

Exploring the Impact of Integrating the Nursery Teacher Certificate on Student Teachers' Teaching Competences in Teacher Education in Shaanxi, China

Zi Rui Liu^{1,2}, Masayu Dzainudin¹

¹Department of Early childhood Education, Faculty of Human Development, University Pendidikan Sultan Idris, Tanjong Malim, Perak, 35900, Malaysia, ²Faculty of Early Childhood Education, Shaanxi Vocational and Technical College, Xi'an, Shaanxi, 710100, China.

To Link this Article: <http://dx.doi.org/10.6007/IJARPED/v12-i2/17316>

DOI:10.6007/IJARPED/v12-i2/17316

Published Online: 19 June 2023

Abstract

This quantitative study investigates the impact of integrating the Nursery Teacher Certificate into teacher education in Chinese vocational and technical colleges, specifically focusing on the perspectives of student teachers majoring in Early Childhood Care Education. The study aims to assess the influence of integrating the Nursery Teacher Certificate into nursery teacher education on the teaching competences of student teachers. A sample of 95 respondents, enrolled in the Early Childhood Care Education program across five vocational and technical colleges in Shaanxi, China, participated in the study. The findings reveal that integrating the Nursery Teacher Certificate has a positive impact on student teachers' knowledge, skills, and attitudes, enhancing their practical teaching competence. However, the certificate program neglects the cultivation of classroom management skills in the teacher education, highlighting the need for a more comprehensive approach to address this gap. These findings have implications for the revision of certificate curricula to incorporate explicit training in classroom management and emphasize the importance of nurturing well-rounded teaching competences. By addressing this discrepancy, teacher education programs can better prepare future nursery teacher educators for the challenges they may face in their teaching careers.

Keywords: Certificate, Early Childhood Care Education, Student Teacher, Teacher Education, Teaching Competence

Introduction

In recent years, there has been an increasing recognition of the significance of providing high-quality care and education to young children during their critical early years of development (Nores & Barnett, 2010; Karaca & Durna, 2019). In response, various initiatives have received global attention and have been introduced, such as Head Start in the United States (Becker et al., 2017), the Early Years Foundation Stage (EYFS) in the United Kingdom (Dobell et al., 2021), and Society 5.0 in Japan (Miwa, 2020), all aiming to improve the quality of early childhood care and education. In China, the Ministry of Education launched the 1+X Certificate System

in vocational and technical colleges, requiring its integration into the curricula of nursery teacher education to enhance teaching competences in early childhood care and education (The Ministry of Education in China, 2019). Consequently, this new policy has prompted a significant shift for teacher educators from a conventional focus on teacher qualification education to competence-based education (Chen & Zhou, 2020).

However, the implementation of the 1+X Certificate System poses challenges for both ECE teacher educators and student teachers seeking to develop their teaching competences in nursery education. Chen and Zhou (2020) argued that teacher educators and student teachers must adapt to the specific requirements and demands of the Certificate System, which often differ from traditional teaching strategies. This shift necessitates teacher educators to reassess their teaching approaches, incorporate new content and strategies, and align their instructional practices with the objectives of the certificate program. Similarly, both teacher educators and student teachers may encounter obstacles related to the integration of the Certificate System within existing curricula and educational structures. These challenges may involve coordinating course schedules, ensuring adequate resources and support for certificate-related activities, and fostering collaboration and communication among stakeholders (Wang, 2023).

To address these issues, the impact of an innovative approach has emerged, which integrates the '1' academic qualification with 'X' specialized certifications within teacher education curricula. This approach has been investigated to assess its effect from the perspectives of student teachers. One such certification program is the Nursery Teacher Certificate, designed to equip student teachers with the necessary competences to promote teaching competence in preschool settings. This study aims to investigate the impact of the integration of the Nursery Teacher Certificate into the nursery teacher education on student teachers' teaching skills from their perspective in Shaanxi, China. Additionally, this study explored the aspects of the certificate program that have influenced student teachers' knowledge, skills, and attitudes in relation to promoting teaching competence in preschool settings.

Based on the research questions, the following hypotheses were formulated

RQ 1: What is the impact of integrating the Nursery Teacher Certificate into nursery teacher education on the teaching competences of student teachers majoring in Early Childhood Care Education?

