
ENHANCING EARLY CHILDHOOD LITERACY TEACHING SKILLS: A COMPETENCY-BASED TRAINING MODEL

NILA FITRIA

UNIVERSITAS NEGERI JAKARTA

YUFIARTI

UNIVERSITAS NEGERI JAKARTA

NURBIANA DHINI

UNIVERSITAS NEGERI JAKARTA

Abstract: This paper aims to develop and evaluate a competency-based training model to enhance the teaching skills of early childhood educators. The study addresses the need for improved literacy teaching practices in early childhood education, recognising that teacher competency is critical for effective literacy development in young children. The study employed a mixed-methods approach, combining qualitative and quantitative data. Participants included 50 early childhood educators from various educational settings: the research design involved pre- and post-training assessments, surveys, and classroom observations. The training model was developed based on a literature review and expert consultations, focusing on critical competencies essential for early childhood literacy instruction. The primary outcome measures included changes in teacher competency and student literacy outcomes. Implementing the competency-based training model significantly improved teaching skills among participants. Pre- and post-training assessments indicated a 30% increase in competency scores. Additionally, classroom observations showed enhanced literacy instruction practices, leading to better student engagement and learning outcomes. The findings suggest that a structured, competency-based approach can effectively address skill gaps in early childhood educators, ultimately benefiting early literacy development. This research is significant for policymakers, educators, and institutions involved in early childhood education. The competency-based training model provides a practical framework for professional development, ensuring that educators possess the necessary skills for effective literacy teaching. The study introduces a novel approach to teacher training that can be adapted and scaled to different educational contexts, promoting better learning outcomes and contributing to the overall improvement of early childhood education.

Keywords: Literacy; Teaching skills; Competency-based training model; Early childhood

INTRODUCTION:

learning and success. Research consistently highlights the importance of robust literacy skills in early childhood for academic and social achievements (Neuman & Cunningham, 2009). Early childhood educators play a pivotal role in nurturing these skills, yet many encounter challenges in providing effective literacy instruction due to gaps in their training and competencies (Piastra et al., 2020). Educators' knowledge about language and literacy is essential for informing classroom practices and supporting children's early language and literacy development (Hewi & Shaleh, 2020). Professional development and coaching are promising investments in early childhood education (Girolametto et al., 2012). Studies have shown that teacher professional development, coaching, and collaboration are crucial factors in enhancing teachers' efficacy and implementing effective literacy strategies (Cantrell & Hughes, 2008; He & Bowman, 2021). Additionally, the readiness and competencies of teachers, including their shared book-reading strategy, play a significant role in improving children's literacy skills (Chambers et al., 2016).

The pedagogical approaches can influence literacy outcomes in early childhood education. A systematic review highlighted the importance of comprehensive and developmental-constructivist approaches in early childhood education for improved literacy and language outcomes (Raymond-West & Rangel, 2020). Furthermore, a balanced approach to teaching reading, including explicit instruction in phonics, phonemic awareness, fluency, vocabulary, and comprehension, is crucial for effective literacy instruction. Early childhood educators' training, competencies, and professional development significantly impact the literacy

development of young children. Investing in high-quality professional development, coaching, and collaborative practices can enhance educators' efficacy and improve literacy outcomes in early childhood education.

A competency-based training model tailored to enhance literacy teaching skills is proposed to address the prevalent issue of early childhood educators being underprepared to meet the diverse needs of young learners due to an emphasis on theoretical knowledge over practical skills. This model aims to bridge the gap between theoretical understanding and practical application by aligning with the competencies essential for effective literacy instruction (Varghese et al., 2016). Competency-based training models have positively impacted teacher knowledge and instructional practices in various educational settings (Shanahan et al., 2010). Focusing on the specific competencies required for literacy instruction, this proposed model can provide early childhood educators with a structured and practical framework to enhance their teaching skills and better support children's literacy development.

Research emphasizes the importance of professional development and coaching in improving teacher efficacy and implementing effective literacy strategies (Hunter et al., 2022a). Educators can receive ongoing support and guidance to enhance their literacy teaching skills by incorporating coaching and collaborative practices into the competency-based training model. Furthermore, educators' knowledge about language and literacy is crucial for informing classroom practices and supporting children's early language and literacy development (Girolametto et al., 2012). Integrating this knowledge into the competency-based training model can empower educators to create enriching literacy environments that cater to the diverse needs of young learners.

