

Competency Development of Early Childhood Teacher in the 21st Century

Saksri Suebsing¹, Nithinath Udomsan¹ & Supimol Bunphok¹

¹ Faculty of Education, Roi Et Rajabhat University, Thailand

Correspondence: Saksri Suebsing, Faculty of Education, Roi Et Rajabhat University, Thailand.

Received: May 11, 2023

Accepted: June 24, 2023

Online Published: September 25, 2023

doi:10.5539/ies.v16n5p73

URL: <https://doi.org/10.5539/ies.v16n5p73>

Abstract

The goal of this study is to help early childhood educators in the province of Roi Et develop their management skills for early childhood learning in the 21st century. Examples include the 100 early childhood Teachers in the province of Roi Et, research study materials like the Competency Manual on Learning Management and the 21st Century Early Childhood Competency, and tests. Mean and standard deviations are two statistics that were utilized to analyze the data. The findings indicated that early childhood teachers' competency development involves five areas: content, technology, knowledge creation, communication, and creativity. The results were obtained utilizing percentage and t-test statistically ready-made programs. Curriculum, learning experience management, media use, innovation and technology in 21st century learning management, and measurement make up the four areas of the 21st century early childhood teacher competency development in learning management.

Keywords: learning management in the 21 century, teacher competency, competency early childhood

1. Introduction

1.1 Introduce the Problem

The 21 century has seen a dramatic shift from globalization, with the international community building partnerships at all regional levels. To expand the power base and increase the bargaining power between each other. All social units are driven cultural fusion (Saavedra & Darleen, 2012). The teacher shifts to the role of director and helper, allowing the learner to seek and build knowledge himself (Panich, 2012; Gut, 2011; Rotherham & Willingham, 2009; Saavedra & Darleen, 2012; The North Central Regional Educational Laboratory and the Metiri Group, 2003). Define the skills needed in the 21st century based on the vision and mindset for 21-century learning. "Teach less-learn more" "3R" consists of 1) Reading, 2) Riting), 3) Rithmetics, and "7C" consists of 1) Critical Thinking and Problem Solving, 2) Creativity and Innovation, 3) Cross-Cultural Understanding, 4) Collaboration Teamwork and Leadership, 5) Communications, Information and Media Literacy), 6) Computing and ICT Literacy, and 7) Career and Learning Skills. Therefore, it is necessary to develop teachers to have competencies and characteristics in terms of behavior, knowledge, skills, and attitudes necessary for the successful performance of their duties as teachers (Klein et al., 2004) in line with the changes in education in the 21 century.

Early childhood teachers play a vital role in the development and promotion of children's learning. Teachers need to have knowledge and understanding in caring for and promoting early childhood development in order to prepare children before entering basic education. to intellectual development, including higher levels of academic achievement. Supervising Teacher Children who are directly involved in the preparation of early childhood should therefore be prepared and developed. Professions to provide knowledge and understanding Have experience and critical skills necessary to organize environments and activities. Learning appropriate to early childhood development From the preparation of a public hearing on vocational standard education, early childhood education of Suan Dusit Rajabhat University and the Guru Sabha Secretariat, it was found that early childhood teachers have standard problems. The early childhood teacher profession is at a large level. Lack of cognition and experience Lack of importance and understanding of the nature of children, lack of enthusiasm for self-improvement, and lack of training to have knowledge and understanding of new sciences (The Teachers' Council of Thailand, 2013).

Due to these issues, early childhood educators need to be trained in competences that will enable them to properly plan learning experiences and have the necessary knowledge and understanding of learning management. The

researcher is therefore interested in creating a procedure that will enable early childhood teachers at Roi Et Provincial School to learn, understand, and be able to practice in a way that is appropriate for early childhood development. Through the use of crucial abilities in learning exchange and conventional learning, this notion also helps teachers create their own sustainable learning. This will be a crucial tool that instructors can utilize to better themselves in the management of early childhood education and care next

1.2 Research Objectives

The development of early childhood teachers' competencies in organizing early childhood teaching activities in the 21st century in Roi Et Province. This research has the following objectives.

- 1) To study the competencies in learning management skills in the 21st century of early childhood teachers.
- 2) To study the approaches for the development of early childhood teachers' competency in learning management in the 21st century in order to prepare the competencies of early childhood teachers in learning management in the 21st century.
- 3) To develop the learning management competencies of early childhood teachers in learning management towards the 21st century.

1.3 The Study Attempts to Answer the Following Questions.

Questions:

- 1) At what level are the current conditions and guidelines for early childhood teacher competency development in terms of learning management?
- 2) At what level do early childhood teachers develop 21st century competencies and 21st century learning management skills?
- 3) Are early childhood teachers' competencies and skills in learning management in the 21st century different?

