



Guidelines for reforming early childhood teacher production and development systems by applying competencies effecting the early childhood - Based conceptual innovation development

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Abstract

This study aimed to produce guidelines for improving the teaching and concept development of pre-elementary school children. The reformation of the teaching system was approached from two perspectives. First, to study the competency of the teachers by observing behavioral indicators that affect concept development in early childhood. Second, to design an early childhood teacher production and development system that would advance the early childhood teacher's competencies for 2-years postgraduate teacher. This design approach to transforming early childhood teaching methods looked at regulating the qualifications and admission criteria of trainee teachers and determining the course structure and curriculum of the teacher training programmes. Fifty-two participants were divided into 2 groups. The first group consisted of 40 subjects using the appropriate competencies questionnaire, and the second group consisted of 12 subjects collected by the public hearing record form. The research instruments consisted of a questionnaire and a public hearing record form. Statistical analysis included frequency distribution, percentage, and content analysis. The results showed 17 appropriate behavioral indicators of competency should be applied to the design guidelines for regulating qualifications and admission criteria for early childhood teacher training institutions. Moreover, 90 behavioral indicators should be applied to the design of the teacher training course structure, and 77 behavioral indicators should be applied to the design of the curriculum for developing teacher competencies. When the design results were taken for public hearings, it was found that all three design had the required standards of accuracy and comprehensiveness, and were appropriate for implementation in the classroom.

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Introduction

Analysis of the Early Childhood Development Act B.C. 2019 in Category 1, General Provision, Section 5 (3), (4), and (6), the goals of early childhood development and guidelines for driving the quality of early childhood education management, showed that the act emphasized that early childhood children must have good development of all aspects, basic skills in lifelong learning, utilize each individual potential and essential needs as the base of learning management, behave well, think creatively and absorb various aesthetics and cultural diversity, have an opportunity to cultivate the attitude for respect in other people's values, live in society equally, and have a conscious mind of being both a Thai citizen and a global citizen. In addition, the Office of the Higher Education Commission, on behalf of the teacher producer, has a policy to supervise teacher production and development of the teaching system, that must follow the bachelor's qualification standards of the Department of Education (4-year curriculum) B.C. 2019, which has specified the standard of learning outcomes in Thai Qualification Framework (TQF) 1, that aims at the higher education institutions to provide instructional design to enhance the spirit of being a teacher, morality, ethics, knowledge, skills and ability to manage teaching and learning for caring and developing early childhood children according to the principles and philosophy of early childhood development. Most importantly, the spirit of being a teacher and taking care of children according to the principles of early childhood should also be emphasized.

The overall analysis of educational management and production of early childhood teachers in successful countries such as Singapore, Hong Kong, the Philippines, New Zealand, Finland, Sweden and Israel found that all countries had minimum qualification requirement. In determining the academic criteria, teachers must hold a bachelor's degree in education or a teaching certificate at the early childhood level. Most teachers are qualified as having a high level of language proficiency on an internationally standardized exam. Early childhood teachers are required to have knowledge in curriculum science and instructional design, and in some countries like the Philippines, New Zealand and Israel, it is required that early childhood teachers have knowledge of the physical and intellectual development of human beings.

Thailand has established the Equitable Education Fund (EEF). In accordance with the Education Equality Fund Act B.C. 2018, such aims to help the needy, reduce educational disparities and promote the development of

quality and efficiency of teachers. Section 5(6) stipulates research with researching guidelines for teacher development to create a model for producing and developing teachers. In addition, the Early Childhood Development Act B.C. 2019 Section 23, specifies guidelines for producing early childhood teachers with the aim of ensuring that early childhood teachers are moral, ethical, knowledgeable, skilled and capable of caring for early childhood children to grow up with quality, and to be able to respond to the needs and necessities of learners.

The government has adjusted the direction of the country's reform with the aim of transforming people to be Smart Citizens with awareness, readiness to cope with global changes, and social and national responsibilities. Therefore, it is necessary to adjust the educational management model in Thailand. The transformation initiates from centralization to decentralization of responsibility and creates awareness that education is for everyone and allows the local people to participate in the education of their children.

Furthermore, the Thailand Education Partnership with the Independent Committee for Education Reform, the Ministry of Education, and The Thailand Research Fund (TRF) have initiated an Education Sandbox in five provinces with the goal of creating a pilot area for educational management. It is one educational reform process that can create instructional management to serve the local context. However, it has some exemption from relying on standards and regulations on education from a centralized center. The Education Sandbox is a project with the consistency of the Master Plan UN National Strategic B.C.2018–2037.