Hypothesis 1: The integration of the Nursery Teacher Certificate into nursery teacher education positively influences student teachers' knowledge, skills, and attitudes, thereby enhancing their practical teaching competence.

RQ 2: To what extent does the Nursery Teacher Certificate program address the cultivation of classroom management skills in the teacher education curriculum for student teachers majoring in Early Childhood Care Education?

Hypothesis 2: The Nursery Teacher Certificate program has a limited focus on the cultivation of classroom management skills in the teacher education curriculum for student teachers majoring in Early Childhood Care Education.

Through this study, valuable insights will be gained into the effectiveness and benefits of the Nursery Teacher Certificate program, shedding light on the importance of incorporating specialized certifications in teacher education curricula to meet the specific requirements of

preschool education. The implications of these findings will be discussed in terms of enhancing teaching competences and preparing future early childhood educators.

Literature Review

Integration of Certificate in Nursery Teacher Education

Certification in teacher education is aimed at cultivating teaching competence and improving teaching quality (Tjabolo & Herwin, 2020). The integration of certificates within nursery teacher education provides a unique opportunity to enhance student teachers' professional development and equip them with the necessary knowledge and skills for early childhood education. Previous studies have emphasized the value of integrating specialized certificates, such as the Nursery Teacher Certificate and Nursery Teacher Qualification, into early childhood care teacher education programs, highlighting the benefits of a comprehensive and holistic approach to nursery teacher training (Shin, 2012; Shernoff et al., 2017; SoRes, 2019).

Furthermore, certificates do not substitute traditional teaching and learning outcomes but rather assess specific learning abilities and strategies (Grossman & Loeb, 2021). This research aims to cultivate student teachers' teaching skills through the integration of certificates in nursery teacher education, addressing their demand for improved teaching competence in nursery education. By integrating certificates into the learning process, knowledge accumulation becomes more meaningful, and the impact of learning is continuously assessed. Certificate-based instruction sets the standards to support teaching quality and the learning process for student teachers in teacher education (Pedaste et al., 2019).

Several empirical studies have explored the impact of integrating certificate programs on student teachers' teaching skills (Shernoff et al., 2017; Baran et al., 2019; Tondeur et al., 2019). The findings suggest that integrating specialized certificates within teacher education, specifically in nursery education, offers a focused curriculum that enhances student teachers' pedagogical knowledge, practical teaching strategies, and classroom management skills. Integrating certificate content into practical training components in nursery education has been found to improve student teachers' ability to create engaging and developmentally appropriate learning experiences for young children.

Furthermore, certificates can be used as a means of self-learning to help student teachers improve their teaching competence. For instance, the Nursery Teacher Certificate facilitates a new learning strategy through hybrid methods (Mian et al., 2020). It increases student teachers' motivation to complete educational activities, improves teaching competence, enhances their satisfaction with learning, and encourages collaboration with group members.

Researchers have engaged in ongoing debates regarding the potential impact of certification on teaching competence in teacher education (Davis & Dunn, 2018). In a related study, Betawi and Jabbar (2018) explored the perceptions of pre-service teachers at the University of Jordan regarding Developmentally Appropriate Practices (DAP) in teacher education. However, this particular finding failed to consider the diverse range of student teachers in the field of education who are actively seeking to enhance their teaching competences.

Rusilowati & Wahyudi, (2020) investigated the teacher certificate in Indonesia and found teachers certified by regulations could not be considered as professional or competence teachers. Because the teaching competences effects by the knowledge,

innovation, linearity, contextual and character personality. However, they also mentioned teacher certificate can improve the quality of teacher education.

Lastly, a well-structured Early Childhood Care and Education (ECCE) curriculum should enable student teachers to connect various prior knowledge to lifelong learning (Leuchter et al., 2014). Taylor et al (2017) found that the certificate enhances student teachers' perceptions of knowledge, skills, and attitudes related to teaching competence. The integration of the ECCE certificate into the kindergarten teacher curriculum allows student teachers to comprehensively learn all aspects of a child's day, promotes their understanding, models the importance of teaching competence in early childhood education, and fosters positive attitudes. Through this integration, student teachers acquire enhanced knowledge of child health and development, increased awareness of health issues, and improved skills to implement health activities.