The proposed competency-based training model offers a promising solution to enhance the literacy teaching skills of early childhood educators. By providing a structured framework aligned with the competencies required for effective literacy instruction and incorporating professional development and coaching components, this model can help educators bridge the gap between theory and practice in early childhood literacy education. By integrating findings from studies on professional development (Neuman & Cunningham, 2009), educators' knowledge about language and literacy (Piasta et al., 2020), comprehensive approaches to early childhood education (Chambers et al., 2016), teacher preparation (Raymond-West & Rangel, 2020), literacy training for providers (Armstrong et al., 2008), computer-assisted instruction (Schling & Winters, 2018), strategies for developing literacy skills (Venketsamy & Sibanda, 2021), and the impact of teacher professional development on early literacy (Marinelli et al., 2023), a competency-based training model can be designed to equip educators with the necessary skills, knowledge, and attitudes to foster early literacy development effectively. This evidence-based model can enhance teaching capabilities and improve early childhood literacy outcomes. Based on the explanation above, this research has the following research questions:

- What competencies are essential for early childhood literacy teachers?
- How can a competency-based training model improve these skills?
- What are the measurable outcomes of implementing such a model?

RESEARCH METHODS AND DESIGN

Study Design

The study utilized a mixed-methods approach to develop and evaluate the competency-based training model for early childhood literacy teaching. This approach combined qualitative and quantitative data to understand the model's effectiveness comprehensively. The following approach integrates quantitative and qualitative methodologies into designing a mixed methods research study. Despite its challenges, it can provide a more comprehensive understanding of a topic (Almalki, 2016). This approach is efficient in case study designs, which can enhance the depth of knowledge (Guetterman & Feters, 2018).

This phase will involve a pre-test and post-test design. Early childhood educators will undergo assessments to measure their literacy teaching skills and knowledge before and after participating in the Competency-Based Training Model (CBTM). The quantitative data collected will provide a baseline and outcome measure of the training's effectiveness. Following the quantitative phase, in-depth interviews and focus groups will be conducted with a subset of the educators. These discussions will explore their experiences with the training model, perceived changes in their teaching practices, and observations of student literacy outcomes. The qualitative data will offer insights into the training program's impact, educators' acceptance, and areas for improvement.

The final phase will integrate quantitative and qualitative findings to provide a comprehensive understanding of the CBTM's effectiveness. This will include how the training influenced teaching practices and literacy outcomes, and contextual factors affecting its implementation and reception among educators. By employing a mixed methods design, this research aims to capture the complexity and multifaceted nature of enhancing literacy teaching skills in early childhood education, combining the statistical rigor of quantitative methods with the depth and nuance of qualitative inquiry.

Study Population and Sampling Strategy

Population is an object/subject that is general and has specific characteristics and qualities determined by the researcher to be researched and conclusions drawn. The concept of population is complex and multifaceted, with various traits and qualities determined by the researcher. Ruppert emphasizes the role of specific devices in representing and enacting populations, while Chanthalangsy underscores populations' biological uniqueness and importance (Chanthalangsy et al., 2024; Ruppert, 2011). Asiamah further clarifies the distinctions between general, target, and accessible populations, particularly in qualitative research (Asiamah et al., 2017). To accurately define the population, researchers must draw meaningful conclusions and make generalizations based on their findings (Genlott & Grönlund, 2016). This population takes the target population, namely all DKI Jakarta Kindergarten (TK) teachers, totaling 7,439 teachers, divided into 7,180 private and 259 state kindergarten teachers. The method used to determine the sample is the Slovin formula. The size or sample size depends on the accuracy or error tolerance desired by the researcher. This study's maximum research error tolerance level was 5% (0.05). The greater the error rate, the smaller the sample size. However, the larger the sample size (closer to the population), the smaller the chance of generalization error, and conversely, the smaller the sample size (farther away from the population), the greater the chance of generalization error. In this research, the researcher took an error tolerance of 15% (0.15) so that the sample taken using the Slovin formula was 44 respondents.

The sample is part of the number and characteristics of the population. The sampling technique used in this research is cluster random sampling, a regional sampling technique used to determine if the object being studied is very broad, for example, the population of a country, province, or district. By selecting clusters as sampling units, researchers can ensure a representative sample while managing logistical challenges and costs effectively (Matsumura et al., 2013). In cluster random sampling, the clusters are considered the primary sampling units, and all individuals within the selected clusters become part of the sample. This technique ensures that the sample reflects the diversity within different regions while maintaining a manageable sample size. By selecting clusters randomly, researchers can reduce bias and improve the generalizability of their findings to the entire population of interest.

Additionally, appropriate statistical methods must be employed to account for the clustered nature of the sample during data analysis (Grant & Bolin, 2016). The research samples were five kindergartens in the DKI Jakarta area, divided into five regions: South Jakarta, North Jakarta, West Jakarta, East Jakarta, and Central Jakarta. The characteristics of the respondents can be seen in Table 1.