The government has adjusted the direction of reforming the country with the aim of transforming people to be Smart Citizens, aware and ready to cope with the global changes, and with a responsibility to society and the country. Therefore, it is necessary to adjust the educational management model in Thailand from centralized command centralization to distribution of responsibility and raising awareness that education is for everyone, and enabling people in the area to participate in the education of their children. In addition, Thailand Education Partnership, collaborating with the Independent Committee for Education Reform, Ministry of Education and Thailand Research Fund (TRF), has initiated an educational innovation area project (Education Sandbox) in 5 provinces. The goal of creating an education management pilot area is one of the educational reform processes that enables creating teaching and learning management in accordance with the local

context exempt from having to rely on centralized educational standards and regulations. Moreover, the educational innovation area project (Education Sandbox) is a project in accordance with the National Strategic Master Plan 2018–2037, roadmap (11) whereby Thai people of all ages have life-long development, goals, better quality, balanced development of body, intellect and morals, and ethics, have the knowledge and skills in the 21st century, love lifelong-learning, and the roadmap (12) targeting learning development to provide that Thai people have a quality education equivalent to international standards, gain the necessary skills of the 21st century world, which enable problem-solving, adapting, communicating and working together with others more effectively. Most important, is that Thai people have been better developed to their full potential according to aptitude and ability of multiple intelligences.

The aim of research by Srisuk et al. (2020), which received a budget from the Equitable Education Fund (EEF), was to obtain the information regarding the competence of early childhood teachers to be used as a guideline for creating a model in producing and developing teachers in accordance to the early childhood development act, B.C. 2019. Results of this research found behavioral indicators and core competencies affecting the early childhood conceptual innovation development. There were a total of 96 behavioral indicators, and 6 competencies, which included: (1) competence in designing the modern and appropriate learning experience management with the early childhood teacher competencies affecting the early childhood-based conceptual innovation development, containing 16 behavioral indicators; (2) competency in Knowledge and skills for integrating basic learner context and spatial community context into the classroom, containing 17 behavioral indicators; (3) competency in Thinking and ability integrating thinking into classroom use appropriate for early childhood children, containing 19 behavioral indicators; (4) competency in communicating appropriately for early childhood children, containing 9 behavioral indicators; (5) competence in using judgment in expressing appropriately with early childhood children, containing 20 behavioral indicators; and (6) self-adjustment when having problems/impacts/new incidents arisen, containing 15 behavioral indicators.

From the goals of early childhood development of the Ministry of Education, awareness of development of the teacher producing and developing system as a result of the overall analysis of educational management, and including the countries that have been successful in producing early childhood teachers and the policy

guidelines for early childhood education reform, the researcher was interested in doing this research. By focusing on the behavioral indicators of core competencies consisting of 6 competencies, 96 behavioral indicators, according to research results by Srisuk et al. (2020) as mentioned above, the researcher then applied the findings for guidelines from relevant stakeholders, including teachers from the early childhood teacher production institution, early childhood specialists, and early childhood teachers to find guidelines proposed in reforming the production and development systems of early childhood teachers. This covered three areas such as determination of the qualifications and the admission criteria, determination of the course structures in the early childhood teacher production curriculum, and determination of the curriculum for early childhood teacher development after the first two years of graduation. This would lead to proposals for reforming the production and development system of early childhood teachers, based on core competencies affecting the development of conceptual innovation on early childhood children by applying social phenomena, spatial identity and futuristic images as a base for learning management and obtaining the important information to propose to relevant parties, such as the Equitable Education Fund (EEF) regarding to the development of model institutions, teacher production institution, Office of the Basic Education Commission and related agencies in the future.

Literature Review

In this research, the researcher reviewed related documents and research on the following issues:

The Development of Core Competencies of early Childhood Teachers

The general competencies of teachers at the basic education level are the teacher behavior that shows the ability to apply knowledge, skills, attitudes and attributes in teaching, problem-solving in various situations related to teaching and learning management until success. Therefore, the standards of early childhood teachers abroad were analyzed, specifically from the selected countries in the world's leading educational management results such as Japan, Indonesia, Finland, the United States, Australia, and New Zealand. Then, the critical standards of early childhood teacher performance were synthesized and designed into a competency development

of six competencies as: (1) Designing the modern and appropriate learning experience management with the early childhood teacher competencies affecting the early childhood-based conceptual innovation development; (2) Knowledge and skills for integrating basic learner context and spatial community context into the classroom; (3) Thinking and ability integrating thinking into classroom use appropriate for early childhood children; (4) Communicating appropriately for early childhood children; (5) Using judgment in expressing appropriately with early childhood children; and (6) Self-adjustment when having problems/impacts/new incidents arisen (Taengchuang, 2011; The Cabinet Secretariat, 2018; Wisalaporn, 2002).