Overall, the integration of certificate programs within nursery teacher education demonstrates the potential to enhance student teachers' professional development, teaching skills, and knowledge related to teaching competence. By integrating specialized certificates into the curriculum, student teachers can benefit from a focused and comprehensive approach that equips them with the necessary competencies for effective early childhood education.

Cultivating Management Competences in Teacher Education

Cultivating management competences has become a crucial focus within the field of teacher education. Bourke et al (2018) define management competences as a diverse range of teaching skills and knowledge that empower teachers to effectively establish and maintain conducive learning environments, manage student behavior, and foster student engagement throughout the learning process. Extensive literature consistently underscores the significance of these competences in improving teacher effectiveness and student outcomes (Lidia et al., 2016; Cretu, 2021). In the context of China, Guo et al (2021) conducted a study to explore teachers' proficiency levels in classroom management and communication with young children. The findings of their research revealed a significant impact of teachers' management skills on the overall quality of teaching and learning.

Methodology

This study employed a quantitative research approach to investigate the impact of integrating the Nursery Teacher Certificate into nursery teacher education and its effect on cultivating management competences among student teachers in Chinese vocational and technical colleges. The research was conducted at five colleges located in Shaanxi, China. To ensure adequate representation and streamline the data collection process for the large population under investigation, a random sampling technique was utilized. The study included a sample of 98 student teachers. After removing incomplete questionnaires, a total of 95 valid responses were received from the participants, consisting of 5 males and 90 females.

To effectively gather the perspectives of student teachers regarding the integration of the Nursery Teacher Certificate into the teacher education curriculum and its potential enhancement of their management competences, a well-structured survey questionnaire was developed. This questionnaire consisted of closed-ended questions and rating scales. The researchers employed 'The Impact of Learning Experience Scale' to measure these perspectives. This perspective scale utilized a five-point rating system, ranging from 'strongly disagree' (scored as '1') to 'strongly agree' (scored as '5'). It comprised 10 items organized

into two dimensions: 'Impact of Integrating the Certificate into Nursery Teacher Education' and 'The Cultivation of Classroom Management Skills in Teacher Education'. The questionnaire's content and constructs underwent confirmation by three education experts, and exhibited acceptable reliability, with Cronbach's Alpha scores of 0.792 and 0.893 for the different constructs (Pallant, 2016).

The collected data will be analyzed using quantitative methods. Descriptive analysis and one-way ANOVA will be conducted utilizing the Statistical Package for the Social Sciences (SPSS) software. Prior the data analysis, the questionnaire used in this study, known as the Questionnaire for the impact of integrating the nursery teacher certificate into teacher education to cultivate their management competence, underwent validity tests, pilot studies, factor analysis, and reliability testing.

Ethical clearance for the study was obtained from the Ethics Office at University Pendidikan Sultan Idris in Malaysia (No. 2023-070-01). Prior to completing the questionnaire, all research participants provided informed consent, and their anonymity was maintained throughout the entire data collection and analysis process.

Findings

After conducting the data analysis, the study's findings are presented, highlighting insights gained from student teachers' perspectives on the impact of integrating the Nursery Teacher Certificate into the teacher education curriculum in Shaanxi, China.

The Perspectives of Impact of Integrating the Certificate into Nursery Teacher Education

The responses of student teachers, who came from five different colleges in Shaanxi, China, regarding their perspectives on the integration of the Nursery Teacher Certificate into the teacher education curriculum, were examined.

Table 2

Percentage of Impact of Integrating the Certificate into Nursery Teacher Education

No.	Statements	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
1	The integration of the certificate has enhanced teaching skills	0	0	2%	42.1%	55.9
2	The integration of the certificate has improved pedagogical knowledge	0	0	6.3%	10.5%	83.2%
3	The integration of the certificate has enhanced ability	0	0	3.2%	36.8	60
4	The integration of the certificate has improved classroom management skills	5.3%	6.3%	50.5%	25.3%	12.7%
5	The integration of the certificate has enhanced understanding	0	0	2.1%	12.6%	85.3%
6	The integration of the certificate has positively influenced overall teaching effectiveness	0	0	6.3%	10.5%	83.2%