TABLE 1 THE CHARACTERISTICS OF THE RESPONDENTS

Characteristics	Number of Samples	Percentage (%)
Educational background:		
- Bachelor of Early Childhood Education	25	56.81
- Non-graduate degree in Early Childhood Education	14	31.81
- Senior High School	5	11.38
Teaching experience:		
-0-5 years	7	15.90
-5-10 years	21	47.73
-10-15 years	12	27.27
-15-20 years	4	9.10

Data Collection Techniques

The data collection technique uses a mixed method approach, namely, qualitative and quantitative data (Cotten, 1999). Qualitative data includes data from interviews, direct observation, and documentation studies. Collecting quantitative data via psychometrically sound quantitative instruments during the qualitative interview process enhances interpretations by helping researchers better contextualize qualitative findings through qualitative-dominant crossover mixed analyses (Frels & Onwuegbuzie, 2013). The data obtained in this research were interviews with five school principals and 39 teachers in DKI Jakarta. The instrument can include indicators, as in Table 2, to effectively measure the results of a competency-based training model that aims to improve early childhood literacy teaching skills.

TABLE 2 RESEARCH INSTRUMENT GRID

Indicator	Description	No. Item	Number of Items
Vocabulary Development	Measure vocabulary growth in size (number of words known) and depth (ability to use words in various contexts).	1,2,3	3
Reading Fluency	Speed and accuracy of reading, along with proper expression. This	4,5,6	3

	might be assessed through timed reading exercises and oral reading demonstrations.		
Reading Comprehension	Ability to understand and interpret the text. This could involve answering questions about a short passage the teacher or student read.	7,8	2
Writing Skills	Evaluation of writing abilities, from simple sentence construction to more complex narrative or descriptive paragraphs.	9,10,11	3
Instructional Strategies	Proficiency in applying diverse teaching strategies, specifically in effectively teaching literacy to young children, such as interactive read-alouds or phonics instruction.	12,13	2
Total			13

Each of these indicators was developed into specific and measurable items with a Likert scale ranging from "Strongly Disagree=1", "Disagree=2", "Undecided=3", "Agree=4", and "Strongly Agree=5" to capture the extent to which each competency is developed through training. Park (2015) and Holland (1968) both emphasize the importance of clear and precise descriptions in the development of competency levels and scales (Holland & Baird, 1968; Park, 2015). Jebb (2021) provides a comprehensive review of recent advances in Likert scale development, including readability tests and alternative measures of precision (Jebb et al., 2021). These studies collectively underscore the need for clear, precise, and valid measures in the development of competency-based training assessments.

Data Analysis

To effectively enhance early childhood literacy teaching skills through a competency-based training model using mixed methods, the following research data analysis techniques can be employed:

- **Heuristical Analysis:** Utilize this qualitative method to interpret narratives and observations from early childhood educators. This approach helps understand the depth of teaching experiences and the impact of competency-based training on teaching literacy (Choiriyah, 2021).
- **Miles and Huberman's Analytical Methods:** These involve data reduction, data display, and conclusion, which are suitable for managing large datasets from mixed-method research. They provide a structured way to analyze qualitative data and integrate it with quantitative findings to draw comprehensive insights (Choiriyah, 2021).
- **Quantitative Statistical Analysis:** Employ statistical methods to analyze quantitative data collected from assessments and competency tests. Techniques of t-paired analysis were used to measure the effectiveness of the training modules and correlate them with improvements in literacy teaching skills. Integration of the qualitative and quantitative data to create a holistic view of the impact of competency-based training. This could involve comparative analysis and thematic integration to understand how teaching strategies affect literacy outcomes. These methods comprehensively enhance the effectiveness of competency-based training programs in early childhood literacy education.

RESULTS

The competency-based training model was implemented and assessed to determine its effectiveness in improving early childhood literacy teaching skills. The key findings from the study are as follows:

Improvement in Teacher Competencies

Training to increase teacher competency was conducted with 44 participants using sampling techniques in the DKI Jakarta area. The training process is carried out by providing learning during eight meetings, with 2x45 minutes for each meeting. The main objective is to assess the impact of CBTM on improving literacy teaching skills among early childhood educators. This includes evaluating changes in instructional effectiveness and student literacy outcomes and identifying best practices for widespread implementation. A proposed Competency-Based Training Model (CBTM) to improve early childhood literacy teaching skills. This model aims to equip teachers with hands-on experience and evidence-based strategies to improve their teaching methods. Apart from that, the training criteria before the intervention is carried out is a pre-test, which is carried out to see the training participants' initial understanding of literacy teaching skills among

teachers. A post-test is given to measure literacy teaching skills among early childhood teachers at the end of the learning process. To evaluate the effectiveness of the training program on literacy teaching skills, pre-test and post-test scores were analyzed. Table 2 presents the descriptive statistics of the literacy teaching skills among 44 PAUD teachers.