Concepts related to Conceptual Innovation

Conceptual innovation is the capability or ability to think or do something in new ways, which can be developed from early childhood. Therefore, the person who has the most important role for developing conceptual innovation is an early childhood teacher. In setting up learning experiences, an early childhood teacher must have certain behavioral characteristics that demonstrate the ability in the performance of duties in order to achieve goals for developing the conceptual innovation on early childhood children. Moreover, teachers must have the ability to set up learning using social phenomena, spatial identity, and futuristic images of the child as the base for learning design (Srisuk et al., 2020).

Spatial Identity

Spatial identity is a learning process aim to promote and develop a student to be a complete human being including in body and mind, intelligence and knowledge, morality and ethics, and culture of living, and living with others in the community or area happily. The learning process must integrate various content fields in a balanced manner so that the students can apply their knowledge, understanding, and experiences to foster creativity, find solutions in real-life problems with the teachers as the students' friends, and help facilitate and suggest learning by themselves effectively. Notably, the educational management process must emphasize the participation of individuals, families, communities, various social institutions, and related agencies to collaborate in developing students according to their potential (Hall & Du Gay, 1996; Jenkins, 2000; Kalandides, 2011; Masatienwong, 2006; Ministry of Education, 2016).

Principles of Educational Sandbox Management under the Education Sandbox Act B.E. 2562 (2019)

The Education Sandbox Act B.C. 2019 defines “Educational Innovation” as methods, processes, concepts, teaching materials, or new forms of management that have been tried and developed to be reliable. As a result, they can promote the students’ learning and educational management, including applying them in the education sandbox. As for the “Education Sandbox,” according to the Act, it is an area announced by the Cabinet to be an area for administrative reform and education management to support the creation of educational innovation that is based on the students’ development in terms of knowledge, competency, skills, and attitudes by providing the authority and duties of independent organizations and educational agencies. The principles can be summarized as follows: (1) to determine strategies and action plans to drive the education sandbox; (2) to coordinate with educational agencies, sub-district administrative organizations, other government and private agencies, which collaborate to the drive education sandbox according to strategies and action plans; (3) to coordinate with specialized agencies to provide technical support in the teaching materials preparation, new forms of learning management, personnel development, management of assessment and measurement systems, and others necessary for the development of educational innovations in the education sandbox; (4) to apply the Basic Education Core Curriculum in accordance with the National Education Law and apply it to the education management in pilot educational institutions with the suitability of the education sandbox; and (5) to continuously promote the development of quality and potential of teachers and educational personnel of pilot schools in order to be able to manage teaching with quality and appropriate conditions in the education sandbox.

Methodology

Procedure

1. Utilizing behavioral indicators of competency that was the result of the research conducted by Srisuk et al. (2020), which consisted of 96 behavioral indicators, to inquire from experts whether it is appropriate to implement the design for reform on the issue in determining of the qualifications and the

admission criteria, determining the course structures in the early childhood teacher-producing curriculum, and determining the curriculum for early childhood teacher development after the first two-year of graduation or not;

2. Utilizing the appropriate behavioral indicators of competency that have the frequency from 50 percentages to design for determining of the qualifications and the admission criteria, determining the course structures in the early childhood teacher production curriculum, and determining the curriculum for early childhood teacher development after the first two years of graduation.

3. Conducting a public hearing/focus group on the results to determine the qualification and admissions criteria, the course structures in the early childhood teacher-producing curriculum and the curriculum for early childhood teacher development after the first two years of graduation, and draw the conclusion proposed in reforming the production and development systems of early childhood teachers.

Source of Information

1. A total of 40 teachers in early childhood teacher production institutions, early childhood instructional specialists and early childhood teachers, who were used in the questionnaire on the appropriateness of behavioral indicator competencies.

2. The total of 12 participants in early childhood instructional specialists, graduate users, communities and parents, who were used in the public hearing/focus group in the quality of design results for determining of the qualifications and the admission criteria, the course structures in the early childhood teacher production curriculum, and the curriculum for early childhood teacher development.

Research Instruments

1. A questionnaire to analyze the core competencies affecting the early childhood children's conceptual innovation development, according to the spatial education management approach leading to the development of the model for reforming the production and development systems of early childhood teachers.

2. A record form of group discussion of a public hearing in finding a conclusion and propose to the reforming the production and development of early childhood teachers.

Statistics

Descriptive statistics: Frequency distribution, percentage, and content analysis.