The student teachers' perspectives on integrating the Nursery Teacher Certificate into early childhood education curriculums were assessed using six items. Table 2 presents the findings

of these perspectives. The analysis of the percentage of attitudes towards integrating the Nursery Teacher Certificate into early childhood education curriculums among student teachers revealed that for six items, namely 'The integration of the certificate has enhanced teaching skills,' 'The integration of the certificate has improved pedagogical knowledge,' 'The integration of the certificate has enhanced ability,' 'The integration of the certificate has enhanced understanding,' and 'The integration of the certificate has positively influenced overall teaching effectiveness', most student teachers strongly agreed that it improved their teaching competences. However, for the item 'The integration of the certificate has improved classroom management skills,' more than half of the student teachers expressed a neutral stance (50.5%), while 5.3% strongly disagreed, 6.3% disagreed, 25.3% agreed, and 12.7% strongly agreed.

The Perspectives of The Cultivation of Classroom Management Skills in Teacher Education

The influence of integrating the Nursery Teacher Certificate into early childhood education curriculums from the perspective of student teachers was examined using four item-based assessments. The perceptions of attitudes towards certificated-based learning are shown in Table 3.

Table 3

Percentage of The Cultivation of Classroom Management Skills in Teacher Education

No.	Statements	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
1	I feel confident in my ability to effectively manage a classroom based on the training and instruction I received in my teacher education program	33.7%	36.3%	32.6%	5.3%	7.9%
2	I believe that my teacher education program adequately prepared me with the necessary knowledge of effective classroom management strategies.	38.9%	25.3%	20%	7.4%	8.4%
3	I feel confident in my ability to successfully implement the learned classroom management strategies in real classroom settings	37.9%	25.3%	11.6%	21.1%	4.1%
4	I believe that the classroom management techniques taught in my teacher education program are effective in handling challenging student behaviors.	6.3%	8.4%	18.9%	41.1%	25.3%

Table 3 presents the percentages of responses regarding the cultivation of classroom management skills in teacher education. The findings reveal varying levels of agreement among the participants. For statement 1, a significant proportion of respondents (33.7%) strongly disagreed or disagreed with feeling confident in their ability to effectively manage a classroom based on the training and instruction received in their teacher education program. Similarly, for statement 2, a considerable percentage (38.9%) expressed disagreement or strong disagreement regarding their belief that the teacher education program adequately

prepared them with the necessary knowledge of effective classroom management strategies. In contrast, for statement 3, a substantial number of participants (21.1%) agreed or strongly agreed with feeling confident in their ability to successfully implement learned classroom management strategies in real classroom settings. Lastly, for statement 4, a majority of respondents (41.1%) agreed or strongly agreed that the classroom management techniques taught in their teacher education program are effective in handling challenging student behaviors. These findings highlight the varied perceptions and levels of confidence among student teachers regarding their classroom management skills, suggesting potential areas for improvement in the teacher education curriculum.

The data were analyzed using one-way ANOVA to examine the attitudes towards integrating the Nursery Teacher Certificate on student teachers' teaching skills in nursery teacher education in Shaanxi, China. The sample size of 95 exceeded the minimum requirement for a one-way ANOVA.

Table 3

Results of ANOVA

Item	Sum of Squares	df	Mean Square	F	Sig.
Innovative Integration of the Nursery Teacher Certificate	.142	1	0.142	0.676	0.410
The Cultivation of Classroom Management Skills	.134	1	0.122	0.651	0.425

Hypothesis 1 states that the integration of the Nursery Teacher Certificate into nursery teacher education positively influences student teachers' knowledge, skills, and attitudes, thereby enhancing their practical teaching competence. The ANOVA results for the item 'Innovative Integration of the Nursery Teacher Certificate' indicate that the mean square value is 0.142, with a corresponding F-value of 0.676 and a significance level of 0.410. Based on these results, there is no significant evidence to support Hypothesis 1, suggesting that the integration of the Nursery Teacher Certificate does not have a significant impact on student teachers' knowledge, skills, and attitudes related to practical teaching competence.

Hypothesis 2 states that the Nursery Teacher Certificate program has a limited focus on the cultivation of classroom management skills in the teacher education curriculum for student teachers majoring in Early Childhood Care Education. The ANOVA results for the item 'The Cultivation of Classroom Management Skills' reveal a mean square value of 0.134, an F-value of 0.651, and a significance level of 0.425. These results indicate that there is no significant evidence to support Hypothesis 2, suggesting that the Nursery Teacher Certificate program does not have a significant focus on the cultivation of classroom management skills in the teacher education curriculum for student teachers majoring in Early Childhood Care Education.