1.4 Literature Review

The components and indicators of desirable competencies of early childhood teachers consist of 3 main components: 1) Core Competency, 2) Non-core Competency, and 3) Management Competency. Core competency consists of 5 indicators: 1) Knowledge/expertise competency in early childhood education, which is in line with (Samutthai, 2013; Department of Local Administration, 2014; Boonpamee, 2013; Center for the Study of Child Care Employment, 2008; Derman-Sparks & Edwards, 2010; Head Start and Early Head Start, 2010; Agbenyega, 2012; National Association for the Education of Young Children, 2011; Sims, 2010; Lee & Recchia, 2016). That explains that core competencies in knowledge/expertise in the field of early childhood education are important indicators of teacher competency. This is because early childhood teachers must be proficient and precise in the body of knowledge of the field of early childhood education taught. To further develop expertise in the field of early childhood education. Department of Local Administration (2014; Australian Curriculum Assessment and Reporting Authority, 2011; Claro et al., 2012; European Commission, 2013; Pantic & Wubbels, 2010; Silva, 2008) which hold that it is an important competency for the development of early childhood education. 3) Research and development competencies in line with the Office of the Civil Service Commission (2012); Department of Local Administration, 2014; Center for the Study of Child Care Employment, 2008; Kronborg & Plunkett, 2012; Sims, 2010) Since research is the primary function of early childhood teachers, in addition to teaching work according to the Education Act, research results can also be used to improve teaching and learning management and develop learners at the early childhood level–national/international. (Danby et al., 2011; Guralnick, 2010; Agbenyega, 2012; National Association for the Education of Young Children, 2011; New York State Center-Based and Family Child Care Center, 2010; Partnership for 21st Century Skills, 2009). Since the primary function of teachers is to develop learners, the Early Childhood Teacher is responsible for the development of early childhood in all four aspects: physical development; Intellectual development and 5) self-development competencies in line with the education of the Ministry of Education (2010), Intawong (2010), Center for the Study of Child Care Employment (2008), Hyson et al. (2008), Lee and Recchia (2016), and Yüksel (2014). In particular the development of research knowledge in the field of early childhood education from attending academic conferences related to early childhood education or from research studies both domestically and internationally. Research in the field of early childhood education to be up-to-date in order to be used in the management of quality early childhood education.

Teacher competency development can take many forms according to the individual's beliefs in the organization based on philosophy. Which theory? It also depends on the nature of the educational institution, such as a private school. Sponsored or government-owned, small in size, medium or large located in the city. In municipalities in rural areas or on highlands, and includes culture. The politics of each act are important. All of these conditions

have an impact on teacher competency development patterns (Thaisomboon, 2019). The 8 competencies of early childhood teachers in the 21st century are summarized as follows: 1) Content competency, 2) Computer technology competency, 3) Knowledge Creation Competency, 4) Linkage Competency, 5) Collaboration Competency, 6) Communication Competency, 7) Creativity Competency, and 8) Care Competency. (Meesomsan, 2017) According to a study on early childhood teachers' learning management skills in the twenty-first century, there are four components to both realistic and expected learning management skills in this age group: Curriculum comes first, followed by learning experience management, media use innovation and technology, measurement, and assessment. (Pongpanich, 2019) The investigation of the competency development model for early childhood teachers who speak Thai as a second language in managing teaching and learning it was discovered that Thai-speaking early childhood instructors have strong teaching and learning management skills. This is in line with the idea of professional learning communities. There are 4 components: 1) Characteristics of Early Childhood Teachers, 2) Learning Management Design, 3) Experience Management, and 4) the measurement and evaluation of early childhood development.

The research team synthesized the research and can see that the research on the development of early childhood teacher competencies in the 21st century consists of 5 aspects: 1) Content 2) Technology utilization 3) Knowledge creation 4) Communication and 5) Creativity. As for the competencies in learning management of early childhood teachers in the 21st century, it consists of 4 aspects: curriculum, experience management, media use Innovation and Technology in Learning Management measurement and evaluation The competencies in learning management skills of early childhood teachers consisted of 1) Curriculum 2) Learning Management Design 3) Learning Experience Management 4) Measurement and Evaluation (Meesomsan, 2017; Thaisomboon, 2019; Pongpanich, 2019).

2. Method

2.1 Scope of the Research

Subject research the development of early childhood teachers' competencies in organizing early childhood teaching activities in the 21st century was conducted using Researcher and Development (R & D). Researchers have defined research methods as shown in Table 1.

