Competency-Based School Curriculum: A Development and Implementation Framework

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(Received: 11 October 2022, Revised: 7 December 2022, Accepted: 9 December 2022)
https://doi.org/10.57260/rcmrj.2022.261665

Abstract

Competency-based school curriculum development is a key mechanism for successful implementation of the national curriculum framework. However, the problem discovered is that schools continue to lack knowledge and clear guidelines, so the purpose of this study is to prepare the development process framework for competency-based school curriculum of pilot schools in the education sandbox. This study employs an explanatory sequential design mixed-method research methodology, beginning with quantitative research using online questionnaires to survey opinions from 224 pilot schools in six areas of the education sandbox, then moving on to a qualitative multi-case study using focus group discussions with administrators and teachers from 18 schools in six areas, and finally a connoisseurship of 15 experts. According to the findings, the main idea behind the development process framework for competency-based school curriculum is to focus on success in developing learners' learning competencies related to work and life. The curriculum development process includes the following components: 1) competency-based curriculum design focuses on determining core competencies and developing appropriate learning designs; 2) learning management that focuses on competency development and learning assessment that emphasizes individual progress; and 3) competency-based curriculum management, which includes appropriate study time structure, adequate preparation for action, and evaluation for continuous improvement. These findings are critical for implementing the national curriculum framework effectively.

Keywords: Curriculum framework, Competency-based curriculum, School curriculum, Education sandbox, Basic education

Introduction

The development of national curricula is an important mechanism for improving educational quality and assisting in the reduction of inequity in the country. The 2008 Basic Education Core Curriculum is the curriculum used in Thailand today to improve learner quality. It is a curriculum with learning standards and indicators for 8 subject areas (Ministry of Education, 2009) which has been used as a direction for student development for nearly 15 years. However, it was found that learner quality is still lower than expectation with low level of deep conceptual understanding and lack of application ability in daily lives (Independent Committee for Education Reform (ICER), 2019). At present, Thailand has driven the development of new curriculum, utilizing the concept of competency-based approach which allows learners to develop the competencies necessary for real life situations (Anderson-Levitt, 2017, Mulenga & Kabombwe, 2019; Thummaphan, 2021; Office of the Education Council, 2019). The initiated curriculum document is the (draft) Basic Education Curriculum Framework B.E. …, which is called (draft) Basic Education Curriculum Framework hereafter, emphasizing the ability or competency of learners as a goal of educational provision (Office of the Basic Education Commission, 2021a). The operation is in the process of defining the details of each component of the curriculum framework as well as the guidelines for implementing it in schools, and will be used in pilot schools in education sandboxes that can manage their own education independently under the supervision of the provincial steering committee. According to the Education Sandbox Act B.E. 2019 (2019), implementation of the (draft) Basic Education Curriculum Framework in education sandboxes is an important step of the development process of national curriculum.

It is necessary to obtain information from practitioners during the development of national curriculum in order to determine whether the (draft) Basic Education Curriculum Framework is of appropriate quality or not. Examining the opinions of pilot schools in education sandboxes is an extremely good opportunity to consider the (draft) Basic Education Curriculum Framework's suitability. Furthermore, the school curriculum is a critical mechanism for implementing the competency-based concept in classrooms. The emphasis is on providing each learner with the resources and opportunities to learn based on their needs (Rajurkar, Chavan, Kachewar, & Giri, 2019) to improve equity in education that is a significant goal of the Education Sandbox Act B.E. 2019. Understanding how schools develop school curriculum using a competency-based approach is therefore an important body of knowledge that can be used to promote the effective use of national curriculum.

While such studies are needed, there are few studies that focus on the framework of the curriculum development and implementation process of schools that focus on the concept of competency-based education. Although there is research on curriculum development, the content focuses on overall curriculum development and use, with such little emphasis on the development process (Jarernrak, 2022). The lack of a framework that can be used as a suitable model will result in a lack of guidelines that schools can effectively use (Bravo & Alves, 2019).