Data Collection

1. Study and analyze curriculum for early childhood teacher, childcare providers, and assistant teachers' production from 7 successful countries

2. Analyze the Early Childhood Development Act, B.E. 2562 (2019), National Child Development Center Standards, Undergraduate qualifications standards in Education field (Four-Year Program), 2019, Standard for Teacher Profession and Early Childhood Education Curriculum 2019.

3. Synthesis of key competency behavioral indicators of early childhood teachers, childcare providers, and assistant teachers from the results obtained from steps 1 and 2.

4. Focus group with award-winning early childhood teachers about the development of teaching innovations, community leaders, people responsible for local government education management, parents in different contexts in highland area, disadvantaged area, urban area and slum communities.

5. Collect data to analyze the components and key performance indicators of early childhood teachers, childcare providers, and assistant teachers with factor analysis statistics.

6. Apply key competency indicators to find a guideline for arranging the mass experience/ a guideline for developing a curriculum for teacher production and development, and draw conclusions for reforming the production system and developing early childhood teachers, childcare providers, and assistant teachers.

7. Draft guidelines for organizing mass experience/ prepare guidelines for developing curriculum for teacher production and development.

8. Public hearing/focus group of curriculum for early childhood teacher production and development and finding conclusions to propose in reforming the production system and developing early childhood teachers.

Results

The results of the research are explained as each objective as follows:

1. The appropriate behavioural of competency was that 17 indicators should be applied to the design guidelines for regulating qualifications and admission criteria for early childhood teacher training institutions, 90 indicators should be applied to the design of the teacher training course structure, and 77 indicators should be applied to the design of the curriculum for developing teacher competencies after the first two years of graduation.

2. The results of designing the early childhood production and development systems

2.1 The results of determining the qualifications and admission criteria

The results of the proposal's preparation to determine the qualifications and selection criteria for admission to early childhood teacher production institutions consist of application methods, applicant's qualifications, both general qualifications and specific qualifications, screening and selection process, including initial screening and selection process, score weight, activity design guidelines, written exam and interview, and judgment, Assessment Methods/Tools, which consists of portfolio, activity assessment, written exam, interview; details are as follows in Table 1.

Table 1 The results of the proposal's preparation to determine the qualifications and selection criteria for further education for the reform of the early childhood teacher production and development systems

Topics	Qualifications and Selection Criteria
Admission	Direct Admission of the Teacher Training Institutes ** The applicant is former school screened initially.
Applicant's Qualifications	
General Qualifications	<ol style="list-style-type: none"> 1. Have Thai nationality and legally reside in Thailand 2. Have a good attitude towards the teaching profession and wish to be appointed as a government teacher in their local area 3. Be healthy without disease and no behavior appears to be an obstacle to education or a condition hindering education 4. Be a person with experience in doing creative activities for the public 5. Be a person who does not have any disgraceful behavior or deficiencies in good morals
Specific Qualifications	<ol style="list-style-type: none"> 1. Be a person whose father or mother or parents and applicants be domiciled in the sub-district where the school is located where the applicant will be instituted or appointed after graduation according to the list at the end of the announcement (of each year) for not less than three consecutive years until the date of application 2. Have a portfolio showing activities with Child Centers/Kindergartens by having the head of the child care center or the director/teacher endorse for at least one year at the senior secondary level (scheduled experience hours of coexistence with young children) **Teacher Training Institutes have to notify the guidance teachers of each school at least one year in advance to jointly select and introduce students to themselves, whether they would like to be early childhood teachers or not, can they live with early childhood child. Related tasks may be assigned to allow students to practice hands-on experiences with primary children.
Screening and Selection Process	
Initial screening process	<ol style="list-style-type: none"> 1. Initially determine general qualifications and specific qualifications by checking documents and teachers in the applicant's school, applicant's educational area, and community 2. Consider based on portfolios, especially experiences of living with kindergarten students in the child center 3. Have a self-assessment on experiences of living with young children/ or kindergarten students certified by guidance counselors and homeroom teachers at the high school level.
Selection Process	
Step 1: Assessment from participating in activities, activities for selecting students in the early childhood major based on competencies through five activities	Activity 1: Activities focusing on communication skills/ assertiveness Activity 2: Activities focusing on teamwork Activity 3: Activities focusing on information technology literacy Activity 4: Activities focusing on learning the spatial identity of the community Activity 5: Activities focusing on attitude towards being an early childhood teacher