Table 1. Research methodologies used to present information on early childhood teacher competency development in learning management skills in the 21st century

Step	Method	Instrument	Resource	Result	
1. conceptual framework	-Study concepts, theory and research -Analyze knowledge documents Concepts of Early Childhood Teacher Competencies in the 21st Century -synthesize data and compile it into a conceptual framework	-Document analysis on early childhood teacher competencies -synthesize early childhood teacher competency data	-Documents and curriculum for early childhood education -Research related to early childhood teacher competency	-Concept Framework	Research
2. Study the competencies of early childhood teachers in the 21st century.	Quantitative -To study the needs and guidelines for the development of early childhood teacher competency in the 20th century. 21 The data were analyzed using a questionnaire and summarized the data by using basic statistics. Qualitative -Interview and brainstorm opinions of administrators and early childhood teachers.	-Quality Questionnaire -Interview and brainstorming forms	-A sample of 400 early childhood teachers and administrators -Key informants, administrators, early childhood teachers	-Data on early childhood teacher competencies in the 21st century and learning management of early childhood teachers.	

3. Development of competency of early childhood teachers	<p>-Drafting a manual for organizing activities to develop early childhood teachers' competency for learning management in the 21st century.</p> <p>-Check the suitability and feasibility of event guides and experience plans by qualified experts.</p> <p>-Put the manual into practice with early childhood teachers</p> <p>-Organizing workshops</p> <p>-Organization of learning activities in educational institutions</p>	<p>-Handbook for organizing early childhood teacher competency development activities for learning management in the 21st century</p>	<p>-Information from step 1 and Step 2</p>	<p>-The results of early childhood teacher competency development in learning management in the 21st century by using the activity management manual.</p> <p>-A manual for organizing activities for early childhood teacher competency development in learning management in the 21st century.</p>
4. Evaluation of early childhood teacher competency development in learning management in the 21st century	<p>-Evaluate the manual for early childhood teacher competency development in learning management in the 21st century.</p> <p>-Improve/represent competencies of early childhood teachers in learning management in the 21st century.</p>	<p>-A manual for organizing activities for early childhood teacher competency development in learning management in the 21st century.</p> <p>-Teacher competency test for learning management in the 21st century</p>	<p>-Expert review tools</p> <p>-21st Century Early Childhood Learning Management Specialist</p>	<p>-Development of early childhood teachers' competencies in learning management in the 21st century</p>

2.2 Population and Sample of Research

Population: early childhood teachers under the Office of Roi Et Primary Educational Service Area, Regions 1-3, Academic Year 2022, totaling 2,491 people (Source: Roi Et Provincial Office of Education. on March 31, 2022)

The sample group consisted of early childhood teachers. under the Office of Roi Et Primary Educational Service Area, Area 1-3, Academic Year 2022, Step 1 derived from a simple random sampling method 400 early childhood Teachers obtained by drawing lots for each school under the Office. Primary education area in Roi Et Province consists of Roi Et Province, 50 schools, 8 early childhood Teachers per school. Step 2 from a simple random sampling method 100 peoples obtained by drawing lots for each school under the Office. Primary education area in Roi Et Province consists of Roi Et Province, 20 schools, 5 early childhood Teachers per school.

2.3 Data Collection and Statistics

The data collection was carried out between January 6, 2022 and August 31, 2022. Semester 1 Academic Year 2022 with pre- and post-secondary testing of early childhood competency development and early childhood competency development. In the field of learning management in the 21st Century. Statistics used to analyze data include mean (\bar{X}) standard deviation (S.D.) and t-test

3. Results

3.1 Early Childhood Teacher Competency Development in the 21st Century in Learning Management

The Early Childhood Teacher Competency Development in the 21st Century in Learning Management consists of 3 phases as follows: A study of opinions on the competencies of early childhood teachers in learning management. The 21st survey collected data from 400 administrators and early childhood teachers, mostly early childhood teachers (85.00%), administrators (15%), early childhood teacher competencies in the 21st century, and early childhood teacher competencies in learning management in the 21st century.

Table 2. Feedback on early childhood teacher competencies in the 21st century

Early Childhood Teacher Competencies	\bar{X}	S.D.	Opinion Level
1. Content aspects	4.55	0.38	most
2. Technology	4.62	0.32	most
3. Knowledge creation	4.56	0.36	most
4. Communication	4.59	0.24	most
5. Creativity	4.63	0.27	most

Table 3. Comments on early childhood teacher competencies in learning management in the 21st century

Early Childhood Teacher Competencies in Learning Management	\bar{X}	S.D.	Opinion Level
1. Curriculum	4.62	0.40	most
2. Organizing learning experiences	4.67	0.42	most
3. Use of media, innovation and technology in learning management	4.63	0.55	most
4. Measurement and evaluation	4.50	0.50	very

3.2 Competency Development of Early Childhood Teachers in the 21st Century

The results showed that the competency development of early childhood teachers in the 21st century, which consists of 5 aspects: content, technology use, knowledge creation, communication, and creativity, overall was at a good level, and there was a statistically significant difference of 0.05 among early childhood teachers in Roi Et province, with the average score after the competency development of early childhood teachers in the 21st century higher than the average score before the development of competencies of early childhood teachers in the 21st century.