In comparison to the critical importance of schools being able to develop competency-based school curriculum, a lack of knowledge about the curriculum development framework can have unexpected negative consequences.

As a result, the purpose of the study is to investigate school principals', teachers', and other stakeholders' perspectives and recommendations on the Basic Education Curriculum Framework, as well as to develop and implement a framework for the development and implementation of school curriculum for pilot schools in education sandboxes with crucial domains of practice. This research contributes to gaining knowledge about the establishment of a school-level curriculum that is appropriate and consistent with the principles of competency-based curricula, as well as supporting policy formulation to promote school implementation of competency-based curricula in order to create quality and equality in education.

Research Objective:

1) To study the opinions and recommendations of school principals, teachers, and other stakeholders in pilot schools in education sandboxes regarding the (draft) Basic Education Curriculum Framework.

2) To establish a framework for the development and implementation of competency-based school curriculum in pilot schools in education sandboxes.

Review Literature:

Curriculum development

Curriculum development concepts vary. Tyler (1949) proposes that curriculum development must address four fundamental questions: the purpose of education that the school wants students to achieve; educational experience that the school organizes to achieve its goals; educational experience organization for effective teaching; and methods of assessment to determine whether the intended purpose is met. Another curriculum development model is bottom up (Taba, 1962), which proposes that curriculum should be developed by teachers rather than executives. The curriculum development process consists of 7 steps: problem analysis, determining the purpose of curriculum content selection, content collection, choosing a learning experience, organizing selected learning experiences, and evaluation (Chookhampaeng, 2008). To develop a curriculum for use throughout the educational system, a prototype curriculum must first be drafted and tested. Bua-Sri (1999) described the curriculum development process as follows: establishing a prototype curriculum, designing the master curriculum, implementing the curriculum, and evaluating the curriculum. Sinlarat (2018) discussed the curriculum development process, which consists of four major processes: objective determination, content determination, learning methods, and assessment, and overall curriculum evaluation, which is similar to the concept of Bua-Sri (1999) in terms of curriculum implementation and evaluation. It can be concluded that curriculum development consists of creating a prototype curriculum in which objectives and subject matter are defined, preparing the master curriculum, implementing the curriculum, and evaluating the overall curriculum. It is possible to say that important aspects of curriculum development include a clear understanding of curriculum

needs, the meaning of education, curriculum, teaching and learning, curriculum types, the curriculum development process, social influence, educational standards and authority, social and national needs, and a vision of an authority that reconciles with stakeholders (Rajurkar, et al., 2019). To summarize, curriculum development is a complex and multifaceted process, and curriculum development for schools should be framed so that schools can effectively operate it and personalize it to their specific context.

Implementing a national curriculum necessitates the development of a school curriculum that transfers concepts into classroom practice. A school curriculum is a document prepared by a group of people at the school level that serves as a plan or a guideline for organizing the overall experience for learners (Bureau of Academic Affairs and Educational Standards, 2008). The core curriculum and a local curriculum focus are usually used to develop school curriculum. Furthermore, each school can include additional important aspects based on the context and focus of the school, as well as the needs and characteristics of the learners. The curriculum is typically implemented in three steps: planning, preparation, and implementation (Sinlarat, 2018). Curriculum administration and services, learning management, and support and promotion of curriculum use were the three main tasks in the context of competency-based curriculum implementation (Jarernrak, 2022). However, the implementation of competency-based school curriculum discovered practical challenging issues in administrators' and teachers' knowledge and understanding of the curriculum, freedom of curriculum management, and clarity on learner assessment methods and tools (Pamies et al., 2015; Mkonongwa, 2018), Mulenga & Kabombwe, 2019; Jarernrak, 2022). Specifically, according to the study of Kabombwe & Mulenga (2019), 67% of history teachers don't grasp what a competency-based curriculum is. These points demonstrate that developing and implementing a competency-based curriculum at the school level presents some difficulties that must be addressed.

(Draft) Basic Education Curriculum Framework B.E. ...