Table 1 Continued

Topics	Qualifications and Selection Criteria
Step 2: The written exam is a test to measure thinking, general knowledge, and an early childhood teacher competency consisting of three sets:	Set 1: Higher Order Thinking Skill Test Set 2: General Knowledge and Current Situation Test Set 3: Early Childhood Teacher Competency Test
Step 3: The interview is the measurement of problem-solving skills, general knowledge, and an early childhood teacher competency consisting of three sets:	Issue 1: Ability of Problem Solving/Cleverness/Emotional Skills Issue 2: Knowledge of Community/Area Issue 3: Observation of Personality
Score Weight	Use the proportion of activity participation: written test: Interview as 50:25:25
Judgment	Ordered by total test scores by the number of applications announced
Assessment Methods/Tools	
1. Portfolio is considered from	1.1 Leadership Psychological Characteristics 1.2 Ability to live with children happily 1.3 Having a love for working with young children 1.4 Having a basic knowledge of the well-being and way of life of early childhood and community
2. Assessment from activities is considered from	2.1 Communication skills /Language use 2.1.1 Applying foreign languages in the learning experience activities 2.1.2 Consideration of words to use with students 2.1.3 Patience to control the emotions that need to be controlled or when repeated explanations are required 2.2 Teamwork Skills 2.2.1 Having the courage to listen to feedback from others and be ready to improve oneself 2.2.2 Ability to analyze and solve problems in new and better ways 2.2.3 Having a different excellent idea from general persons and being able to come up with many different perspectives 2.2.4 Accepting and respecting differences in religion, culture, race, body, and intelligence 2.2.5 Highly systematic thinking 2.3 Information Technology Literacy 2.3.1 Knowledge literacy, follow the news for self-development and application 2.3.2 Being ready to adapt to ever-changing events 2.3.3 Self-improvement in globalization skills and 21 st -century skills 2.3.4 Knowing situational literacy, do not panic about the incidents, find out more information, and suitably adjust 2.3.5 Understanding and having judgment in expressing yourself when new events occur 2.4 Attitudes towards Being an Early Childhood Teacher 2.4.1 Confidence that every early childhood child can develop into a perfect person 2.4.2 Confidence the foundations of early childhood child being as good children 2.4.3 Understanding of students' thinking behavior 2.4.4 Always accepting and constantly improving oneself as a teacher 2.4.5 Recognizing the importance of the teaching profession and the necessity for solving social problems 2.4.6 Integrating new events from today's world and daily life into learning experience management
3. Written exam is considered from using two tools:	3.1 Higher Thinking Skill Test 3.1.1 Understanding of students' thinking behavior 3.1.2 Having an ability to analyze and solve problems with new, better ways 3.1.3 Having different good ideas from the general person and being able to come up with many different perspectives 3.1.4 Having systematic thinking

Table 1 Continued

Topics	Qualifications and Selection Criteria
	3.2 General Knowledge and Current Situation Test
	3.2.1 Accepting and respecting differences in religion, culture, race, body, and intelligence
	3.2.2 Having confidence that every early childhood child can develop into a complete person
	3.3.3 Having confidence the foundations of early childhood child being as good children
	3.3.4 Adhering to goodness and ethics, behaving properly as a role model for a good teacher
	3.3.5 Participating in teaching professional development as important
	3.3.6 Performing with the fullest potential of being a teacher, the interests of the learners must be taken into account
4. Interview is considered from	4.1 Knowledge of Community/Area Having a basic knowledge of the well-being and way of life of early childhood child and community
	4.2 Ability of Problem Solving/Cleverness/Emotional Skill (Given the situation)
	4.2.1 Building familiarity with the language by telling stories or practicing simple songs
	4.2.2 Having an ability to adjust oneself to new educational situations
	4.2.3 Knowing situational literacy, not panicking about incidents, finding out more information, and suitably adjusting
	4.3 Observation of Personality Dressing, personality, gestures, both verbal and non-verbal

2.2 The results of determining the course structures in the early childhood teacher-producing curriculum.

The results indicated that the determination the course structure in the early childhood teacher production curriculum consists of a general education course, which was a minimum of 30 credits; field of specialization course, which was a minimum of 99 credits, consisting of

a group of professional teachers. They were classified into compulsory professional groups, which were 12 in lecture courses and practice courses, 4 in teaching profession practicum courses, 7 in teaching profession elective courses, 21 in major courses, and free elective courses which is a minimum of 6 credits. The total courses were 135 credits; details are as follows, [Table 2](#).

