robust linear relationship, whereas coefficients approaching 0 indicate a feeble linear relationship (Westover & Marangell, 2002). The results obtained from the analysis of Table 2 highlight a statistically significant and positive relationship between teachers' transformational leadership both self-efficacy ($r=0.480$, $p<0.01$) and engagement ($r=0.492$, $p<0.01$). Moreover, a significant and strong association was observed between student self-efficacy and engagement, as indicated by a correlation coefficient of 0.453 ($p < 0.01$). In brief, the notable and favorable correlations observed among the three variables provide a foundation for the utilization of structural equation modeling. The research framework being proposed posits that the independent variable is the display of transformational leadership by teachers, while the mediating variable is self-efficacy, and the dependent variable is engagement.

Table 2. Intercorrelations of the latent variables

| Variable | TTL | Sef | Eng |
|----------|---------|---------|-----|
| TTL | 1 | | |
| Sef | 0.480** | 1 | |
| Eng | 0.492** | 0.453** | 1 |

** Correlation is significant at the 0.01 level (2-tailed).

4.2. Model Effect Analysis

4.2.1. Preliminary Structural Equation Model Fit Test

The study employed a structural model that incorporated segmented indicators of the teachers' transformational leadership behavior, self-efficacy, and engagement. The researchers conducted an analysis of the full path structural model to assess its adequacy in fitting the study data based on the recommended goodness-of-fit parameters. Figure 1 displays the structural model along with the estimated standardized regression coefficients. The indices for goodness-of-fit presented in Table 3 demonstrate that the structural model attained a satisfactory level of fit ($\chi^2 = 1485$, $df = 934$, $\chi^2/df = 1.562$, $p < 0.001$; CFI = 0.981; GFI = 0.938; RMSEA = 0.023).