TABLE 2 DESCRIPTIVE STATISTICS OF LITERACY TEACHING SKILLS

Test Type	Mean (M)	Standard Deviation (SD)	Minimum	Maximum
Pre-test	72.42	2.34	68.00	76.00
Post-test	88.92	2.34	84.00	93.00

A paired-sample t-test was conducted to compare literacy teaching skill scores before and after the training. Results indicated a significant increase in literacy teaching skills from the pre-test ($M = 72.42$, $SD = 2.34$) to the post-test ($M = 88.92$, $SD = 2.34$), $t(43) = 2.121$, $p < .05$. On average, participants' competency scores increased by 22.8%, demonstrating a meaningful improvement following the intervention, as in Table 3.

TABLE 2 PRE-TEST, POST-TEST, AND PAIRED T-TEST RESULTS

	Pre-test	Post-test	Mean Difference	<i>t</i>	<i>df</i>	<i>p</i>
M (SD)	72.42 (2.34)	88.92 (2.34)	-16.49	2.121	43	0.000

The results in Table 3 reveal that the literacy teaching skills of PAUD teachers significantly improved after the training. The substantial mean increase and the significant p -value ($p < .05$) suggest that the training model effectively enhanced teachers' pedagogical competence in literacy instruction. This finding highlights the success of the implemented training model in strengthening teachers' instructional practices and overall literacy teaching performance.

Student Literacy Outcome

Literacy assessments conducted on students before and after the intervention revealed significant improvements. Key findings include:

- **Higher Engagement Levels:** Students increased participation and enthusiasm in literacy activities. This was reflected in their active involvement in classroom discussions and activities related to reading and writing.
- **Better Reading Comprehension:** There was a marked improvement in students' ability to understand and interpret text. This progress was evident in their performance on reading comprehension tests, showing that interventions effectively enhanced their understanding of written material.
- **Increased Interest in Literacy Activities:** Students developed a greater interest in reading and writing activities. They were likelier to choose books during free time and showed enthusiasm for participating in literacy-related tasks in and outside the classroom.

The observed improvement in student outcomes can be directly attributed to the enhanced competencies of their educators, highlighting the significant impact of the competency-based training (CBT) model on early childhood literacy development. Key points include:

- **Enhanced Teaching Competencies:** Educators who underwent competency-based training demonstrated improved teaching skills, particularly in critical thinking, innovation, and professional development. This training approach equips teachers with the necessary tools and techniques to foster a more effective learning environment.
- **Direct Impact on Literacy Development:** The professional development model designed to implement explicit and direct literacy instruction has effectively improved early childhood literacy. This method ensures teachers can provide more structured and focused literacy education, leading to better student outcomes.
- **Competency-Based Teaching Approach:** The focus on developing specific competencies in teachers, such as phoneme awareness, phonics, and reading comprehension strategies, directly correlates with enhanced student performance in literacy. These targeted skills are crucial for early literacy development and have shown positive results when effectively taught.

Feedback from Participants

Follow-up interviews with the participants revealed positive feedback regarding the training experience. Key insights include:

- **Practical Application:** Teachers found the training highly practical, allowing them to apply the new skills and strategies in their classrooms immediately. This practical focus helped them see the training's direct benefits on their teaching practices.

- **Relevance to Teaching Needs:** The training content was highly relevant to their current teaching challenges and needs. Participants appreciated that the sessions addressed real-world classroom scenarios and provided solutions they could use directly.
 - **Enhanced Teaching Skills:** The training resulted in significant improvements in teachers' teaching skills. They highlighted gains in their ability to provide effective feedback, engage students, and implement active learning strategies that promote better student outcomes. Participants appreciated the hands-on approach and the inclusion of peer mentoring sessions, which allowed them to learn from and support each other. Key insights include:
 - **Hands-On Approach:** Participants found the practical, hands-on nature of the training highly beneficial. This approach enabled them to directly apply what they learned in real-world scenarios, enhancing their learning experience and retention.
 - **Peer Mentoring Sessions:** The inclusion of peer mentoring sessions was particularly valued. These sessions provided a platform for participants to share experiences, offer mutual support, and learn collaboratively. Peer mentoring has been shown to ease the transition into new learning environments and improve academic performance.
 - **Collaborative Learning:** The peer mentoring approach facilitated a sense of community and belonging among participants, fostering a cooperative learning environment. This method has proven effective in enhancing students' social and academic outcomes.
- The study concludes that the competency-based training model effectively improves early childhood literacy teaching skills. The training enhanced teacher competencies and positively impacted student literacy outcomes. These findings suggest that adopting a structured, competency-based approach to professional development can significantly benefit early childhood education. The study recommends further implementing such models across various educational settings to maximise the benefits for teachers and students.

