

The Impact of Learning Engagement on Professional Identity of Pre-Service Early Childhood Teachers: The Mediating Role of Teaching Efficacy

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Abstract

The purpose of this study is to examine the structural relationships between learning engagement, teaching efficacy, and professional identity of pre-service early childhood teachers in China. To achieve this, the study theoretically explored each variable and constructed a research model to identify and validate the relationships and mediating effects among the variables.

To establish the research model and test the hypotheses, the researcher conducted a survey from April 27 to April 30, 2024, involving fourth-year university students from six universities, including Lingnan Normal University in China. All participants had a semester (approximately 16 weeks) of internship experience before graduation. A total of 223 valid questionnaires were collected and analyzed using SPSS 25.0. The results of the study's hypotheses are as follows.

Firstly, learning engagement had a significant positive impact on the teaching efficacy of pre-service early childhood teachers in China. Secondly, teaching efficacy had a significant positive impact on the professional identity of pre-service early childhood teachers in China. Thirdly, learning engagement had a significant mediating effect in the relationship between learning engagement and professional identity of pre-service early childhood teachers in China.

The results of this study provide practical significance for personnel involved in pre-service teacher education in China, offering guidance on how pre-service teachers in China can enhance their professional identity. Additionally, the findings of this study serve as a valuable resource for research in the field of pre-service teacher education.

Keywords: learning engagement, teaching efficacy, professional identity, pre-service early childhood teachers

1. Introduction

The early childhood years constitute a critical period in human development (Bailey, 2002). In the field of early childhood education, the role of teachers is particularly crucial, and pre-service early childhood teachers, who serve as the future reserve of teachers, are also important. There is compelling evidence that highly trained early childhood care and education sector graduates are being lost to other sectors (Moloney, 2010). Central to early childhood teacher education is the development of students to become professional actors in a workplace setting upon graduation, thereby developing a professional identity (Olsen et al., 2024). Teacher professional identity is the self-recognition of a teacher's affirmative evaluation, positive emotional experience, and behavioral tendencies towards their profession. It is also the result of the continuous integration between the teacher's individual psychology and the educational environment (Li & Yan, 2018).

Developing a professional identity as a teacher has been highlighted as crucial in understanding teaching

experiences, practice, and professional development (Britzman, 2003; Hoban, 2007; Wubbels, 1992). Professional identity can significantly influence trainee teachers' performance in their future professional life (Beijaard et al., 2004; Bullough & Gitlin, 2001; Trede et al., 2011). The development of professional identity is a continuous and gradual process, and the formation of the professional identity of pre-service early childhood teachers is influenced by a number of factors.

To our knowledge, research that directly investigates the factors contributing to the professional identity of pre-service early childhood teachers is scarce. However, research in various contexts (e.g., school, health, social work) has identified a positive association between professional identity and several motivational factors such as work engagement, efficacy, professionalism, and occupational development (Beauchamp & Thomas, 2009; Zhang et al., 2018). The formation of pre-service teachers' professional identity in early childhood education is influenced by many factors, including motivation, commitment to learning, practice placements, and self-efficacy (Chen, 2024; Deng, 2022; Xie & Yin, 2022).

Zimmerman (2002) emphasised the importance of personal initiative and perseverance in the learning process, self-regulated students focused on how activate, alter, and sustain specific learning practices. It is argued that professional learning and identity formation can reinforce and enrich each other and, as such, will result in a more comprehensive and coherent framework for understanding teachers' professional work and their development as teachers (Beijaard et al. 2023). Learning engagement refers to sustained involvement in learning activities with ample energy (Schaufeli, 2002). Jiang (2018), Wang et al. (2010), and Yin (2022) suggested that college students' learning engagement is an important predictor of the development of professional identity. Emotional involvement, cognitive involvement, and behavioral involvement have an impact on college students' occupational identity (Guo, X., & Liu, Z., 2023).

Zeichner (2010) argued that field experiences in university-based preservice teacher education will create expanded learning opportunities for prospective teachers that will better prepare them to be successful in enacting complex teaching practices. Through observing and participating in teaching activities, students can better understand the complexity of teaching methods and the student learning process (Hammond, 2006). Pre-internship teacher education students' participation in practice activities would significantly affect their teachers' sense of efficacy (Stewart et al., 2011). Teaching efficacy refers to a teacher's confidence in their ability to complete all teaching tasks and their belief in their capacity to influence students' achievements (Ashton, 1984). Mastery experiences are considered to be the most effective source of self-efficacy belief (Bandura, 1977). Student teachers need strong efficacy beliefs in order to continue teaching during in-service education and it was found that self-perceptions of teaching competence, personal characteristics, and motivation were contributory factors to teaching efficacy (Poulou, 2007). Sai (2023), Hu et al. (2022), and Wang (2024) suggested that teaching efficacy significantly influences the professional identity of both college students and teachers.