The (draft) Basic Education Curriculum Framework aims to develop all learners' core competencies so that they can reach their full potential (Office of the Basic Education Commission, 2021a; 2021b). There are 11 essential components: (1) Fundamentals of curriculum development; (2) Vision; (3) Curriculum principles; (4) Curriculum Objectives; (5) Desirable characteristics; (6) Six core competencies and 10 competency levels; (7) Learning areas; (8) Relationship between core competencies with the content of 7 learning areas (in the 1st grade level); (9) the structure of the study time; (10) the learning management approach and assessment; and (11) curriculum management guidelines. The six core competencies are (1) self-management; (2) higher-order thinking; (3) communication; (4) teamwork and collaboration; (5) active citizenship; and (6) sustainable coexistence with nature and science. Level 1 learning areas include Thai language, mathematics, English language, arts, health and physical education, social studies, and science and natural systems. This draft curriculum framework leads to various educational approaches. By the way, due to the practitioner relevance, the components of learning and assessment were expanded into elements, and the major components of (1) Fundamentals of curriculum development; (2) Vision; (3) Curriculum principles; (4) Curriculum Objectives; and (5) Desirable characteristics were collapsed and reported as prologue in the quantitative part of this research.

Pilot School Project for the (draft) Basic Education Curriculum Framework B.E. ... in Educational Sandbox

The Education Sandbox Act was passed in 2019 with the intent of enhancing the country's education. It became effective on April 30, 2019 (Education sandbox Act, 2019). Education sandbox refers to the area designated as administrative reform for educational management to support the creation of educational innovations covering concepts, methods, processes, teaching materials, or new forms of management that promote learner learning and education management. Currently, six education sandboxes have been established in Satun, Rayong, Si Sa Ket, Chiang Mai, Kanchanaburi, and three Southern Border Provinces (Narathiwat, Yala, Pattani). The Ministry of Education gives these education sandboxes the opportunity to develop new educational management guidelines to improve educational quality and serve as a model for future education management.

The Pilot School Project is an initiative of the Basic Education Commission's Bureau of Academic Affairs and Educational Standards. The objective of this project is to investigate the application of the (draft) Basic Education Curriculum Framework in the context of the school and use the information gathered to modify it (Office of the Basic Education Commission, 2021b). The project is being implemented in 2 phases: Phase 1: While schools are developing a curriculum for schools, capacity building for school supervisors and consulting with the school on curriculum preparation; Phase 2: After the school curriculum has been approved by the Educational Sandbox Steering Committee, capacity building for school supervisors and consulting with the school on teaching and learning. The project accepted applications from schools in educational sandboxes to be pilot schools (Office of the Basic Education Commission, 2021b). While this research project is in progress, the Pilot School Project is in its first phase, with 224 elementary schools voluntarily participating.

Methodology

This research is an explanatory sequential design research (Creswell & Plano Clark, 2011), with quantitative research using online questionnaires to study opinions about the (draft) Basic Education Curriculum Framework, and qualitative research using a multi-case study design to study recommendations for improving the (draft) Basic Education Curriculum Framework, and connoisseurship to examine the appropriateness of the development. The research procedure is as follows:

Phase 1: quantitative research to survey opinions on the (draft) Basic Education Curriculum Framework. According to the Office of the Basic Education Commission's database, it used survey research in 224 pilot schools across six education sandboxes: Rayong, Si Sa Ket, Satun, Chiang Mai, Kanchanaburi, and the three southern border provinces. There are 6,685 teachers and administrators in the region. The minimum sample size, according to Yamane's formula (Yamane, 1973), is 378. Furthermore, 100% of the schools were included in the sample to obtain a complete picture of the practitioners' opinions. At least two people were asked to respond to the online survey in each school: one school administrator and one teacher, for a total of 448 people as the required sample size. As a result, 639 people completed the online questionnaire, accounting for 142.63% of the required sample size.