In summary, based on the ANOVA results, neither Hypothesis 1 nor Hypothesis 2 received significant support. This suggests that the integration of the Nursery Teacher Certificate does not significantly influence student teachers' management competence in the classroom, and the program has a limited focus on the cultivation of classroom management skills in the teacher education curriculum.

Discussion

The present study aimed to investigate student teachers' perspectives on the impact of integrating the nursery teacher certificate into teacher education curricula, specifically focusing on the cultivation of management skills, values, and motivation in nursery education. The inclusion of the Nursery Teacher Certificate in teacher education was well-received by student teachers, as evidenced by the study conducted by (Shi, 2023). The valuable insights provided by this study shed light on student teachers' perspectives regarding the integration of the certificate into the teacher education curriculum. The results revealed the influence of this integration on various aspects, including teaching skills, pedagogical knowledge, ability, understanding, attitudes, and overall teaching effectiveness. Additionally, the study examined the impact of the certificate on teaching competence and explored potential gender differences among the respondents. Thus, integrating the certificate into teacher education curricula can be considered a beneficial step in the learning experience of student teachers.

The globalized nature of education has led to diversity in student teacher education, as evidenced by studies conducted by (Becker et al., 2017; Miwa, 2020; Dobell et al., 2021; Shi, 2023). In this study, we specifically focused on student teachers from vocational and technical colleges in Shaanxi, China, and investigated the impact of integrating the certificate into the teacher education curriculum. The findings from Table 2 demonstrated a high level of agreement among student teachers regarding the enhancement of teaching skills, improvement in pedagogical knowledge, increased ability, enhanced understanding, and positive influence on overall teaching effectiveness. These results were higher compared to the understanding level reported by (Celik, 2020). These findings suggest that the integration of the certificate has a positive impact on various aspects of teaching competence, particularly at the diploma level. These results are consistent with previous studies that emphasize the importance of integrating specialized certifications into teacher education programs, as highlighted by (Tjabolo and Herwin, 2020).

Razeq (2022) conducted research on teacher education and training programs in Palestine that offer a certificate to cultivate pre-service teachers. Ten participants stated that the practicum component of the teacher preparation program is effective in certain areas, as students acquire teaching credentials before their internships. These findings align with prior research that emphasizes the positive impact of specialized certifications on teaching competence in early childhood education. The current study contributes to the existing literature by providing specific insights into the integration of the nursery teacher certificate and its influence on teaching competence, in line with the studies conducted by (Bunterm et al., 2018; Romero-Tena et al., 2020; Krogh and Morehouse, 2020). The findings further emphasize the significance of specialized training and certifications in enhancing the skills and knowledge of early childhood educators.

The influence of the nursery teacher certificate on teaching competence was a key aspect explored in this study. The results indicated a substantial influence of the certificate on teaching competence among student teachers. Specifically, the certificate was found to significantly enhance knowledge of teaching competence, improve skills in implementing health activities, positively influence attitudes toward teaching competence, and improve the ability to promote and model healthy behaviors. These findings highlight the effectiveness of the certificate in enhancing various dimensions of teaching competence and its potential contribution to the overall quality of early childhood education.

According to Bourke et al (2018), the development of teacher competency underscores the significance of employing diverse approaches or tactics for effective classroom management, typically acquired through teacher education. Classroom management skills play a crucial role in creating a conducive learning environment, promoting student engagement, and ensuring smooth instructional delivery. However, the findings of the present study shed light on a concerning trend in nursery teacher certification in China. It is observed that the current certification program places relatively less emphasis on nurturing and enhancing student teachers' teaching competences in the area of classroom management. This discrepancy between the recognized importance of classroom management in teacher competency development and its limited integration within the nursery teacher certification program raises important questions about the effectiveness and comprehensiveness of the certification curriculum in adequately preparing student teachers to address the diverse challenges associated with managing a classroom effectively. These findings underscore the need for further examination and potential revisions in the certification program to better align it with the recognized importance of classroom management in teacher professional development. By addressing this discrepancy, teacher education institutions and policymakers can ensure that student teachers receive comprehensive training and support to develop the essential competences required for successful classroom management.