The existing literature has provided important insights into the impact of learning engagement and teaching efficacy on professional identity. However, more comprehensive empirical research is needed to understand how these two factors interact and influence professional identity.

Therefore, this study aims to investigate the interactions and relationships among learning engagement, teaching efficacy, and professional identity among Chinese pre-service early childhood teachers. By exploring the complex interactions between these variables, this study seeks to gain a deeper understanding of their impact on professional identity. The results of this study will have practical implications for the preparation and professional development of pre-service early childhood teachers by identifying the influences that contribute to the enhancement of professional identity.

2. Research Methods

2.1 Research Model and Hypothesis

This study aims to empirically explore the structural relationships between learning engagement, teaching efficacy, and professional identity among pre-service early childhood teachers in China. Specifically, our hypotheses are as follows:

H1: Learning engagement has a significant impact on teaching efficacy.

H2: Teaching efficacy has a significant impact on professional identity.

H3: Teaching efficacy plays a significant mediating role in the relationship between learning engagement and professional identity.

2.2 Research Participants

To achieve the objectives of this study, the research participants consisted of pre-service early childhood teachers in China who have completed a one-semester internship (approximately 16 weeks) before graduation. This

internship is their final practical experience during their university studies, and they are about to graduate.

A total of 223 students were selected from six universities, including Lingnan Normal University in China. During the data collection process, invalid questionnaires were removed, resulting in 223 valid questionnaires. Among the participants, there were 28 male students (12.56%) and 195 female students (87.44%). Additionally, 191 students (85.65%) participated in two or more practical activities, while 32 students (14.35%) participated in only the internship. There were 137 students from rural areas (61.43%) and 86 students from urban areas (38.57%). The results are presented in Table 1.

Table 1. Demographic Factors of Participants ($N=223$)

| Factor | Item | N | Percentage (%) |
|----------------------|-------------------|-----|----------------|
| Gender | Male | 28 | 12.56 |
| | Female | 195 | 87.44 |
| Practical Situations | Two or More Types | 191 | 85.65 |
| | Only Internship | 32 | 14.35 |
| Residential Location | Rural | 137 | 61.43 |
| | Urban | 86 | 38.57 |

2.3 Research Tools

2.3.1 Learning Engagement Questionnaire

The learning engagement scale used in this study was developed by Schaufeli et al. (2002) and revised by Cui (2012). The Cronbach's α coefficient of the total scale is .914, with subscale coefficients of .796 for vigor, .869 for dedication, and .745 for absorption. These results indicate that the scale has good reliability and validity.

The questionnaire includes three dimensions: vitality, dedication, and focus, comprising a total of 14 items. The vitality dimension has 5 questions, the dedication dimension has 5 questions, and the focus dimension has 4 questions. The scale uses a Likert five-point scoring method, with options ranging from "1" (strongly disagree) to "5" (strongly agree). The total score of the scale represents the level of learning engagement of the participants. The dimensions and content measured by this scale are highly consistent with this study and effectively fulfill the empirical research needs of this study.

Cronbach's α coefficient was computed to test the internal consistency of the Learning Engagement Scale. The Cronbach's α coefficients, shown in Table 2, indicate that the participants' learning engagement is highly reliable.

Table 2. Reliability of Learning Engagement

| Dimension | N | Items | Cronbach's α |
|------------|----|----------------|---------------------|
| Vitality | 5 | 1, 2, 3, 4, 5 | .851 |
| Dedication | 5 | 6, 7, 8, 9, 10 | .896 |
| Focus | 4 | 11, 12, 13, 14 | .815 |
| Total | 14 | | .915 |

2.3.2 Teaching Efficacy Questionnaire

The teaching efficacy scale used in this study was validated and investigated by Xie (2021) for new kindergarten teachers, based on the "Teacher Teaching Efficacy Scale Questionnaire" by Zhao (2007). The Cronbach's α coefficient of the total scale is .800, with subscale coefficients of .730 for general teaching efficacy and .740 for personal teaching efficacy. These results indicate that the scale has good reliability and validity.