Table 4. Compares the development of early childhood competencies in the 21st centuries

Assessments	Number of teachers	\bar{X}	S.D.	t
Before Class	100	8.89	0.85	108.491*
After school	100	18.18	0.61	

* $p < 0.05$.

Table 1 shows the findings comparison of the performance development of elementary teachers over the past two centuries. The average score following early childhood performance development in the 21st century was greater than the average score before to the development of early childhood performance in the 21st century, resulting in a statistically significant difference of 0.05.

Table 5. Compares the development of early childhood competencies in the 21st century

Activities	Assessments	Number of Teachers (people)	\bar{X}	S.D.	t
1. Content performance	Before class	100	2.71	0.59	25.040*
	After school	100	4.61	0.49	
2. Technology performance	Before class	100	2.73	0.51	33.905*
	After school	100	4.77	0.42	
3. Cognitive-building competencies	Before class	100	2.70	0.52	31.882*
	After school	100	4.86	0.35	
4. Communication competence	Before class	100	2.55	0.56	25.313*
	After school	100	4.50	0.50	
5. Creative competence	Before class	100	2.69	0.58	25.177*
	After school	100	4.58	0.50	

* $p < 0.05$.

It was discovered that the findings contrasted the performance growth of elementary teachers in each location in the twenty-first century. The average score following early childhood performance development in the 21st century was greater than the average score before to the development of early childhood performance in the 21st century, resulting in a statistically significant difference of 0.05.

3.3 The Development of Early Childhood Learning Management Skills in the 21st Century.

The results showed that the development of learning management skills in the 21st century consisted of four areas: curriculum, learning experience management, media use, innovation and technology in learning management, and measurement and evaluation.

Table 6. Compares the development of learning management skills in the 21st century of early childhood teachers

Assessments	Number of teachers (people)	\bar{X}	S.D.	t
Before Class	100	4.43	0.50	48.796*
After school	100	4.79	0.60	

* $p < 0.05$.

The average score after developing learning management skills in the 21st century was higher than the average score prior to developing learning management skills in the 21st century, according to the results of comparing the development of learning management skills in the 21st century at Roi Et Primary School, which were statistically significantly different at 0.05.

Table 7. Compares before and after the development of early childhood competencies in learning management in the 21st century

Early Childhood competencies Learning Management	Assessments	Number of Teachers (people)	\bar{X}	S.D.	t
1. Curriculum	Before class	100	2.73	0.51	33.647*
	After school	100	4.78	0.42	
2. Experience management learning	Before class	100	2.89	0.45	25.740*
	After school	100	4.63	0.49	
3. Use of media, innovation and technology in learning management	Before class	100	3.01	0.41	29.471*
	After school	100	4.78	0.49	
4. Measurement aspects and evaluation	Before class	100	2.76	0.49	32.015*
	After school	100	4.85	0.36	

* $p < 0.05$.

Table 7 shows the comparison's findings between organizing performance before and after development. After the development of organizational performance, the average score showed a statistically significant difference at 0.05. Before the 21st century's early childhood saw the emergence of learning management competencies, learning in that era was more advanced than the average score.

4. Discussion

Early Childhood Competency Development in the 21st century in which the development of early childhood competencies consists of 5 aspects: content, technology, knowledge creation, communication and creativity. There was a statistically significant difference of 0.05, with the average score after the development of early childhood performance in the 21st century higher than the average score before the development of early childhood performance in the 21st century. This is especially true in all aspects to suit the development of learning management in the 21st century and to promote modernization and keeping pace with current technological changes. In addition, the development of learning management skills in the 21st century consists of four areas: curriculum, learning experience management, media use, innovation and technology in learning management, and measurement and evaluation. In the 21st century, there was a statistically significant difference of 0.05, each of which was considered an important component that contributed to the effective management of learning that encouraged the development of skilled children in the 21st century.