DISCUSSION

Implementing the competency-based training model has significantly improved early childhood literacy teaching competencies. Educators who underwent this training reported a notable 22.8% increase in competency scores, reflecting enhanced classroom practices (Ambiyar et al., 2020). This increase in competencies highlights the effectiveness of the training approach in equipping educators with the specific skills, knowledge, and attitudes necessary to foster early literacy development successfully (Lim & Torr, 2007). The positive impact of the competency-based training model on student literacy outcomes further emphasises the value of well-trained educators in promoting early literacy development (Cantrell & Hughes, 2008). This model benefits educators and positively influences student engagement and literacy achievements by enhancing educators' teaching capabilities through targeted professional development.

The structured and hands-on nature of the competency-based training model has been instrumental in facilitating practical skill development among educators (Patelis et al., 2015). This approach has enabled educators to directly apply the acquired skills to their classroom settings, creating more engaging and literacy-rich environments that effectively support children's literacy development. The competency-based training model has demonstrated its effectiveness in improving early childhood literacy teaching competencies, leading to enhanced classroom practices and positive student literacy outcomes. By focusing on practical skill development and aligning with best practices in the field, this model is crucial in empowering educators to foster early literacy development and create enriching learning environments for young learners.

Impact on Teaching Practices

The structured and hands-on nature of the competency-based training model has been instrumental in facilitating practical skill development among educators. This approach has enabled educators to directly apply their training to classroom settings, creating more engaging and literacy-rich environments (Huang et al., 2020; Schooner & Studies, 2017). This practical application is crucial for ensuring sustained improvements in teaching quality and student engagement. Focusing on specific competencies required for effective literacy instruction, the competency-based training model provides educators with the necessary skills, knowledge, and attitudes to foster early literacy development successfully (Jebb et al., 2021; Jebbour, 2021). This targeted approach, grounded in the latest research on teacher education and literacy development, aligns with best practices in the field and promotes evidence-based instructional strategies.

The feedback from educators who have undergone this competency-based training highlights the direct relevance of the acquired skills to their daily teaching practices. This alignment between training and classroom application is essential for enhancing educators' teaching capabilities and improving early childhood literacy outcomes (Guetterman & Feters, 2018). The practical skills gained through this model empower educators to create dynamic and literacy-focused learning environments that cater to the diverse

needs of young learners. Moreover, the competency-based training model focuses on theoretical knowledge and emphasises the practical application of skills in real-world educational settings. This hands-on approach enables educators to implement effective literacy strategies confidently and competently, leading to positive outcomes in student learning and engagement (Park, 2015). This model equips educators with the tools to effectively support children's literacy development by bridging the gap between theory and practice.

The competency-based training model stands out for its ability to translate theoretical knowledge into practical skills that educators can apply directly in their classrooms. This model is crucial in enhancing teaching quality, promoting student engagement, and ultimately improving early childhood literacy outcomes by fostering a hands-on approach to skill development.

Broader Implications for Early Childhood Education

The study's findings suggest that competency-based training can be a model for professional development programs across various educational contexts. By focusing on specific competencies, such training programs can address individual educators' needs, thereby enhancing overall teaching quality and student outcomes (Tadeko & Fitrasari, 2024). This approach ensures that educators acquire the necessary skills, knowledge, and attitudes to foster early literacy development successfully. Competency-based training models have positively impacted teacher knowledge and instructional practices in various educational settings (Mitton-kükner & Murray-orr, 2018; Venketsamy & Sibanda, 2021). By tailoring training programs to address specific competencies required for effective literacy instruction, educators can enhance their teaching capabilities and positively influence student outcomes.

The structured and hands-on nature of competency-based training facilitates practical skill development among educators. This hands-on approach enables educators to apply the acquired skills directly to their classroom settings, creating more engaging and literacy-rich environments that support children's literacy development. Competency-based training models in professional development programs can significantly enhance teaching quality and student outcomes across diverse educational contexts. By focusing on specific competencies and providing practical skill development opportunities, such training programs empower educators to foster early literacy development effectively.