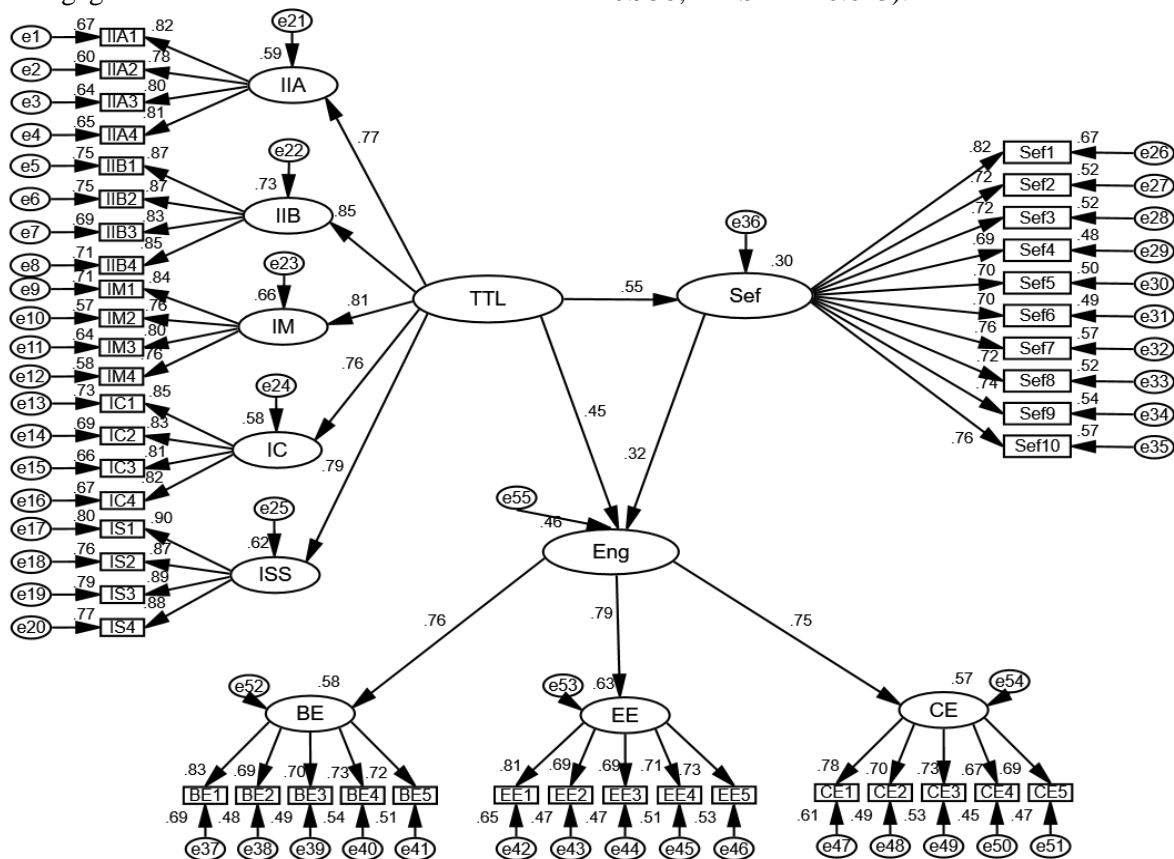


Figure 1. Structural model of the impact of teachers' transformational leadership on student engagement

Table 3. Structural equation model fit test results

| Statistical test volume | Symbol | Value | Adaptation criteria | Result |
|--------------------------|---------|-------|---------------------|--------|
| Absolute fit indices | RMSEA | 0.023 | <0.05 | Fit |
| | GFI | 0.938 | >0.9 | Fit |
| | AGFI | 0.931 | >0.9 | Fit |
| | SRMR | 0.043 | <0.05 | Fit |
| Parsimonious fit indices | CMIN/DF | 1.562 | 1-3 | Fit |
| | PGFI | 0.846 | >0.5 | Fit |
| | PNFI | 0.896 | >0.5 | Fit |
| Incremental fit indices | NFI | 0.950 | >0.9 | Fit |

Continuation of Table 3

| | | | |
|-----|-------|------|-----|
| IFI | 0.981 | >0.9 | Fit |
| RFI | 0.947 | >0.9 | Fit |
| TLI | 0.980 | >0.9 | Fit |
| CFI | 0.981 | >0.9 | Fit |

4.2.2. Structural Equation Model Path Coefficient

The table below presents a summary of the estimated path parameters of the model, as documented in Table 4. The table presents the standardized estimates of the regression path coefficients for three distinct sets of variables. All of the estimated regression path coefficients in this study demonstrate statistical significance, as indicated by reaching the significance level, and exhibit small standard errors. These findings suggest the presence of a significant influence relationship and imply that the model has been constructed with a reasonable structural relationship. The results displayed in Table 4 demonstrate that there is a significant standardized path coefficient ($\beta=0.665$,

$p<0.001$) for the impact of teachers' transformational leadership on student self-efficacy and on student engagement ($\beta=0.397$, $p<0.001$). Furthermore, the results obtained are in line with the path coefficient representing the influence of student self-efficacy on student engagement ($\beta=0.236$, $p<0.001$). The findings of this study underscore a noteworthy and favorable correlation between the exhibition of transformational leadership by teachers and the degree of self-efficacy and engagement displayed by students. In the context of Chinese higher vocational colleges, a discernible association can be observed between the self-efficacy of students and their degree of engagement.

Table 4. Significance testing results of the structural model path coefficients

| | Route | | Estimate (β) | S.E. | C.R. | P |
|----|-----------|--|----------------------|-------|--------|-----|
| H1 | TTL → Sef | | 0.665 | 0.047 | 14.279 | *** |
| H2 | TTL → Eng | | 0.397 | 0.042 | 9.484 | *** |
| H3 | Sef → Eng | | 0.236 | 0.030 | 7.749 | *** |

4.2.3. Medication Effect on Student Self-Efficacy

The purpose of this research was to examine how students' perceptions of their self-efficacy influenced the connection between teachers' transformational leadership and their level of engagement in class. The Bias-Corrected and Percentile methods were employed for data analysis. The analysis of Table 5 indicates that both direct and indirect effects exhibit statistical significance, with Z-values exceeding the critical value of 1.96. Furthermore, it is worth noting that the confidence intervals obtained through both the bias-corrected and percentile methods, with a confidence level of 95%, do not encompass the value of zero. The

standardized total effect is observed to be 0.621, while the indirect and direct effects are measured at 0.176 and 0.445, respectively. Thus, self-efficacy appears to play a partial mediating role, contributing to 28.3% of the overall mediating effect, with the remaining 71.7% being attributed to the direct effect. Moreover, the primary factor exerting a more substantial impact is the direct influence of transformational teacher leadership on engagement, as opposed to the indirect influence mediated by self-efficacy. The findings indicate that, in Chinese higher vocational colleges, self-efficacy acts as a partial mediator between teachers' display of transformational leadership and student engagement.