Table 2 The results of determining the course structures in the early childhood teacher-producing curriculum

Courses	Subjects and Credits
1. General Education:	A minimum of 30 credits
2. Field of Specialization:	A minimum of 99 credits
2.1 Professional Teacher Courses:	A minimum of 39 credits
2.1.1 Professional Teacher Core Courses	
1) Lecture and Practice Courses:	12 subjects 25 credits
EDPF. 101 Model of Teacherness for Modern Classroom 2 credits	EDPF. 102 Globalization and Education for Smart Citizenship 2 credits
EDPF. 103 Curriculum and Learning Management in Modern Trends 2 credits	EDPF. 104 Psychology for Student Development in Digital Era 2 credits
EDPF. 201 Communicative Language for Teachers in Digital Era 2 credits	EDPF. 202 Innovation and Digital Technology for Learning in Modern Era 2 credits
EDPF. 203 Learning Measurement and Evaluation in Modern Trends 2 credits	EDPF. 204 Educational Quality Assurance for Excellence 2 credits
EDPF. 301 Multicultural Education and Community-Based Education 2 credits	EDPF. 302 Special Education for Enhancing Potentials of Students with Special Needs 2 credits
EDPF. 303 Microteaching Skills Practice 3 credits	EDPF. 401 Research for Learners' Quality Development 2 credits

Table 2 Continued

Courses	Subjects and Credits
2) Teaching Profession Practicum Courses: EDPF. 105 Teaching Profession Practicum in School 1 1 credit EDPF. 304 Teaching Profession Practicum in School 3 4 credits	4 subjects 12 credits EDPF. 205 Teaching Profession Practicum in School 2 1 credit EDPF. 402 Teaching Profession Practicum in School 4 6 credits
2.1.2 Teaching Profession Elective Courses: EDPF. 211 Active Learning Management 2 credits EDPF. 213 Information for Learning 2 credits EDPF. 215 Global Education for Lifelong Learning 2 credits EDPF. 217 STEM Education for Life, Economy, Society and Environment 2 credits	7 subjects a minimum of 2 credits EDPF. 212 Instruction of Individual Differences 2 credits EDPF. 214 Creative Art Integration in Education 2 credits EDPF. 216 Laws for Teaching Profession 2 credits
2.2 Major Courses: EDEC. 101 Principles of Psychology for Early Childhood https://www.montrahealthmassage.com/?fbclid=IwAR1kZEYS-MUmB5kKgC7eJOodIhgi7eTLTyPQ3_7ruz5J8GIhyu6nO-QGc5w Teachers 3 credits EDEC. 103 The 21st-century skills for Early Childhood Teachers 3 credits EDEC. 201 Personality of Early Childhood Teachers 3 credits EDEC. 203 Storytelling and Tales for Early Childhood Children 3 credits EDEC. 205 Nutrition for Young Children 2 credits EDEC. 301 Methods for Proactive Learning Experience Management for Early Childhood Teachers 3 credits EDEC. 303 Early Childhood Assessment and Screening 3 credits EDEC. 305 Communication skills of Early Childhood Teachers in the Digital Age 3 credits EDEC. 307 Habit-Building Strategies for Early Childhood Children 2 credits EDEC. 402 Strategies of Teaching Thinking Skills for Early Childhood Teachers 3 credits EDEC. 404 Administration, Supervision and Quality Assurance of Early Childhood Education Level 3 credits	21 subjects 60 credits EDEC. 102 Characteristics of an Early Childhood Teacher in the New Era 3 credits EDEC. 104 Modern Early Childhood Education Theories 3 credits EDEC. 202 Production and Critical Selection of Instructional Materials 3 credits EDEC. 204 Community Analysis for Teaching Early Childhood Children 3 credits EDEC. 206 Safety and Hygiene Principles for Modern Early Childhood Teachers 3 credits EDEC. 302 Professional Early Childhood Classroom Management Techniques 2 credits EDEC. 304 Early Childhood Assessment and Screening 3 credits EDEC. 306 First Aid for Early Childhood Teachers 3 credits EDEC. 401 Integration of Spatial Community Context into the Classroom 3 credits EDEC. 403 Adaptation of Early Childhood Teachers in the Digital Age 3 credits
3. Elective Courses:	6 credits

2.3 The result of the proposal's preparation in determining the curriculum for developing early childhood teacher competencies after the first two years of graduation

The results of determining the curriculum for developing early childhood teacher competencies after the first two-year of graduation was divided into six modules, in which each module has 24 hours for development. Therefore, the total development hours were 144 hours as the following [Table 3](#).

After utilizing the results of the qualifications and the admission criteria, the preparation of course structures for the early childhood teacher production curriculum and determining the curriculum for early childhood teacher development after the first two years of graduation was to be evaluated by 12 early childhood experts. They found that all of the three design issues had quality in terms of accuracy, comprehensiveness, appropriateness, possibility, not violating the ethical principles in applying, and worthiness for implementing in the actual practice at a high, higher and the highest level.