The data was gathered via an online questionnaire that requested respondents' opinions on five crucial aspects: appropriateness, comprehensiveness, content clarity, application of the (draft) Basic Education Curriculum Framework, and equity concerns. Basically, it mainly included 133 items on a 5-point Likert scale (strongly agree (5) to strongly disagree (1)), with open-ended questions for suggestions for improvement covering 11 primary components and overall structure of the (draft) Basic Education Curriculum Framework. Three curriculum and research experts evaluated the questionnaire content validity. Then it was tested with 31 teachers in two elementary schools in Thailand's central region. The alpha coefficient for Likert scale items was .99, indicating that the questionnaire was trustworthy for data collection.

The data was gathered over a three-month period. Prior to data collection, two online workshops were held to explain the contents of the (draft) Basic Education Curriculum Framework and details of relevant documents to a sample of schools in the target area to help them understand before answering the questionnaire. The online survey link address was then distributed to participants, along with instructions for completing the questionnaire. The schools were given the authority to assign the respondents. Using the SPSS 18.0 for Windows program, the data was analyzed for frequency, percentage, mean and standard deviation, and the F-test.

Phase 2: qualitative research to conduct an in-depth investigation of opinions and recommendations on the major issues raised by the (draft) Basic Education Curriculum Framework. The research design was a multi-case study that purposefully selected schools on a quota basis based on the local context (in town - outside the city), size (small-medium-large), and grade level (primary - secondary) in order to cover diversity of schools and obtain information from various contexts. Three schools in each of the six education sandboxes, for a total of 18 schools, were selected. Each school's key-informants included the principal, head of academic affairs, teachers, and/or school board committees, with an average of 8-12 people per school. Eventually, the study included 188 key-informants.

Data was collected through focus group discussions using questions that addressed five important elements: appropriateness, comprehensiveness, content clarity, application of the (draft) Basic Education Curriculum Framework, particularly for designing school curriculum, and equity issues. Three curriculum and research experts evaluated the questionnaire's content validity. There were 16 schools that participated in the online focus group and 2 schools that participated in the on-site format. The issues for discussion were extracted from the results of

the data analysis in Phase 1 to produce qualitative findings that can explain the quantitative findings and findings for developing a framework for competency-based school curriculum development. A document of (draft) Basic Education Curriculum Framework and details of relevant documents was sent to schools for review prior to the group discussion to provide a basic understanding that is sufficient for the focus group. Data were analyzed using a descriptive content analysis approach with Miles and others' steps (Miles et al., 2014). The recordings of the focus groups were transcribed and coded. Following that, the development of themes and subthemes occurred. By examining the links between the themes and their subthemes, as well as the relationships between each theme, it was possible to ensure coherence and, as a consequence, internal consistency.

Phase 3: Developing a framework for the development and implementation of the competency-based school curriculum. Following the findings of quantitative and qualitative research in phase 1 and 2, the research team drafted a framework for the development and implementation of the competency-based school curriculum. Following that, 15 experts in the fields of curriculum, educational administration, assessment, and education practitioners reviewed it using the connoisseurship approach.

A summary of the research process is a framework for research as shown in Figure 1.