The scale consists of 27 items, including 6 items for general teaching efficacy and 21 items for personal teaching efficacy. The scale uses a Likert five-point scoring method, with options ranging from "1" (strongly disagree) to "5" (strongly agree). A higher total score on the scale indicates higher teaching efficacy. The dimensions and content measured by this scale are highly consistent with this study and effectively fulfill the empirical research needs of this study.

Cronbach's α coefficient was computed to test the internal consistency of the Teaching Efficacy Scale. The Cronbach's α coefficients, shown in Table 3, indicate that the participants' teaching efficacy is highly reliable.

Table 3. Reliability of Teaching Efficacy

| Dimension | N | Items | Cronbach's α |
|----------------------------|----|---|---------------------|
| General Teaching Efficacy | 6 | 1, 2*, 3, 4*, 5*, 6 | .950 |
| Personal Teaching Efficacy | 21 | 7*, 8, 9, 10*, 11*, 12*, 13*, 14, 15*, 16*, 17, 18*, 19, 20*, 21*, 22, 23, 24*, 25, 26, 27* | .973 |
| Total | 27 | | .969 |

* Reverse-scored items.

2.3.3 Professional Identity Questionnaire

The measuring tool used in this study is based on Wei et al. (2013) and revised by Nie (2019), which has been validated among early childhood education major students. The Cronbach's alpha coefficient of the total scale is .904, with subscale coefficients of .892 for professional will, .797 for professional expectations, .742 for professional cognition, .719 for professional behavior, and .733 for professional emotions. These results indicate that the scale has good reliability and validity.

The questionnaire consists of 22 items: 6 items for professional will, 5 items for professional expectations, 4 items for professional cognition, 4 items for professional behavior, and 3 items for professional emotions. The scale uses a Likert five-point scoring method, with options ranging from "1" (strongly disagree) to "5" (strongly agree).

Cronbach's α coefficient is computed to test the internal consistency of the Professional Identity Scale. The Cronbach's α coefficients, shown in Table 4, indicate that the participants' professional identity is highly reliable.

Table 4. Reliability of Professional Identity

| Dimension | N | Items | Cronbach's α |
|---------------------------|----|-----------------------|---------------------|
| Professional will | 6 | 7, 11, 12, 13, 17, 21 | .925 |
| Professional expectations | 5 | 5, 6, 8, 9, 10, | .877 |
| Professional Cognition | 4 | 14, 15, 16, 22 | .865 |
| Professional Behavior | 4 | 2, 18, 19, 20 | .848 |
| Professional Emotions | 3 | 1, 3, 4 | .831 |
| Total | 22 | | .935 |

2.4 Data Analysis

To study the structural relationship between learning engagement, teaching efficacy, and professional identity, data was collected using the Wenjuanxing platform from pre-service early childhood teachers in China.

This study primarily conducted descriptive analysis, Pearson correlation analysis, and Bootstrap mediation effect analysis and tests on the data using SPSS 25.0 software.

3. Research Results

3.1 Correlation Analysis

3.1.1 The Correlation Analysis Between Variables

Using Pearson correlation analysis to study the relationships between learning engagement, teaching efficacy, and professional identity, the specific analysis reveals the following:

The correlation coefficient between learning engagement and professional identity is 0.708, showing significance at the 0.01 level, indicating a significant positive correlation between learning engagement and professional identity. The correlation coefficient between teaching efficacy and professional identity is 0.535, also significant at the 0.01 level, indicating a significant positive correlation between teaching efficacy and professional identity. The results are presented in Table 5.

Table 5. Correlation Analysis of Learning Engagement, Teaching Efficacy, and Professional Identity

| | Professional Identity | Learning Engagement | Teaching Efficacy |
|-----------------------|-----------------------|---------------------|-------------------|
| Professional Identity | 1 | | |
| Learning Engagement | 0.708** | 1 | |
| Teaching Efficacy | 0.535** | 0.551** | 1 |

* p<0.05, ** p<0.01.

3.1.2 Correlations Between Dimensions

By examining the correlation coefficients, it is possible to predict the results of hypothesis testing. Therefore, we conducted a more detailed investigation to explore the specific relationships between the dimensions of the variables.

Using correlation analysis, we studied the relationships between career will, career expectations, career cognition, career behaviors, and career emotions with five factors: vitality, dedication, focus, general teaching efficacy, and personal teaching efficacy. As shown in Table 6:

Career will be significantly correlated with all five factors: vitality, dedication, focus, general teaching efficacy, and personal teaching efficacy, with correlation coefficients of 0.536, 0.427, 0.424, 0.297, and 0.457, respectively. All correlation coefficients are greater than 0, indicating a positive correlation between career commitment and the five factors.