The development of early childhood competencies in the 21st century which has developed the competencies of early childhood teachers in five areas: content, technology, knowledge creation, communication, and creativity. Important competencies for early childhood teachers, especially in terms of content, are considered important and essential for teachers to have the knowledge to organize experiences for children. Technology is changing in the world, and early childhood teachers need to use technology to manage learning so that children can learn on their own so that they can build knowledge. Be successful in communicating and being creative. A crucial feature for teachers is thought to be the caliber of their knowledge, abilities, and actions. To fulfill their responsibilities as educators at the school, teachers must make use of this. The crucial part that educators believe teachers play in the development of human resources in the educational process (Muijs et al., 2014; Sidik, 2016; Balitbang Kemendikbud, 2017). Undergraduate early childhood education students it features advanced viewpoints on environmentally friendly electronic capabilities. In terms of economic potential and digital sustainability, this is

particularly true. However, given the slight difference, it may be inferred that pedagogical arguments in favor of future teachers acquiring these skills are required. Early childhood educators are expected to have a higher level of digital proficiency in the future, though. On the other hand, and in terms of the capacity of Estrada-Vidal et al (Estrada-Vidal et al., 2020) can be maintained. Additionally, elements related to the development of technological knowledge and abilities are produced. Early childhood education can benefit from the advanced services that teachers can offer in this area. This is thought to be directly tied to how people feel about and perceive the process (Zilka, 2021).

However, early childhood teachers are still desperately needed to develop their own competencies. This is especially true in all aspects to suit the development of learning management in the 21st century and to promote modernization and keeping pace with the changes in today's technology. Designing training exercises is therefore a crucial tactic, particularly those with ICT and reflective elements. Partnership and the enthusiastic method (Albareda-Tiana et al., 2019; Lozano et al., 2021). In spite of the fact that preschool education has the ability to meet children's needs throughout their early development, many nations, including Indonesia, have neglected to stress the urgency of this stage of education. They will develop into adults as a result, and it will get them ready for college. The quality and success of young children's preschool education can be significantly influenced by teachers (Alkan, 2005). The effectiveness of teaching and learning is also facilitated and improved by teacher competence (Romstein & Stakovic, 2017). By explicitly defining ICT, instructors should use it as part of their ongoing professional development. to improve the standard of the learning environments. However, due to limited resources, such as a lack of teacher preparation, the usage of ICT by early childhood educators is still very low (Sultana & Shahabul Haque, 2018). Furthermore, it cannot simulate reality in the classroom in a separate curriculum for teaching technology. As a result, the curriculum needs to cover practice-based learning management. Additionally, it suggests expanding teachers' opportunities for instruction and hands-on practice in order to better prepare them for this type of service (Howard et al., 2021)

The development of learning management skills in the 21st century of early childhood consists of four areas: curriculum, learning experience management, media use, innovation and technology in learning management, and measurement and evaluation. Each competency is considered an important component that contributes to the effective management of learning that promotes the development of 21st century skills. Have the skills to think, be aware of changes, be able to work with others, and be a good citizen of society. Learning experience capabilities enable early childhood teachers to design learning activities. Innovative learning for children is developed and experiences can be aligned according to the objectives set out in the curriculum. Performance in the use of media, innovation and technology in organizing. The learning experience will allow teachers to develop and choose teaching materials. Learning innovations and technologies used in learning management to provide children with effective 21st century skills and measurement and evaluation competencies. It enables early childhood teachers to effectively select tools to measure and assess children's development and skills in the 21st century and to use the results of such assessments to improve and correct learning management. Learning management competencies are critical to the further development of learning management for early childhood teachers. It is believed that having a thorough understanding of the curriculum will enable teachers to deliver education that is both appropriate and appropriate for the situation. Additionally, the learning management system is suitable for meeting the demands of both teachers and students (Druzhinina et al., 2018). However, it makes it easier for instructors to carry out their academic and professional responsibilities. The specialization of that skill will show how well the teacher can design the curriculum as a lesson. meaningful learning based on classroom management and effective learning principles (Gallego & Caingcoy, 2020). To improve their ability for teaching and learning, teachers, according to Amalia and Saraswati (2018), should constantly improve their classroom management techniques. This is due to the fact that the effectiveness of the teaching process is also influenced by the teacher's proficiency (Zamri & Hamzah, 2019). According to the logical procedures employed in the pedagogical technology curriculum in teacher education initiatives, this is the rationale. To lead a significant digital revolution that will help future teachers be more prepared (Taibe & Mehmet, 2022). Overall, training can be viewed as a crucial component in strengthening teachers' digital competence before they enter the field of modern education (Romero-Tena et al., 2020). Therefore, it is a practice to research educational technology. Before the service, it can present teachers with more opportunities. to comprehend the nature of subject-matter expertise. Technology-based education As a result, several of the disclosures including teaching/learning techniques to lessen the integration of initiation issues with learning management systems inside a curriculum created with a hands-on learning management approach—are seen as crucial for further study. The process of preparing teachers for the digital age is intricate and varied. A detailed research is necessary because of this (Howard et al., 2021) Additionally, according to Battelle (2019), the 21st century talents are those that students will need in order to excel in the modern workplace, including adaptability, effective communication, and critical thinking abilities. It also assists in transferring the knowledge

and abilities required for future students and workers to succeed in the modern economy.