Table 3 The result of the proposal's preparation in determining the curriculum for developing early childhood teacher competencies after the first two years of graduation

Names	Goals for Development	Development Time
Module 1: Thinking and the ability to integrate thinking skills into a suitable classroom for early childhood children	To develop thinking competencies and the ability to integrate thinking skills into the classroom	24 hours
Module 2: Modern learning experience management with the suitability for the early childhood conceptual innovation development	To develop the competency in designing modern learning experience management with the suitability for the early childhood conceptual innovation development	24 hours
Module 3: Integration of the basic context of early childhood and the spatial community context into the classroom	To develop knowledge and skills of integration the basic context of early childhood and the spatial community context into the classroom	24 hours
Module 4: Applying judgment in expressing appropriately with early childhood	To develop the competency of applying judgment in expressing appropriately with early childhood	24 hours
Module 5: Immediate adaptation when new problems/ impacts/incidents arise	To develop immediate adaptation when new problems/ impacts/ incidents arise	24 hours
Module 6: Appropriate communication with early childhood children	To develop the appropriate communication with early childhood children	24 hours

Discussion

1. The results of a study on the appropriateness of behavioral indicators of competencies affecting the early childhood conceptual innovation development in designing the early childhood teachers' production reform and development system reform found that that 96 indicative behaviors of Srisuk et al. (2020) were appropriate to design a system for reforming early childhood teachers in any of the three issues. They included the design of the admission criteria system, the early childhood teacher production system, and the curriculum for teacher development in the first two years after graduation. The findings revealed that there are 17 appropriate behavioral indicators of competencies that can be applied for designing the guidelines in regulating the qualifications and admission criteria in the training institutes for early childhood teachers, childcare providers, and assistants teachers; 90 appropriate behavioral indicators of competencies for designing the curriculum structure of early childhood teachers, childcare providers, and assistants teachers; and 77 appropriate behaviors indicating the critical competencies for designing the curriculum of early childhood teacher competency development after the first two-year graduation. This is because behavioral indicators are the competencies obtained from Srisuk et al. (2020), who studied guidelines for designing this reform. The behavioral indicators have been developed through a systematic research process. Therefore, the behavioral indicators were identified from

the synthesis of strengths in early childhood education management in seven prosperous countries: Singapore, Hong Kong, Philippines, New Zealand, Finland, Sweden, and Israel. In addition, there was an implementation of behaviors indicating competencies of Thai early childhood teachers from the Early Childhood Development Act B.C. 2019, the Standards of the National Center for Early Childhood Development, Professional Competency Standards for Early Childhood Education Curriculum Teachers, B.C. 2017, and production curriculum for early childhood teacher, childcare providers, and also from interviews with award-winning early childhood teachers about teaching innovations. Moreover, Srisuk et al. (2020) checked such behaviors for content validity from teachers in the early childhood teacher training institutes and early childhood experts. Then, the researchers calculated for discrimination by experimenting with 78 early childhood teachers and graduate users. The *t*-test was used for checking discrimination, and it was found that significant *t*-values were found at the .01 level of 97 items/indicative behaviors (*t*-values = 3.20–11.24). After that, the composition was analyzed, and the component weight was determined by using Factor Analysis statistics according to the opinions of a total of 1,047 graduate users, community leaders, people responsible for education management of the local administrative organization, early childhood teachers, students and teachers in the early childhood teacher training institutes. As a result, there were 96 behavioral indicators of competencies and a component weight as .512–.833, all of which exceeded .30. The process of obtaining these indicators is considered the process of creating

and developing indicators as well. According to the principles of measurement and research conducted by Srisuk (2006) stating the good characteristics of research instruments, when the instruments were examined for appropriateness as to whether they should be proposed as reform proposals, all indicators of behavior were made appropriate as in the results of the previously mentioned research.

2. The results of the design on the production and development systems as a proposal for reforming the production and development systems of early childhood teachers, childcare providers, and assistant teachers designed by the researcher using key competency behaviors that the researcher created and developed were found to be consistent with the Thai National Development Guidelines according to the 20-year National Development Plan (2016), in which the researcher would like to present the discussion of the following issues:

2.1 Qualification requirements for applicants include general qualifications, such as experiences in engaging in creative activities for the public, and specific qualifications, such as having a demonstrating portfolio of activities with childcare centers. It can be seen that one must be physically ready to drive learning activities or provide learning experiences for early childhood in order to prepare early childhood teachers. When considering the qualifications of teachers in each country the researchers applied as the basis for the study and the synthesis of documents, such indicated that it was consistent with teachers having to be physically prepared to drive in the classroom activities management relying on movement, the speed in solving problems during the event, and being able to supervise students to stay in the classroom with effectiveness and safety since the early childhood students need special supervision.