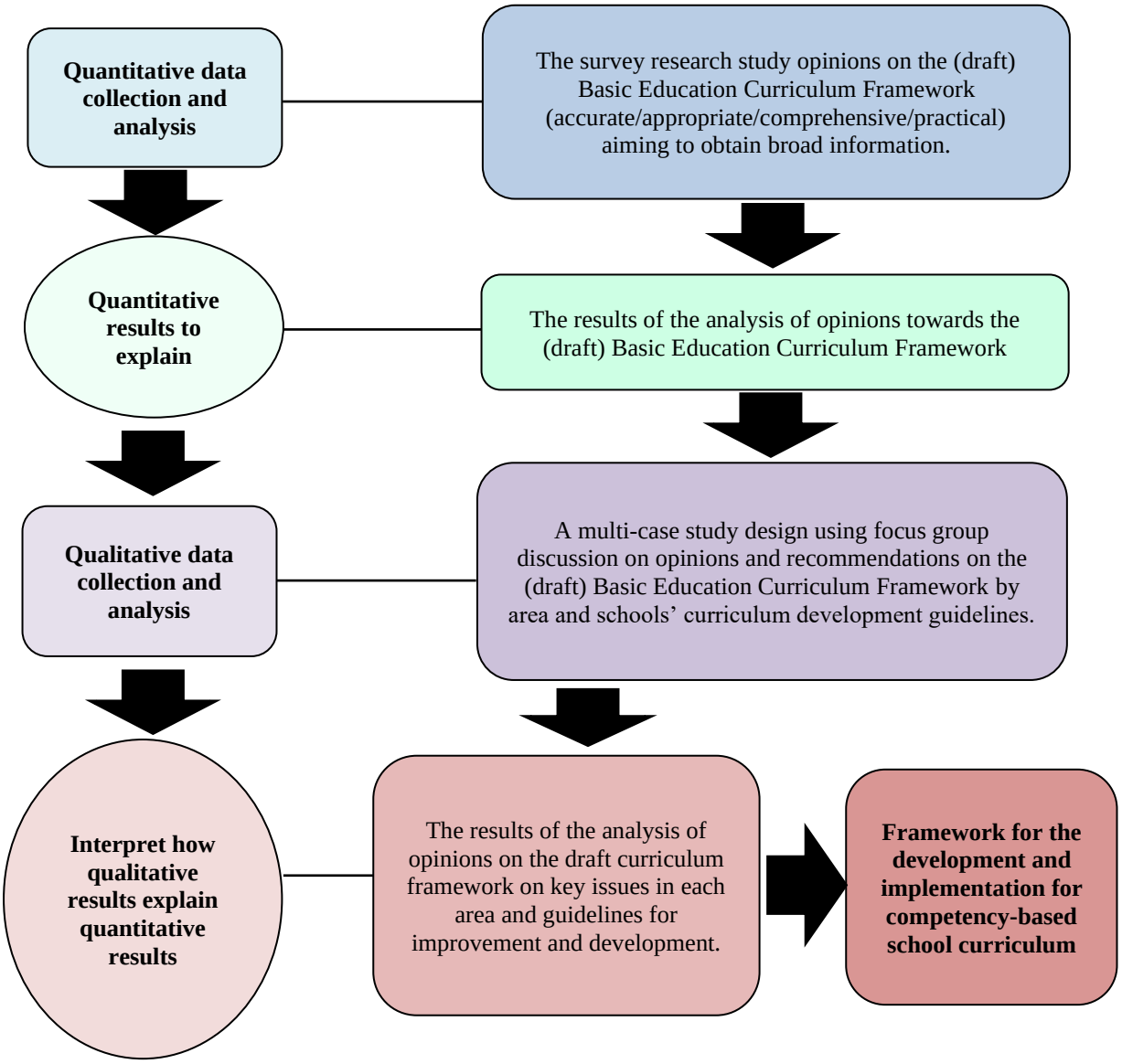

Figure 1 Research Implementation Framework
(Source: Thummaphan et al., 2022)

This research has been approved by the Human Research Ethics Committee, Faculty of Social Science, Royal Police Cadet Academy, with the research project code: SSRPCA-REC 030/2021 on November 19, 2021. Every step of the research process has involved informing participants of their rights and requesting their consent.

Rajabhat Chiang Mai Research Journal
Vol. 23 No.3 September – December 2022

Results

1. Opinions and recommendations of school principals, teachers and other stakeholders in pilot schools in education sandboxes towards the (draft) Basic Education Curriculum Framework.