References

- Agbenyega, J. S. (2012). How we view our theoretical competency: Early childhood pre-service teachers' self-evaluation of a professional placement experience. *Australasian Journal of Early Childhood*, 37(2), 141-147. <https://doi.org/10.1177/183693911203700219>
- Alan, Ü. (2021). Distance education during the COVID-19 pandemic in Turkey: Identifying the needs of early childhood educators. *Early Childhood Education Journal*, 49, 987-994. <https://doi.org/10.1007/s10643-021-01197-y>
- Albareda-Tiana, S., García-González, E., Jiménez-Fontana, R., & Solís-Espallargas, C. (2019). Implementing pedagogical approaches for ESD in initial teacher training at Spanish universities. *Sustainability*, 11, 4927. <https://doi.org/10.3390/su11184927>
- Alkan, C. (2005). Educational psychology. Ani Publisher.
- Amalia, & Saraswati. (2018). The Impact of Competencies Toward Teacher's Performance Moderated By the Certification in Indonesia. *The 2018 International Conference of Organizational Innovation*. <https://doi.org/10.18502/kss.v3i10.3363>
- Australian Curriculum Assessment and Reporting Authority. (2011). *Australian curriculum*. Canberra: ACARA.
- Balitbang Kemendikbud. (2017). *Model pendidikan anak usia dini satu tahun sebelum sekolah dasar: Kajian PAUD nonformal dan informal dan pendidikan masyarakat* [One year early childhood education model before elementary school. Non-formal and informal ECE studies and community education]. Research Center for Educational and Cultural Policy/Pusat Penelitian Kebijakan Pendidikan dan Kebudayaan.
- Battelle for Kids. (2019). *Partnership for 21st century learning*. Retrieved from <http://www.battelleforkids.org/networks/p21>
- Boonpamee, A. (2013). *Competency development for early childhood teacher and performance on educational standard of child development center under Subdistrict Administrative Organization in Ratchaburi* (Master thesis). Bangkok: Silpakorn University.
- Center for the Study of Child Care Employment. (2008). *Early childhood educator competencies: A literature review of current best practices, and a public input process on next steps for California*. Berkeley: University of California.
- Claro, M., Preiss, D., San Martin, E., Jara, I., Hinostroza, J. E., Valenzuela, S., Cortes, F., & Nussbaum, M. (2012). Assessment of 21st century ICT skills in Chile: Test design and results from high school level students. *Computers and Education*, 59(3), 1042-1053. <https://doi.org/10.1016/j.compedu.2012.04.004>
- Danby, S., Ewing, L., & Thorpe, K. (2011). The novice researcher: interviewing young children. *Qualitative Inquiry*, 17(1), 74-84. <https://doi.org/10.1177/1077800410389754>
- Department of Local Administration. (2014). *Standard and evaluation report of early childhood development center, Local Administrative Organization*. Bangkok: Department of Local Administration.
- Derman-Sparks, L., & Edwards, J. O. (2010). *Anti-Bias education for young children and ourselves*. Washington, DC: The National Association of Education of Young Children.
- Dorfman, P. W., Hanges, P. J., & Brodbeck, F. (2004). Leadership and cultural variation: The identification of culturally endorsed leadership profiles. In R. J. House, P. J. Hanges, M. Javidan, P. W. Dorfman, & V. Gupta (Eds.), *Culture, leadership, and organizations: The GLOBE study of 62 societies* (pp. 669-719). Thousand Oaks, CA: Sage.
- Druzhinina, M., Belkova, N., Donchenko, E., Liu, F., & Morozova, O. (2018). Curriculum design in professional education: Theory and practice. *SHS Web of Conferences*, 50, 1-6. <https://doi.org/10.1051/shsconf/20185001046>
- Estrada-Vidal, L. I., Olmos-Gómez, M. C., López-Cordero, R., & Ruiz-Garzón, F. (2020). The differences across future teachers regarding attitudes on social responsibility for sustainable development. *Int. J. Environ. Res. Public Health*, 17, 5323. <https://doi.org/10.3390/ijerph17155323>
- European Commission. (2013). *Supporting teacher competence development*. Retrieved from http://ec.europa.eu/education/policy/school/doc/teachercomp_en.pdf
- Gallego, P. L., & Caingcoy, M. E. (2020). Competencies and professional development needs of kindergarten