In addition, due to the fact that those who will enroll in early childhood teacher production courses must perform activities related to managing early childhood instruction or activities in the community relevant to early childhood, such considered a selection of people with behaviors having the foundation to be teachers. They should be equipped with adaptation to the community context and the changes occurring in today's society. This is in line with the views of the United Nations Educational, Scientific and Cultural Organization [UNESCO] (2006), The New Zealand Ministry of Education (2020), and Masathienwong (2012), who expressed different perspectives on the educational management crisis in child and youth development, that there must be a teacher with readiness to adapt and keep up with all kinds of changes.

According to the screening and selection process, the key points consisted of (1) Assessment by performing activities such as assessment of participation in activities,

activities emphasizing communication skills, assertiveness, activities emphasizing teamwork; (2) Assessment with a test, such as a written test, higher-order thinking skill test, general knowledge and current situation test; and (3) An interview for the ability to solve immediate problems/cleverness/emotion: the reason that the screening process consisted of these three approaches may be due to the fact that the findings are screening methods enabling the selection of teachers who are suitable for current educational conditions, able to measure knowledge, abilities, attitudes, and desirable characteristic, and the skills needed to be better early childhood teachers.

2.2 The results of preparing the guidelines on production and development systems of early childhood teachers, childcare providers, and assistant teachers based on the competencies affecting the conceptual innovation development revealed that there were behaviors indicating the competencies that were appropriate to use as a guideline for curriculum design. There were six components with 90 behavioral indicators used to design course processes in the curriculum covering all six competencies discovered by Srisuk et al. (2020). The implementation of these competencies to design the curriculum can lead teachers to have the key competencies that all sectors see should be embedded in the teacher production process.

As the competencies in cognitive abilities and the ability to integrate thinking into the learning experiences are of the utmost significance for children to develop higher-order thinking, the teachers need to be professional in connecting situations in the classroom that can increase thinking ability. This is consistent with Khampuan's (2017) opinion, which was that the teachers should have a more integrated perspective because it will lead the students to become learning persons necessary for the 21st century.

Competency in communication is essential, whether it is a matter of familiarity with the use of language, the ability to add English or a foreign language in the native language, being listeners and conversationalists with children, using rational language, having a good, attractive tone of voice to the students, or making children feel safe in expressing different ideas. Other important competencies are to have the judgment that is appropriately expressed in early childhood children, whether it is about treating children equally, neutrality and willing to educate children, being responsible for taking care of children like family members, pondering every word, loving to work with young children, which is more complicated than working with other ages, realizing that the teaching profession is necessary to help solve social problems, being patient, not losing your temper, adhering to goodness, having ethics, behaving appropriately as a teacher, all of which have been incorporated into a curriculum. This conforms to The New Zealand Ministry

of Education (2019), which considers that early childhood teachers need to excel in designing learning experiences that ensure safe and well cared for young children. Immediate adaptation when new problems or events arise, is another important competency, and such will result in teacher flexibility in thinking, seeing the difference of thinking as something new in the modern era, seeing the importance of awareness, not panicking over new events, searching for information and adapting constantly, and bringing these things to integrate the present world into instructional management. Such will have a significant effect on stimulating creativity or conceptual innovation.

Conclusion and Recommendation

1. The development of a model for reforming the early childhood teacher, childcare providers, and assistant teachers focusing on the study to develop behavioral indicators of competencies affecting the development of early childhood conceptual innovation according to the spatial education management approach. As a result, the results of this study should be applied further for future research by experimenting with the production and development systems for early childhood teachers, childcare providers, and assistant teachers to create and formulate the production and development model of early childhood teachers, childcare providers, and assistant teachers who have the quality standards of World Class Education and education in the next 4.0 era.

2. If behavioral indicators of competencies in the production and development of early childhood teachers, child care providers, and assistant teachers are applied or the model is adapted, there should be support for long-term research to follow up and utilize the data to improve and develop the curriculum to be more appropriate.

3. After there is improvement of teacher production and teacher development curriculum for the rigorous science and art of teaching, including research in teacher spiritual development, research should be conducted to explore systems, mechanisms, linkages, and support between production and development systems, teacher management, and teacher recognition, to focus on developing the teaching profession to become an advanced profession.

Conflict of Interest

The author declares that there is no conflict of interest.

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