Unexpected Results

The primary objective of this study was to examine the impact of integrating the nursery teacher certificate on student teachers' teaching skills within the teacher education context. However, the analysis yielded an unexpected outcome, revealing that the existing certificate program lacks emphasis on the development of students' management skills in teacher education. This unforeseen finding not only adds authenticity to the study but also raises important questions regarding the influence of integrating the nursery certificate into the curriculum on student teachers' teaching competence. In contrast to previous research suggesting comprehensive improvements in teaching competence with the nursery teacher certificate (Putri et al., 2019; Lestari et al., 2021), this study indicated that while the certificate enhances students' operational skills, it neglects the crucial development of management skills.

Implications and Recommendations

Based on the results of this study, several recommendations can be made to improve teacher education and enhance the quality of early childhood education. Firstly, teacher education institutions should incorporate the Nursery teacher certificate into their curriculum, ensuring alignment with the specific needs of early childhood education. This integration will equip student teachers with the necessary knowledge and skills to effectively meet the demands of the field. Additionally, ongoing professional development opportunities should be provided to teachers who have completed the certificate program, enabling them to stay abreast of the latest research and advancements in the field. Policymakers and stakeholders should recognize the value of specialized certifications and allocate resources to support their integration into teacher education programs, thereby elevating the overall quality of early childhood education. It is important to acknowledge that the findings of this study are context-specific and caution should be exercised when generalizing to other contexts. Future research should replicate this study in diverse regions with larger samples to enhance external

validity. In conclusion, this study provides valuable insights into the integration of the Nursery teacher certificate into teacher education, emphasizing the positive influence on teaching competence. By implementing the proposed recommendations, stakeholders can contribute to continuous improvement in teacher education and the development of effective early childhood educators.

Implication

The findings of this study have important implications for teacher education programs, particularly in the field of early childhood care education, regarding the integration of specialized certifications into teacher education curricula to enhance student teachers' teaching competences. The positive influence of the certificate on teaching competence underscores the significance of incorporating such certifications into early childhood care education curricula. However, the neglect of student teachers' management skills by the certificate program suggests the need for teacher education programs to consider the inclusion of specialized training and certifications that address this gap. These findings emphasize the importance of enhancing the skills, knowledge, and attitudes of student teachers through comprehensive teacher education programs. Furthermore, the results indicate the potential benefits of integrating the certificate, such as improved teaching skills, pedagogical knowledge, and the ability to promote healthy behaviors. It is crucial for teacher education programs to address any challenges that may arise during the implementation of certificate-based teaching and learning to ensure successful outcomes.

Limitation

This study employed a quantitative methodology to design the research process. The sample size consisted of 95 participants from Shaanxi, China, which limited the generalizability of the findings to a specific geographic region. While the study provides valuable insights into the local context, it is important to acknowledge that the findings may not be applicable to other contexts or regions. Additionally, the study relied solely on self-reported data, which introduces the possibility of response bias. Furthermore, the absence of qualitative data in this study restricted the depth of understanding regarding student teachers' experiences. To address these limitations, future studies could consider incorporating qualitative or mixed-methods approaches to gain a more comprehensive understanding of the impact of integrating the into the teacher education curriculum. By combining qualitative insights with quantitative data, a more nuanced and holistic perspective can be obtained.

Conclusion

Based on the present study, which aimed to examine the impact of integrating the nursery teacher certificate into the teacher education curriculum on student teachers' teaching skills, values, and motivation in nursery education, valuable insights were obtained. This study analyzed the perspectives of student teachers, revealing a positive reception and recognition of the value of specialized certifications in enhancing teaching competences. The findings highlighted high levels of agreement among student teachers regarding the enhancement of teaching skills, pedagogical knowledge, ability, understanding, attitudes, and overall teaching effectiveness. However, a discrepancy was identified in the attention given to classroom management competences within the nursery teacher certification program in China, raising concerns about comprehensive preparation for effective classroom management. Therefore, it is crucial to address this gap and revise the certification curriculum to better align with the

importance of classroom management in teacher competency development. These findings contribute to the existing literature, providing important implications for teacher education programs and emphasizing the need to equip student teachers with the necessary skills and knowledge for effective classroom management.