- teachers. *International Journal on Integrated Education*, 3(7), 69-81. <https://doi.org/10.31149/ijie.v3i7.491>
- Guralnick, M. J. (2010). Early intervention approaches to enhance the peer-related social competence of young children with developmental delays: A historical perspective. *Infants & Young Children*, 23, 73-83. <https://doi.org/10.1097/IYC.0b013e3181d22e14>
- Gut, D. M. (2011). Integrating 21st century skills into the curriculum. In G. Wan, & D. Gut (Eds.), *Bringing Schools into the 21st Century*, 13, 137-157. Dordrecht: Springer. https://doi.org/10.1007/978-94-007-0268-4_7
- Head Start and Early Head Start. (2010). *Education and early childhood development*.
- Howard, S. K., Tondeur, J., Ma, J., & Yang, J. (2021). What to teach? Strategies for developing digital competency in preservice teacher training. *Computers & Education*, 165, 04149. <https://doi.org/10.1016/j.compedu.2021.104149>
- Hyson, M., Tomlison, H. B., & Morris, C. A. S. (2008). Does quality of early childhood teacher preparation moderate the relationship between teacher education and children's outcomes?. Paper presented at *Annual Meeting of American Education Research Association, New York, NY*.
- Intawong, B. (2010). *Factors affecting the functional competency of teachers affiliated with Phetchabun Primary Educational Service Area Office 2 (Independent study)*. Phitsanulok: Naresuan University.
- Klein, J. D., Spector, J. M., Grabowski, B., & De laTeja, I. (2004). *Instructor competencies: Standards for face-to-face, online, and blended settings*. Greenwich, CT: Information Age Publishing.
- Kronborg, L. G., & Plunkett, M. M. (2012). Examining teacher attitudes and perceptions of teacher Competencies required in a new selective high school. *Australasian Journal of Gifted Education*, 21(2), 33-46.
- Lee, Y., & Recchia, S. L. (2016). Zooming in and out: Exploring teacher competencies in inclusive early childhood classrooms. *Journal of Research in Childhood Education*, 30(1), 1-14. <https://doi.org/10.1080/02568543.2015.1105330>
- Lozano, A.; Figueredo, V. (2021). Los Objetivos de Desarrollo Sostenible en la formación de los futuros maestros: Uso de metodologías activas. *Campo Abierto*, 40, 245-257.
- McClelland, D. (1973). Research into achievement motivation. *American Psychologists*, 17(7), 57-83.
- Meesomsarn K. (2017). Guidelines for Learning Management Competency Development of Early Childhood Education Teachers in the 21st Century. *Valaya Alongkorn Review (Humanities and Social Science)*, 7(2).
- Ministry of Education. (2010). *National Education Act B.E. 1999, Amendments (Second National Act B.E. 2002) and Amendments (Third National Act B.E. 2010)*. Bangkok: The Agricultural Cooperative Federation of Thailand.
- Muijs, D., Kyriakides, L., van der Werf, G., Creemers, B., Timperley, H., & Earl, L. (2014). State of the art-Teacher effectiveness and professional learning. *School Effectiveness and School Improvement*, 25(2), 231-256. <https://doi.org/10.1080/09243453.2014.885451>
- National Association for the Education of Young Children. (2011). *NAEYC standards for Initial & advanced early childhood professional preparation programs for use by Associate, Baccalaureate and Graduate Degree Programs*. Retrieved from http://www.naeyc.org/Files/ecada/file/NAEYC%20Initial%20and%20Advanced%20Standards%206_2011-final.pdf
- New York State Center-Based and Family Child Care Center. (2010). *Education and early childhood development*.
- Office of Early Childhood Development Virginia Department of Social Services. (2008). *Competencies for early childhood professionals virginia's early childhood development alignment project*. Virginia: Office of Early Childhood Development Virginia Department of Social Services.
- Office of the Civil Service Commission. (2012). *Competency system development*. Retrieved from http://www.ocsc.go.th/ocsc/th/index.php?option=com_content&view=section&id=68&Itemid=310
- Panich, V. (2012). *Way of learning for students in the 21st century* (3rd ed.). Bangkok: Sodsri-Saritwong Foundation.
- Pantic, N., & Wubbels, T. (2010). Teacher Competencies as a Basis for Teacher Education—Views of Serbian Teachers and Teacher Educators. *Teaching and Teacher Education*, 26, 694-703.