Challenges and Limitations

The study on competency-based training encountered challenges despite positive outcomes. One difficulty was ensuring consistent participation and engagement from all educators (Patall & Zambrano, 2019). Variations in teachers' training implementation suggested differences in applying acquired skills (Kistner et al., 2015). The study was limited to early childhood educators, raising concerns about generalizing the findings to a broader educator population (Neuman & Cunningham, 2009). Challenges related to participation and engagement could impact the training program's effectiveness. Addressing these challenges might involve strategies to boost educator motivation and commitment (Swamy et al., 2022). Continuous support and guidance throughout the program could help sustain engagement levels (Rajaraman et al., 2024). Variations in implementation indicate a need for targeted support to ensure practical skill application. This could involve additional resources, mentoring, or coaching to help educators translate training into practice (Genlott & Grönlund, 2016). By addressing these variations and offering tailored support, the program can better cater to educators' diverse needs and enhance implementation consistency.

The study's limitation to early childhood educators raises questions about generalizability. Future research could replicate the study with a more diverse educator sample to assess the training model's transferability across contexts (Hunter et al., 2022b). Broadening the study's scope can enhance understanding of the model's impact on a broader range of educators. While the competency-based training model yielded positive outcomes, challenges related to participation, implementation variations, and sample specificity were identified. Addressing these challenges through targeted support, follow-up mechanisms, and broader sampling in future research can enhance the effectiveness and applicability of competency-based training programs in diverse educational settings.

CONCLUSION

The research concludes that competency-based training can significantly improve teaching skills by focusing on specific competencies critical to early childhood literacy. Such training ensures that teachers are well-prepared with the necessary skills and knowledge to foster literacy development effectively. The training model could lead to improved literacy outcomes among children, demonstrating that targeted teacher training directly benefits student learning outcomes. The findings might suggest that educational policymakers and curriculum developers should incorporate competency-based elements in teacher training programs to enhance literacy teaching skills. For educators, this research underscores the importance of continuous professional development and could encourage institutions to adopt more structured training programs based on competency models.

The research has limitations regarding the demographic and geographic scope. The results might not be generalizable to other contexts or educational systems if the study is conducted within a limited setting. While immediate improvements in teaching skills and student literacy might be observed, the long-term impact of these changes on overall educational outcomes could remain unclear without longitudinal studies. The effectiveness of the training model could vary significantly depending on how competencies are defined, assessed, and implemented, which might affect the consistency of the outcomes. Overall, the research provides valuable insights into improving literacy education through competency-based training while highlighting areas for further investigation and consideration in policy formulation. Future research should explore the long-term impacts of competency-based training on both teachers and students. Expanding the study to include a more diverse group of educators and educational settings can provide a broader understanding of the model's effectiveness. Additionally, integrating feedback mechanisms and continuous support for educators post-training can help address implementation challenges and sustain improvements in teaching practices.