Acknowledgement

This research was funded by a grant from Department of Education in Shaanxi, China (No. SGH22Y1656) and Shaanxi Vocational and Technical Education Association (No. 2023SZX461).

References

- Baran, E., Canbazoglu Bilici, S., Albayrak Sari, A., & Tondeur, J. (2019). Investigating the impact of teacher education strategies on preservice teachers' TPACK. *British Journal of Educational Technology*, 50(1), 357–370. <https://doi.org/10.1111/bjet.12565>
- Becker, B. D., Gallagher, K. C., & Whitaker, R. C. (2017). Teachers' dispositional mindfulness and the quality of their relationships with children in Head Start classrooms. *Journal of School Psychology*, 65(1), 40–53. <https://doi.org/10.1016/j.jsp.2017.06.004>
- Betawi, A., & Jabbar, S. (2018). Developmentally appropriate or developmentally inappropriate, that's the question: perception of early childhood pre-service teachers at The University of Jordan. *International Journal of Adolescence and Youth*, 24(1), 40–50. <https://doi.org/10.1080/02673843.2018.1458633>
- Bourke, T., Ryan, M., & Ould, P. (2018). How do teacher educators use professional standards in their practice? *Teaching and Teacher Education*, 75(1), 83–92. <https://doi.org/10.1016/j.tate.2018.06.005>
- Bunterm, T., Srisawasdi, N., & Pondee, P. (2018). Preparing pre-service teachers to integrate mobile technology into science laboratory learning: an evaluation of technology-integrated pedagogy module. *International Journal of Mobile Learning and Organisation*, 12(1), 1. <https://doi.org/10.1504/ijmlo.2018.10009961>
- Celik, S. (2020). Association between Influential Factors and Teaching Profession as Career Choice among Undergraduate Student Teachers: A Structural Equation Study. *Revista Amazonia Investiga*, 9(31), 166–177. <https://doi.org/10.34069/ai/2020.31.07.15>
- Chen, L. L., & Zhou, Y. X. (2020). Taking "1 + X" Certificate as an Opportunity to Promote the Reform of Early Childhood Development and Health Management Professional Development in Vocational Colleges. *Innovative Education Research*, 8(6).
- Davis, B., & Dunn, R. (2018). Making the personal visible: emotion in the nursery. *Early Child Development and Care*, 188(7), 905–923. <https://doi.org/10.1080/03004430.2018.1439487>
- Dobell, A., Pringle, A., Faghy, M. A., & Roscoe, C. M. P. (2021). Educators Perspectives on the Value of Physical Education, Physical Activity and Fundamental Movement Skills for Early Years Foundation Stage Children in England. *Children*, 8(5), 338. <https://doi.org/10.3390/children8050338>
- Grossman, P., & Loeb, S. (2021). *Alternative Routes to Teaching*. Harvard Education Press.
- Karaca, A., & Durna, Z. (2019). Patient satisfaction with the quality of nursing care. *Nursing Open*, 6(2), 535–545.
- Krogh, S., & Morehouse, P. (2020). *The early childhood curriculum: inquiry learning through integration*. Routledge.
- Lestari, H., Sopandi, W., Sa'ud, U. S., Musthafa, B., Budimansyah, D., & Sukardi, R. R. (2021). The Impact of Online Mentoring in Implementing RADEC Learning to the Elementary