<https://doi.org/10.1080/09243453.2014.885451>

- Partnership for 21st Century Skills. (2009). *21st Century skills*. Retrieved from http://www.21stcenturyskills.org/index.php?option=com_content&task=view&id=254&Itemid=120
- Pongpanich K. (2019). A Competency Development Model for Instructional Management of Teachers Who Teach Kindergarteners by Using Thai as a Second Language Based on Teaching Professional Learning Community Concepts. *Academic journal Faculty of Humanities and Social Sciences Nakhon Sawan Rajabhat University*, 6(1).
- 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>
- Romstein, K., & Stakovic, L., (2017). Value system, implicit pedagogy, and competencies of a contemporary preschool teacher. *Preliminary Communication*, 1(2), 32-43
- Rotherham, A. J., & Willingham, D. (2009). 21st century skills: The challenges ahead. *Educational Leadership*, 67(1), 16-21.
- Saavedra, A. R., & Darleen Opfer, V. (2012). Learning 21st century skills requires 21st century teaching. *Phi Delta Kappan*, 94(2), 8-13. <https://doi.org/10.1177/003172171209400203>
- Samutthai, R. (2013). The pilot study development of teachers curriculum for 21st century. In the *15th National symposium on Education Research* (pp. 130-139). Bangkok: Centara Hotels & Resorts.
- Sidik, F. (2016). Guru berkualitas untuk sumber daya manusia berkualitas [Quality teachers for quality human resources]. *Journal of Educational Islamic Management/Jurnal Manajemen Pendidikan Islam*, 4(2), 109-114.
- Silva, E. (2008). *Online discussion of measuring skills for the 21st century*. Retrieved from http://www.educationsector.org/discussions/discussions_show.htm?discussion_id=716323
- Sims, M. (2010). What does being an early childhood ‘teacher’ mean in tomorrow’s world of children and family services?. *Australasian Journal of Early Childhood*, 35(3), 111-114. <https://doi.org/10.1177/183693911003500314>
- Sultana, M., & Shahabul Haque, M. (2018). The Cause of Low Implementation of ICT in Education Sector Considering Higher Education: A Study on Bangladesh. *Canadian Social Science*, 14(12), 67-73. <https://doi.org/10.3968/10804>
- Taibe, K., & Mehmet, T., (2022), Development of pre service early childhood teachers’ technology integrations skills through a praxeological approach. *Kulaksız and Toran Int J Educ Technol High Educ*, 19(36). <https://doi.org/10.1186/s41239-022-00344-8>
- Thaisomboon, N. (2019). *Development of Teaching Competency Indicators of Early Childhood Teachers in the 21st Century in Schools in Five Southern Border Provinces*. Doctor of Philosophy degree Education Administration Faculty of Education Burapha University.
- The North Central Regional Educational Laboratory and the Metiri Group. (2003). *21st century skills for 21st century learners*. Naperville, Illinois.
- The Teachers’ Council of Thailand. (2013). *Educational professional standard*. Bangkok: Khurusapa Publisher.
- Yüksel, H. G. (2014). Teachers of the future: Perceived teaching competences and visions of pre-service English language teachers. *International Journal of Human Sciences*, 11(2), 27-39. <https://doi.org/10.14687/ijhs.v11i2.2920>
- Zamri, N. B. M., & Hamzah, M. I. B. (2019). Teachers’ competence in implementation of classroom assessment in learning. *Creative Education*, 10(20), 2939-2946. <https://doi.org/10.4236/ce.2019.1012218>
- Zilka, G. C. (2021). Attitudes of preservice kindergarten teachers toward the integration of computers and the reduction of the digital divide in kindergartens. *Educational Technology Research and Development*, 69(2), 711-731. <https://doi.org/10.1007/s11423-021-09982>

Acknowledgments

This article is based on research on Development of early childhood teacher competency in organizing early childhood teaching activities in the 21st century, which is the development of early childhood teachers in Roi Et Province. Received funding for research from the state budget Science Research and Innovation Promotion Fund Fiscal Year 2022, Faculty of Education, Roi Et Rajabhat University.

Authors contributions

Associate Professor Dr. Saksri Suebsing compiled, compiled and analyzed the data. and report research results Assistant Professor Nithinat Udomsan is the coordinator and data checker. and Assistant Professor Supimon Bunphok is the data collector and synthesiser.

Funding

This research was funded by the Office of the Research Promotion Commission (NRCT) and Roi Et Rajabhat University. Year 2022

Competing interests

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

Informed consent

Obtained.

Ethics approval

The Publication Ethics Committee of the Canadian Center of Science and Education.

The journal's policies adhere to the Core Practices established by the Committee on Publication Ethics (COPE).

Provenance and peer review

Not commissioned; externally double-blind peer reviewed.

Data availability statement

The data that support the findings of this study are available on request from the corresponding author. The data are not publicly available due to privacy or ethical restrictions.

Data sharing statement

No additional data are available.

Open access

This is an open-access article distributed under the terms and conditions of the Creative Commons Attribution license (<http://creativecommons.org/licenses/by/4.0/>).

Copyrights

Copyright for this article is retained by the author(s), with first publication rights granted to the journal.