1.1 The results of a quantitative study on opinions on the (draft) Basic Education Curriculum Framework

The respondents were at "agree" level for the overall of (draft) Basic Education Curriculum Framework (Mean = 4.13, S.D.= 0.67). In all components, the scores were higher than 4.00 based on the scores in the range 1 – 5. The respondents strongly agreed on 4 components, namely prologue, competency, learning area, and time structure, and was agree on the rest of the components. When considering by the education sandbox, it was found that respondents in all sandboxes agreed with the curriculum on all components with scored between 3.94 - 4.32 which were at the level of agree and strongly agree on every component. In each component, respondents from each education sandbox had different opinion levels, but no statistically significant differences were found (statistical values from F=1.36, p=.239 to F=0.26, p=.933). So, the level of agreement was quite similar across respondents from different education sandbox. The opinion level of respondents by education sandbox were shown in Figure 2.

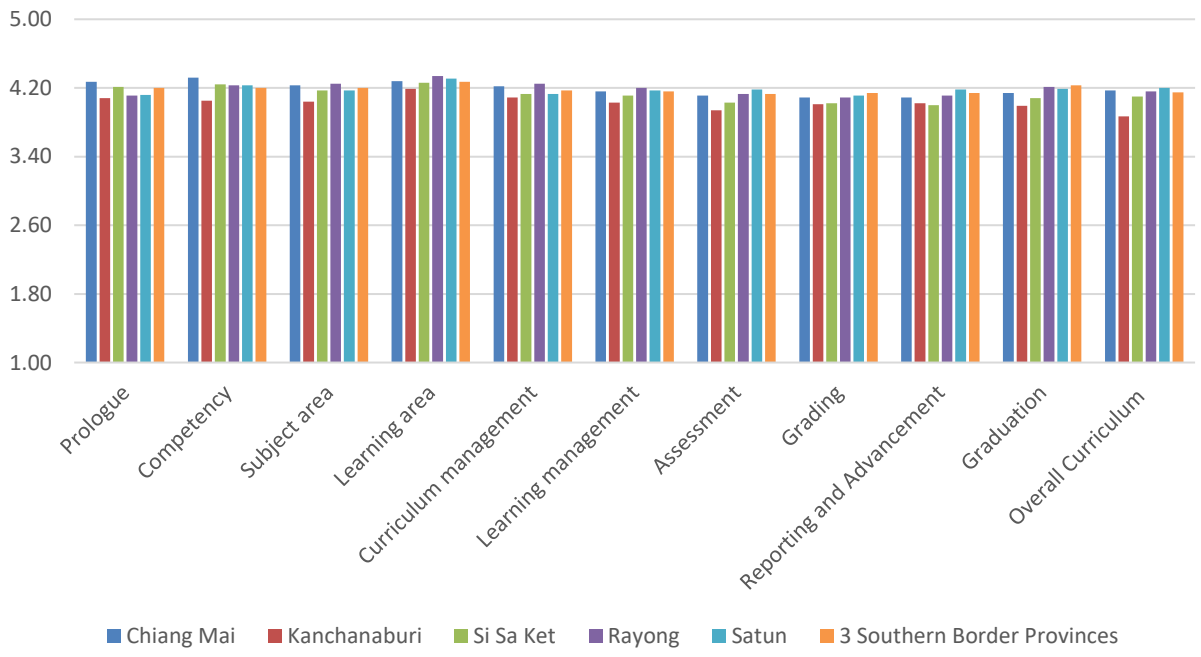

Figure 2 The level of opinion towards the draft Basic Education Curriculum Framework (competency base) classified by education sandbox
(Source: Thummaphan et al., 2022)

1.2 The results of a qualitative study on the opinions on the (draft) Basic Education Curriculum Framework

The multi-case study revealed important findings to explain the results of the quantitative research as follows:

1) Opinions on prologue in the draft curriculum framework; the quantitative study found the opinion level of "strongly agree", which is consistent with the qualitative study that viewed this curriculum framework is fully defined. Curriculum principles, objectives, and desirable characteristics are defined clearly and appropriate to the context of present era and learner development in the 21st century, as well as in harmony with the six core competencies. They suggested to emphasize the desirable characteristics of learners in the subject " eager to learn " and "love being Thai"