Table 5. Mediating effect analysis of sef between TTL and Eng

| Route | Effect type | Estimate | Coefficient product | | Bootstrap | | | |
|-------------|-----------------|----------|---------------------|-------|--------------------|-------|----------------|-------|
| | | | SE | Z | Bias-corrected 95% | | Percentile 95% | |
| | | | | | Lower | Upper | Lower | Upper |
| TTL→Sef→Eng | Total effect | 0.621 | 0.033 | 18.82 | 0.555 | 0.683 | 0.556 | 0.684 |
| | Indirect effect | 0.176 | 0.031 | 5.68 | 0.118 | 0.242 | 0.117 | 0.240 |
| | Direct effect | 0.445 | 0.052 | 8.56 | 0.349 | 0.540 | 0.349 | 0.540 |

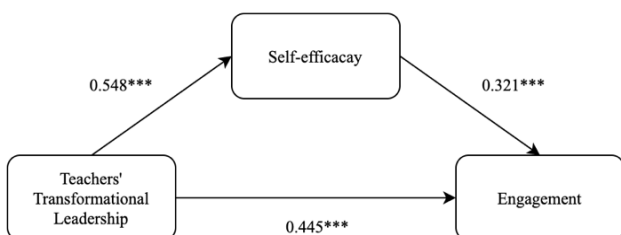


Figure 2. Self-efficacy mediation effect pathway diagram

5. Discussion

The primary purpose of the current study was to examine the correlation between the display of transformational leadership behavior among teachers and the degree of student engagement within Chinese

HVE institutions. Moreover, the study aimed to determine how much student self-efficacy acts as a mediator in this connection. The present study has identified the unique pathways that exist between the behavior of teachers displaying transformational leadership and the level of engagement exhibited by their students. Additionally, the results indicate indirect effects, especially through the mediating role of self-efficacy, in the relationship between teachers' transformational leadership behaviors—encompassing attributed idealized influence, behavioral idealized influence, inspirational motivation, individualized consideration, and intellectual stimulation—and the level of student engagement. Nevertheless, the primary

factor that exerts a more significant impact is the direct influence of transformational teacher leadership on engagement, as opposed to the indirect influence mediated by self-efficacy.

The result of this study revealed that when teacher exhibited the transformational leadership, they can boost student engagement. This findings echo the findings of earlier research, such as Ronksley-Pavia & Neumann (2022) and Saini & Goswami (2019) which also identified a positive link between transformational leadership and student engagement. This may because the results reinforce the transformational leadership theory by Bass & Riggio (2006), leaders can inspire and motivate subordinates by giving their work significance and challenging them. In vocational education, teachers can increase student engagement by connecting the subject content to real-world applications. This strategy seeks to boost student anticipation to improve learning. Additionally, Chinese higher education culture values respect and appreciation for authoritative figures, notably academics. Thus transformational leadership works well in these situations because it uses respect and trust to inspire and engage. These elements create a classroom environment that encourages social interaction when teachers use transformational leadership.

Furthermore, this study illuminates how teachers' transformational leadership indirectly boosts student engagement via increased self-efficacy, aligning with existing research such as Pachler et al. (2019) and Prochazka et al. (2017). Such findings support Bandura's Social Cognitive Theory, particularly the aspect of Triadic Reciprocal Determinism, which explains the interactive influence of personal, behavioral, and environmental factors. In educational settings, transformational teachers act as environmental catalysts, promoting positive learning atmospheres and ambitious goals, thereby enhancing students' self-belief. This increased self-efficacy in students, fueled by transformational leadership, leads to greater engagement and observable behavioral outcomes in the classroom.