On the other hand, the correlation coefficients between general teaching efficacy and dedication, focus, career expectations, career cognition, career behaviors, and career emotions are close to 0, with p-values greater than 0.05. This indicates that there is no significant correlation between general teaching efficacy and these variables.

Table 6. Correlations between Dimensions (N=223)

| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 10 | |
|----|---------|---------|---------|---------|---------|---------|---------|---------|---------|---|
| 1 | 1 | | | | | | | | | |
| 2 | 0.472** | 1 | | | | | | | | |
| 3 | 0.363** | 0.728** | 1 | | | | | | | |
| 4 | 0.489** | 0.732** | 0.623** | 1 | | | | | | |
| 5 | 0.683** | 0.708** | 0.558** | 0.683** | 1 | | | | | |
| 6 | 0.536** | 0.396** | 0.291** | 0.491** | 0.502** | 1 | | | | |
| 7 | 0.427** | 0.630** | 0.564** | 0.653** | 0.597** | 0.695** | 1 | | | |
| 8 | 0.424** | 0.642** | 0.593** | 0.616** | 0.604** | 0.593** | 0.781** | 1 | | |
| 9 | 0.297** | 0.005 | -0.024 | 0.111 | 0.100 | 0.333** | 0.113 | 0.105 | 1 | |
| 10 | 0.457** | 0.539** | 0.497** | 0.603** | 0.487** | 0.549** | 0.550** | 0.548** | 0.586** | 1 |

* p<0.05 ** p<0.01

1. Professional will 2. Professional expectations 3. Professional Cognition 4. Professional Behavior 5. Professional Emotions 6. Vitality 7. Dedication 8. Focus 9. General Teaching Efficacy 10. Personal Teaching Efficacy

3.2 Analysis of Mediating Effect

Table 7 presents the mediating effect test of teaching efficacy in the relationship between learning engagement and professional identity. To more accurately verify the mediating effect, the Bootstrap method was employed, with 5000 repetitions and a confidence interval set at 95%, using the bias-corrected non-parametric percentile method for sampling.

Firstly, the results in Tables 7 and 8 indicate that the total effect of learning engagement on professional identity is 0.654, with a confidence interval of [0.568, 0.740], which does not include 0, confirming the existence of a total effect. The direct effect is 0.549, with a confidence interval of [0.449, 0.649], also not including 0, indicating the existence of a direct effect. The indirect effect of teaching efficacy is 0.105, with a confidence interval of [0.042, 0.190], which does not include 0, confirming the existence of the indirect effect of teaching

efficacy.

Table 7. Analysis of Mediating Effect

| | | | Effect | 95% CI | | SE | z/t | p |
|----------|-----|-----------------|--------|--------|-------|-------|--------|-------|
| | | | | LLCI | ULCI | | | |
| LE→TE→PI | a*b | Indirect Effect | 0.105 | 0.042 | 0.190 | 0.038 | 2.809 | 0.005 |
| LE→TE | a | X=>M | 0.405 | 0.324 | 0.486 | 0.041 | 9.806 | 0.000 |
| TE→PI | b | M=>Y | 0.260 | 0.124 | 0.397 | 0.069 | 3.753 | 0.000 |
| LE→PI | c' | Direct Effect | 0.549 | 0.449 | 0.649 | 0.051 | 10.747 | 0.000 |
| LE→PI | c | Total effect | 0.654 | 0.568 | 0.740 | 0.044 | 14.914 | 0.000 |

PI: Professional Identity, LE: Learning Engagement, TE: Teaching Efficacy.

Secondly, the regression coefficient of learning engagement on teaching efficacy and the regression coefficient of teaching efficacy on professional identity are significant. Moreover, the direct effect of learning engagement on professional identity is significant. Since the product of $a*b$ and c' have the same sign, this indicates a partial mediation effect, proving that teaching efficacy partially mediates the relationship between learning engagement and professional identity.