*"First of all, we normally have 8 desirable attributes. Now we cut 3 of them: Eager to learn, commitment to work. love being Thai. But children should still have "eager to learn" because out of these 5 things (*desirable characteristics*), there is no such thing as pursuing learning. Enthusiasm for studying is recommended that you have a passion for learning."* (Participant from Kanchanaburi Province)

2) Opinions about the six core competencies; the quantitative analysis yielded a "strongly agree" level, which is consistent with the qualitative study's finding that an overall assessment of competency definitions, components, and component descriptions are quite appropriate, comprehensive, and clear. Most concerns are given to the higher-ordered thinking competency, which according to quantitative research was shown to be "agree" with a lower agreement level than other competencies. Although, the qualitative study discovered that the definitions and descriptions of the components are clear, many teachers are worried that achieving the competent level may be too difficult for learners in grade level 1. They also worry that because the descriptions of the level are broadly defined and have multiple points, it is unclear how to use it in instruction and assessment. The main observation is that teachers still lack understanding of the competency level definitions.

"Six core competencies and 10 levels that have been announced, the school considers it appropriate. Considering a child who will go out from school and go to society or to the outside world, if he has all 6 competencies, he will be able to live." (Participant from Si Sa Ket Province)

3) Opinions on the learning area; the quantitative study was found "strongly agree" with most learning areas, except English language. The qualitative study found that the provision of 7 learning areas is appropriate for the development of core competencies. For the English language learning area, it was found that the name would be revised to "Foreign language" to cover other foreign language courses being taught by schools. The level of competency and learning outcomes are too difficult for first grade level learners to accomplish in some points. For the essence of the learning area, specific competency, and learning outcomes, a quantitative study found "agree", which is consistent with the qualitative study findings. Although they are generally appropriate, some elements should be adjusted to suit the needs of first-grade level students and the teacher's chosen content.

" In the language group just like at our school, there are Malay language classes...that is, the word English is probably changed to foreign language." (Participant from Satun province)

The findings of the qualitative study also revealed a significant suggestion for subject integration, which the teacher believes should be a genuine integration for efficient learning management. Additionally, there can be objections to some particular competences and learning outcomes that students would not be able to achieve owing to restrictions on teachers' capacity and instructional resources in schools.

4) Opinions on time structure; quantitative study found that "strongly agree", which is compatible with the findings of the qualitative study, which revealed that the time schedule for each category of subjects is quite suitable for learning. The majority of participants, however, express concerns about whether the 800 hours allotted for the program will be sufficient to cover all of the required coursework and other school-focused activities. They reasoned that issue may be solved by taking additional hours for this kind of activities from the scheduled time.

"The word no more than 800 hours, the teacher thought it was too little. If it is no less than 800, this is still ok. It can still be arranged for the 1st-3rd grade is 800 or less than that. But teachers will have the feeling that they will not able to teach the children in that timeframe yet." (Participant from Rayong Province)

5) Opinions regarding curriculum management covering curriculum management, learning management, assessment, grading, reporting and advancement, and graduation; the results of the quantitative study on all of these components were found to be "agree", which the qualitative study confirmed that administrators and teachers thought the curriculum management approach and the learning management approach coupled with the assessment are appropriate. A detailed, step-by-step explanation of how to manage curriculum, learning, and assessment is given. But some schools are still unsure about how to put it into practice because some teachers may lack experience in curriculum development and are still rigidly adhering to the traditional assessment techniques.

"In learning management, it is considered appropriate to use in teaching. Let the children do real practice. We guide and support and the children do self-learning, taking into account the differences of students. It can be used which is coordinated with the assessment which at first, we assess with the old and same way, but now we have to assess a new way. This is a new issue for teachers who need to continue to study about assessment. They must periodically assess everything that children do. Teachers must understand this type of assessment." (Participant from Si Sa Ket Province)

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2. Framework for development and implementation of competency-based school curriculum

According to the findings of the quantitative and qualitative study, three key domains of the framework of the competency-based curriculum development and implementation for schools were identified as follows: (1) Competency-based curriculum design, (2) Learning management and assessment, and (3) Competency-based curriculum management.