Finally, multiple pragmatic reasons show that teachers' transformational leadership directly affects student engagement more than self-efficacy. First, transformational leadership often involves visible behaviors and attitudes that students can observe. Even if their self-efficacy is unchanged, pupils will be more engaged in school when teachers are enthusiastic, passionate, or encouraging. Transformational leadership can boost self-efficacy, but it requires a series of steps. Leadership behaviors must first boost self-efficacy to boost engagement. This pathway's indirectness may dilute the initial effect. Student self-efficacy varies based on prior experiences, cultural circumstances, and distinctive traits. Changing these deeply held beliefs can be more difficult and time-consuming than increasing their involvement. The direct and indirect effects of teachers' transformative leadership are large and

compatible. Due to its rapid nature and the complexity of self-efficacy change, the direct effect on student involvement is more influential.

6. Conclusion

This research has illuminated the significant correlation between teachers' transformational leadership and student engagement. The main findings demonstrate that student self-efficacy can significantly enhance the effectiveness of transformational leadership practices in fostering student engagement. In contrast to prior research that mainly examines corporate contexts, this study presents a unique perspective by including transformational leadership principles in education. This approach aligns with Pounder's concept of a fourth wave in teacher leadership. Moreover, this study provides a novel perspective on the complex nature of teacher-student interactions, building upon the research conducted by Pounder et al. (2018) and Beauchamp & Morton (2011).

While prior research has often focused on the direct effects of transformational leadership on engagement, this study extends the body of knowledge by revealing the intermediate variable of self-efficacy that shapes this relationship, offering new insight in a relatively unexplored area. Apart from the aforementioned theoretical contribution, this study holds practical implications for educational leadership and pedagogy. By recognizing the critical mediating roles variables such as self-efficacy play, educators and policymakers can develop more targeted strategies for professional development and training programs. Their application can potentially enhance the benefits of transformational leadership in educational contexts, leading to more engaged and successful students.

This research illuminates key efficacy features by linking teachers' transformational leadership to student engagement. However, this study's limitations must be acknowledged in this investigation. The investigation was quantitative. Quantitative research alone limits understanding. Qualitative methods like interviews and observations enhance comprehension. Thus, studies can use blended methodologies in the future. In addition, self-reported data was collected in this cross-sectional study. This strategy has limitations in linking teacher transformational leadership to student engagement. Due to the limitations, cross-sectional designs cannot draw causal conclusions. Alternative viewpoint: Skinner & Belmont (1993) believe that students' participation may help teachers develop transformational leadership behaviors. Lastly, student self-reported data is vulnerable to subjectivity and memory bias. Thus, this data needs analysis alongside other objective indicators and multiple data sources. Thus, we advise longitudinal or experimental research designs for future studies.

Furthermore, it is crucial to consider the existence of supplementary potential variables that might influence student engagement, and other variables that could act as mediators in these associations. The

findings of Alazmi & Al-Mahdy (2022) suggest that the authentic leadership displayed by principals positively impacts the level of engagement demonstrated by teachers. Moreover, the research conducted by Agustini et al. (2022) underscored the significance of interest, motivation, learning attitudes, and learning strategies concerning students' cognitive engagement during the learning process. Hence, we recommend that future research endeavors incorporate a broader set of variables for a deeper insight into the intricacies of the teacher–student dynamic.

Finally, the cultural context of the study poses a constraint, given that all participants are Chinese students. The impact of transformational leadership may vary across different cultural contexts. For example, it has been observed that Chinese students tend to place a higher emphasis on the dimension of inspirational motivation in leadership, whereas UK students tend to value individualized consideration more, and US students tend to lean toward the dimension of idealized influence. The works of Balwant et al. (2019) and Alimo-Metcalfe & Alban-Metcalfe (2005) support his observation. This observation aligns with the findings of the GLOBE study, suggesting diverse cultural perspectives on leadership (Javidan et al., 2006). Further investigation is warranted to explore the possibility of achieving measurement equivalence across different cultural contexts.

Authors' Contributions

Zuo Xiao Yanyan: writing and editing; Kenny Cheah Soon Lee: tutorial; Intan Marfarrina Binti Omar: tutorial.

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