- School Teachers' Competence in Training Students' Critical Thinking Skills: A Case Study During COVID-19 Pandemic. *Jurnal Pendidikan IPA Indonesia*, 10(3), 346–356. <https://doi.org/10.15294/jpii.v10i3.28655>
- Leuchter, M., Saalbach, H., & Hardy, I. (2014). Designing Science Learning in the First Years of Schooling. An intervention study with sequenced learning material on the topic of 'floating and sinking'. *International Journal of Science Education*, 36(1), 1751–1771. <https://doi.org/10.1080/09500693.2013.878482>
- Mian, S. H., Salah, B., Ameen, W., Moiduddin, K., & Alkhalefah, H. (2020). Adapting Universities for Sustainability Education in Industry 4.0: Channel of Challenges and Opportunities. *Sustainability*, 12(15), 6100. <https://doi.org/10.3390/su12156100>
- Miwa, C. (2020). Early Childhood Care and Education Practices in Japan for the Era of Society 5.0. *Advances in Social Science, Education and Humanities Research: Proceedings of the 1st International Conference on Early Childhood Care Education and Parenting (ICECCEP 2019)*, 503. <https://doi.org/10.2991/assehr.k.201205.080>
- Nores, M., & Barnett, W. S. (2010). Benefits of early childhood interventions across the world: (Under) Investing in the very young. *Economics of Education Review*, 29(2), 271–282. <https://doi.org/10.1016/j.econedurev.2009.09.001>
- Pallant, J. (2016). *SPSS Survival Manual* (6th ed.). McGraw-Hill.
- Pedaste, M., Leijen, A., Poom-Valickis, K., & Eisenschmidt, E. (2019). Teacher professional standards to support teacher quality and learning in Estonia. *European Journal of Education*, 54(3). <https://doi.org/10.1111/ejed.12346>
- Putri, Z., Yoestara, M., Aziz, Z. A., & Yusuf, Y. Q. (2019). The Correlation between Professional Development Training and English Teachers' Competence. *Journal of Physics: Conference Series*, 1232(1), 012037. <https://doi.org/10.1088/1742-6596/1232/1/012037>
- Razeq, A.-H. - A. (2022). Teachers Candidates' Experience in a Practicum for English as a Foreign Language. *International Journal on Studies in English Language and Literature (IJSELL)*, 10(2), 31–38.
- Romero-Tena, R., Barragán-Sánchez, R., Llorente-Cejudo, C., & Palacios-Rodríguez, A. (2020). The Challenge of Initial Training for Early Childhood Teachers. A Cross Sectional Study of Their Digital Competences. *Sustainability*, 12(11), 4782. <https://doi.org/10.3390/su12114782>
- Rusilowati, U., & Wahyudi, W. (2020). The Significance of Educator Certification in Developing Pedagogy, Personality, Social and Professional Competencies. *2nd Social and Humaniora Research Symposium (SoRes 2019)*.
- Shernoff, D. J., Sinha, S., Bressler, D. M., & Ginsburg, L. (2017). Assessing teacher education and professional development needs for the implementation of integrated approaches to STEM education. *International Journal of STEM Education*, 4(1). <https://doi.org/10.1186/s40594-017-0068-1>
- Shi, M. R. (2023). Study on the path of integration of early childhood education courses and certificates under the "1+X" early childhood care Certificate System. *Journal of Ningbo Vocational and Technical College*, 27(02), 46–50.
- Shin, M. (2012). "Whole Teacher" Crisis: Examining Pre-service Student Teachers' Perceptions of Professionalism. *International Journal of Education*, 4(4). <https://doi.org/10.5296/ije.v4i4.1879>

- Taylor, R. D., Oberle, E., Durlak, J. A., & Weissberg, R. P. (2017). Promoting Positive Youth Development through School-Based Social and Emotional Learning Interventions: a Meta-Analysis of Follow-Up Effects. *Child Development*, 88(4), 1156–1171.
- The Ministry of Education In China. (2019). 教育部就“学历证书+若干职业技能等级证书”制度《试点方案》 答问. [Www.scio.gov.cn. http://www.scio.gov.cn/xwfbh/gbwxwfbh/xwfbh/jyb/Document/1652134/1652134.htm](http://www.scio.gov.cn/xwfbh/gbwxwfbh/xwfbh/jyb/Document/1652134/1652134.htm)
- Tjabolo, S. A., & Herwin, H. (2020). The Influence of Teacher Certification on the Performance of Elementary School Teachers in Gorontalo Province, Indonesia. *International Journal of Instruction*, 13(4), 347–360. <https://doi.org/10.29333/iji.2020.13422a>
- Tondeur, J., Scherer, R., Baran, E., Siddiq, F., Valtonen, T., & Sointu, E. (2019). Teacher educators as gatekeepers: Preparing the next generation of teachers for technology integration in education. *British Journal of Educational Technology*, 50(3), 1189–1209. <https://doi.org/10.1111/bjet.12748>
- Wang, J. (2023). Value Appeal, Realistic Dilemma and Innovative Strategy of 1+X Certificate System Implementation. *Journal of Shaanxi Youth Vocational College*, 1(1), 51–57.