Table 8. Mediation analysis

| | c Total effect | a | b | a*b Mediator value | a*b effect(Boot SE) | a*b (z) | a*b (p) | a*b (95% BootCI) | c' Direct Effect | Test result |
|----------|----------------------|---------|---------|--------------------------|---------------------------|------------|------------|------------------------|------------------------|----------------------|
| LE→TE→PI | 0.654** | 0.405** | 0.260** | 0.105 | 0.038 | 2.809 | 0.005 | 0.042 0.190 | ~0.549** | Partial mediation |

* $p < 0.05$ ** $p < 0.01$

4. Discussion and Suggestions

This study aims to explore the relationships among learning engagement, teaching efficacy, and professional identity of Chinese university students majoring in early childhood education, particularly those who have already participated in internships and are about to graduate. By examining the interactions among these psychological variables, this study enhances the understanding of the professional identity of students in early childhood education, providing insights and references for the training of teacher candidates and educational internships. The following points were discussed:

Firstly, the hypothesis proposed that learning engagement significantly affects professional identity. The results strongly supported this hypothesis, showing that individuals with higher levels of learning engagement are more likely to achieve better professional identity. Research by Wang et al. (2010) found that university students' learning engagement is an important predictor of their professional identity development. This study reinforces this view by confirming the positive correlation between learning engagement and professional identity, unlike Yin's (2022) research, which focused on the impact of professional identity on learning engagement among early childhood education students.

Secondly, the hypothesis explored the relationship between teaching efficacy and professional identity, proposing that teaching efficacy significantly affects professional identity. Teaching efficacy, as a subjective perception of teachers, involves general teaching efficacy and personal teaching efficacy. The results provided empirical support for this hypothesis, revealing that both types of teaching efficacy directly influence professional will, expectations, cognition, behavior, and emotions. Although these findings differ from previous research by Sun (2011), Xu (2021) discovered a positive correlation between professional identity and teaching efficacy, emphasizing the positive impact of teaching efficacy on professional identity.

Thirdly, the hypothesis posited that teaching efficacy has a significant mediating role between learning engagement and professional identity. The results strongly supported this hypothesis, demonstrating that teaching efficacy mediates the relationship between learning engagement and professional identity. Self-verification theory suggests that individuals with higher teaching efficacy are more likely to experience

self-fulfillment and view contributing to school development as affirmation and enhancement of themselves, thereby increasing professional identity. Additionally, research found that teachers with higher teaching efficacy are more inclined to serve their schools, overcome difficulties, and persist longer in their teaching positions. The stronger the teaching efficacy, the stronger the professional identity, confirming the positive impact of teaching efficacy on professional identity.

Finally, it was explored that teaching efficacy plays a partial mediating role between learning engagement and professional identity. The results confirmed this hypothesis, indicating that teaching efficacy serves as a significant mediator in the relationship between learning engagement and professional identity.

In summary, this study verifies the proposed hypotheses and provides valuable insights into the relationships among learning engagement, teaching efficacy, and professional identity for Chinese pre-service early childhood teachers. The findings emphasize the significance of strengthening learning engagement, and boosting teaching efficacy to reinforce professional identity. By recognizing the importance of these factors, university institutions and instructors can improve students' professional identity as teachers, thereby enhancing the quality of pre-service training. These findings contribute to a better understanding of the factors influencing the professional identity of pre-service early childhood teachers and offer practical significance for improving professional identity education and talent cultivation quality. Additionally, the results are applicable to Chinese pre-service early childhood teachers, confirming the accuracy of the relationships among learning engagement, teaching efficacy, and professional identity. These findings provide valuable insights into professional identity education and talent cultivation quality for Chinese pre-service early childhood teachers.

However, it must be acknowledged that this study has certain limitations:

Firstly, regarding the study subjects, the sample size selected for this research is not large enough, posing certain limitations. It is difficult to represent the entire population of early childhood education majors. Therefore, future research should further expand the sample size, include graduate students, and explore the developmental trends of early childhood education majors longitudinally. Additionally, the sample in this study comes from a single source. Future research should select subjects from cities with different levels of development and make horizontal comparisons of the characteristics and situations of learning engagement, teaching efficacy, and professional identity among early childhood education majors in developed and underdeveloped regions. This would provide references for the growth and development of students in underdeveloped areas.

Secondly, this study, as a cross-sectional research, although obtaining some valuable results, still has shortcomings. For instance, professional identity and teaching efficacy, as psychological terms, describe a person's current psychological state, which is not always stable. Students' professional identity and teaching efficacy will change with personal experiences and real-life environments, showing new characteristics over time. The influence process of learning engagement, and teaching efficacy on the professional identity of early childhood education majors is also complex. It is difficult to grasp its process characteristics through a cross-sectional study alone. Future research can build on this foundation to further explore the temporal stability of each variable and their dynamic interrelationships.

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