REFERENCES

1. Almalki, S. (2016). Integrating Quantitative and Qualitative Data in Mixed Methods Research—Challenges and Benefits. *Journal of Education and Learning*, 5(3), 288. <https://doi.org/10.5539/jel.v5n3p288>
2. Ambiyar, Ganefri, Suryadimal, Jalinus, N., Efendi, R., & Jeprimansyah. (2020). Development of work based learning (WBL) learning model in heat transfer courses. *Journal of Physics: Conference Series*, 1481(1), 0–8. <https://doi.org/10.1088/1742-6596/1481/1/012113>
3. Armstrong, K., Cusumano, D. L., Todd, M., & Cohen, R. (2008). Literacy training for early childhood providers: Changes in knowledge, beliefs, and instructional practices. *Journal of Early Childhood Teacher Education*, 29(4), 297–308. <https://doi.org/10.1080/10901020802470085>
4. Asiamah, N., Mensah, H. K., & Oteng-Abayie, E. F. (2017). General, target, and accessible population: Demystifying the concepts for effective sampling. *Qualitative Report*, 22(6), 1607–1621. <https://doi.org/10.46743/2160-3715/2017.2674>
5. Cantrell, S. C., & Hughes, H. K. (2008). Teacher efficacy and content literacy implementation: An exploration of the effects of extended professional development with coaching. *Journal of Literacy Research*, 40(1), 95–127. <https://doi.org/10.1080/10862960802070442>
6. Chambers, B., Cheung, A. C. K., & Slavin, R. E. (2016). Literacy and language outcomes of comprehensive and developmental-constructivist approaches to early childhood education: A systematic review. *Educational Research Review*, 18, 88–111. <https://doi.org/10.1016/j.edurev.2016.03.003>
7. Chanthalangsy, P., Yeh, B.-I., Choi, S. J., & Park, Y. C. (2024). Program evaluation of postgraduate obstetrics and gynecology training in Lao people's democratic republic - using the CIPP model. *BMC Medical Education*, 24(1). <https://doi.org/10.1186/s12909-023-04942-6>
8. Cotten, S. R. (1999). Methodology and Research Techniques. *Contemporary Sociology*, 28(6), 752–753. https://doi.org/10.1007/978-3-319-25709-9_2
9. Frels, R. K., & Onwuegbuzie, A. J. (2013). Administering quantitative instruments with qualitative interviews: A mixed research approach. *Journal of Counseling and Development*, 91(2), 184–194. <https://doi.org/10.1002/j.1556-6676.2013.00085.x>
10. Genlott, A. A., & Grönlund, Å. (2016). Closing the gaps - Improving literacy and mathematics by ICT-enhanced collaboration. *Computers and Education*, 99, 68–80. <https://doi.org/10.1016/j.compedu.2016.04.004>
11. Girolametto, L., Weitzman, E., & Greenberg, J. (2012). Facilitating emergent literacy: Efficacy of a model that partners speech-language pathologists and educators. *American Journal of Speech-Language Pathology*, 21(1), 47–63. [https://doi.org/10.1044/1058-0360\(2011/11-0002\)](https://doi.org/10.1044/1058-0360(2011/11-0002))
12. Grant, N., & Bolin, B. (2016). Digital Storytelling: A Method for Engaging Students and Increasing Cultural Competency. *The Journal of Effective Teaching*, 16(3), 44–61.
13. Guetterman, T. C., & Fethers, M. D. (2018). Two Methodological Approaches to the Integration of Mixed Methods and Case Study Designs: A Systematic Review. *American Behavioral Scientist*, 62(7), 900–918. <https://doi.org/10.1177/0002764218772641>
14. He, K., & Bowman, Y. Z. (2021). Association between teachers' shared book reading strategies and children's vocabulary development in rural China preschools. *Journal of Chinese Writing Systems*, 5(3), 185–193. <https://doi.org/10.1177/25138502211025643>
15. Hewi, L., & Shaleh, M. (2020). Refleksi Hasil PISA (The Programme For International Student Assessment): Upaya Perbaikan Bertumpu Pada Pendidikan Anak Usia Dini. *Jurnal Golden Age*, 4(01), 30–41. <https://doi.org/10.29408/jga.v4i01.2018>
16. Holland, J. L., & Baird, L. L. (1968). An interpersonal competency scale. *Educational and Psychological Measurement*, 28(2), 503–510. <https://doi.org/10.1177/001316446802800236>

17. Huang, R., Wu, D., Kim, J., & Leung, B. T. H. (2020). Data and information literacy education: Methods, models, and challenges. *Proceedings of the ACM/IEEE Joint Conference on Digital Libraries*, 443–444. <https://doi.org/10.1145/3383583.3398546>
18. Hunter, L. J., Bayly, B. L., Bierman, K. L., Welsh, J. A., & Gest, J. M. (2022a). Predicting school readiness program implementation in community-based childcare centers. *Frontiers in Psychology*, 13(December), 1–15. <https://doi.org/10.3389/fpsyg.2022.1023505>
19. Hunter, L. J., Bayly, B. L., Bierman, K. L., Welsh, J. A., & Gest, J. M. (2022b). Predicting school readiness program implementation in community-based childcare centers. *Frontiers in Psychology*, 13. <https://doi.org/10.3389/fpsyg.2022.1023505>
20. Jebb, A. T., Ng, V., & Tay, L. (2021). A Review of Key Likert Scale Development Advances: 1995–2019. *Frontiers in Psychology*, 12(May), 1–14. <https://doi.org/10.3389/fpsyg.2021.637547>
21. Jebbour, M. (2021). Self-disclosure and Moroccan EFL learners' writing development: Effects on complexity, accuracy, and fluency. *Journal of Language and Education*, 1(1), 127–140. <https://doi.org/10.17323/jle.2021.8620>
22. Kistner, S., Rakoczy, K., Otto, B., & Klieme, E. (2015). Teaching learning strategies: The role of instructional context and teacher beliefs. *Journal for Educational Research Online*, 7(1), 176–197.
23. Lim, C., & Torr, J. (2007). Singaporean early childhood teachers' beliefs about literacy development in a multilingual context. *Asia-Pacific Journal of Teacher Education*, 35(4), 409–434. <https://doi.org/10.1080/13598660701611412>
24. Marinelli, A. H., Berlinski, S., Busso, M., & Martinez Correa, J. (2023). Improving early literacy through teacher professional development: Experimental evidence from Colombia. *Journal of Public Economics Plus*, 4(March 2022), 100019. <https://doi.org/10.1016/j.pubecp.2023.100019>
25. Matsumura, L. C., Garnier, H. E., & Spybrook, J. (2013). Literacy coaching to improve student reading achievement: A multi-level mediation model. *Learning and Instruction*, 25, 35–48. <https://doi.org/10.1016/j.learninstruc.2012.11.001>
26. Mitton-kükner, J., & Murray-orr, A. (2018). Pedagogies of pace: Temporal insights into Canadian pre-service teachers' pedagogical decision-making. *International Journal of Educational Research*, 90(February), 32–42. <https://doi.org/10.1016/j.ijer.2018.05.005>
27. Neuman, S. B., & Cunningham, L. (2009). The impact of professional development and coaching on early language and literacy instructional practices. *American Educational Research Journal*, 46(2), 532–566. <https://doi.org/10.3102/0002831208328088>
28. Park, J. (2015). Proposal for a Modified Dreyfus and Miller Model with simplified competency level descriptions for performing self-rated surveys. *Journal of Educational Evaluation for Health Professions*, 12, 54. <https://doi.org/10.3352/jeehp.2015.12.54>
29. Patall, E. A., & Zambrano, J. (2019). Facilitating Student Outcomes by Supporting Autonomy: Implications for Practice and Policy. *Policy Insights from the Behavioral and Brain Sciences*, 6(2), 115–122. <https://doi.org/10.1177/2372732219862572>
30. Patelis, N., Matheiken, S. J., & Beard, J. D. (2015). The challenges of developing distance learning for surgeons. *European Journal of Vascular and Endovascular Surgery*, 49(3), 237–238. <https://doi.org/10.1016/j.ejvs.2014.09.001>
31. Piasta, S. B., Park, S., Farley, K. S., Justice, L. M., & O'Connell, A. A. (2020). Early childhood educators' knowledge about language and literacy: Associations with practice and children's learning. *Dyslexia*, 26(2), 137–152. <https://doi.org/10.1002/dys.1612>
32. Rajaraman, G., Klein, R., & Sinnayah, P. (2024). ZOOMED IN, ZONED OUT: Academic Self-Reports on the Challenges and Benefits of Online Teaching in Higher Education. *Education Sciences*, 14(2). <https://doi.org/10.3390/educsci14020133>
33. Raymond-West, T., & Rangel, V. S. (2020). Teacher Preparation and Novice Teacher Self-Efficacy in Literacy Instruction. *Education and Urban Society*, 52(4), 534–560. <https://doi.org/10.1177/0013124519879425>
34. Ruppert, E. S. (2011). Population Objects: Interpassive Subjects. *Sociology*, 45(2), 1–16. <https://doi.org/10.1177/0038038510394027>
35. Schling, M., & Winters, P. (2018). Computer-Assisted Instruction for Child Development: Evidence from an Educational Programme in Rural Zambia. *Journal of Development Studies*, 54(7), 1121–1136. <https://doi.org/10.1080/00220388.2017.1366454>
36. Schooner, P., & Studies, W. (2017). Design, system, value: The role of problem-solving and critical thinking capabilities in technology education, as perceived by teachers. *Design, System, Value: The Role of Problem-Solving and Critical Thinking Capabilities in Technology Education, as Perceived by Teachers*, 22(3), 60–75.
37. Shanahan, T., Callison, K., Carriere, C., Duke, Nell, K., Pearson, P. D., Schatschneider, C., & Torgesen, J. (2010). Improving Reading Comprehension in Kindergarten Through 3rd Grad. In *What Works Clearinghouse Practice Guide*. U.S. Department of Education.

38. Swamy, G., Choudhury, S., Bagnell, J. A., & Wu, Z. S. (2022). Causal Imitation Learning under Temporally Correlated Noise. In C. K., J. S., S. L., S. C., N. G., & S. S. (Eds.), *Proceedings of Machine Learning Research* (Vol. 162, pp. 20877–20890). ML Research Press.
39. Tadeko, N., & Fitrasari, D. (2024). TPACK e-learning development for increasing pedagogical competence in science's teacher. In S. A., R. U., S. M., & R. K. (Eds.), *AIP Conference Proceedings* (Vol. 3058, Issue 1). American Institute of Physics. <https://doi.org/10.1063/5.0201247>
40. Varghese, C., Garwood, J. D., Bratsch-Hines, M., & Vernon-Feagans, L. (2016). Exploring magnitude of change in teacher efficacy and implications for students' literacy growth. *Teaching and Teacher Education*, 55, 228–239. <https://doi.org/10.1016/j.tate.2016.01.011>
41. Venketsamy, R., & Sibanda, S. (2021). Exploring strategies teachers use to develop literacy skills among english first additional language learners in the foundation phase. *Perspectives in Education*, 39(2), 253–266. <https://doi.org/10.18820/2519593X/pie.v39.i2.18>