1) Competency-based curriculum design divided into competence determination, and learning areas.

Competency determination takes the consistency of the six core competencies as outlined in the curriculum framework into consideration since they are fundamental competencies that are essential and comprehensive for the development of learners for present and future living. In this regard, taking into account the context or focus of the school, some schools may add more competencies or modify the specifics of each competency defined in the curriculum framework. In order to properly create a school curriculum with strong direction and teamwork, administrators, teachers, and other stakeholders should have a clear common goal for learner growth in each grade level.

Learning areas place an emphasis on addressing the seven topic areas as outlined in the curriculum framework by offering effective instruction in all learning areas at all grade levels to ensure that learners' progress is continuous. The emphasis on the design of the learning areas is considered to be aligned with the focus of the school and the context of the community as well as emphasis on learning areas that are related to modern society and technological advances. The learning should promote life skills for the present and equip students with the fundamental skills for the future. In order to do this, students should be given the opportunity to participate in choosing the theme they wish to study about. Moreover, the design of the learning areas should encourage the participation of teachers, learners and parents and should prioritize learning areas to suit each grade and grade level, and to have continuity between each grade. Furthermore, the number of subjects may be reduced and focus more on integration between learning areas by considering the nature of disciplines and the connection between learning areas to design the integration appropriately as well as draw on the strengths or ways of the community for designing the integration between learning areas.

2) Learning management and assessment divide into learning management, and competency assessment.

Learning management places a strong emphasis on both promoting learners' competency development and minimizing educational inequities. Participation of instructors, students, and parents is the important strategy. In order for students to learn from their experiences and personal matters, emphasis is made on learning approaches that are consistent with learners' daily lives and communal ways of living. Additionally, emphasis is put on practicing what one learns and developing flexible learning opportunities that give everyone access to education regardless of where they are or when they choose to learn. Learning management also takes into account learners’ individual differences and resources are available to enable all learners to achieve competencies according to their potential and aptitude. Additionally, in order for parents to comprehend the personalized learning approach and work

with schools to support students in developing competencies, communication with parents about learning that focuses on learner competency development is essential.

Competency assessment focuses heavily on designing the competency assessment criteria to be flexible according to the learners' ages and needs, adjustment of the assessment method to be able to assess along with the learning process with ease to manage according to the time structure, or utilizing performance assessment. In order for each learner to feel confident in themselves without comparing or ranking with their peers, emphasis is also made on each learner's progress and how they have improved in terms of performance or ability. It is crucial to explain to parents the purpose of competency-based assessment, which was discussed above, and that it is not to pit their children against others to see who can graduate from school the quickest and with the greatest grade.

3) Competency-Based Curriculum Management divided into 1) Setting time structure, 2) Preparation and use, and 3) Supervision, monitoring and evaluation of schools' curriculum.

Setting time structure should create an understanding for teachers to define learning time structure that are consistent with learning areas as described in the curriculum framework, promote participation in the learning schedule, focus on reducing the number of subjects and emphasize greater integration of learning areas., and devote a larger percentage of time to the crucial learning areas and use the integration between other lower prioritized learning areas and additional activities. Moreover, the school should analyze and prioritize the activities that are truly consistent with the school focus to develop learners' competency within the specified time frame.

Preparation and implementation are the key steps in efficient and effective deployment of competency-based school curriculum. Preparation of personnel is needed by determining the knowledge set required for practitioners and utilizing appropriate methods of training. Important knowledge sets include knowledge of competency-based curriculum, learning design for competency development, and the integration of concepts within and across learning areas, as well as assessment design and practices. It is necessary to set up the systems and support for curriculum implementation, including planning training, assigning mentors to offer guidance and consultation, providing manuals or case studies for use in learning management and assessment, and creating a professional learning community to promote collaborative learning and continuous improvement.

Supervision, monitoring and evaluation are required for both school and policy-level agencies to ensure that the implementation of the school curriculum is on the right track in terms of fidelity, effectiveness, and efficiency. There should be check list forms to examine the quality of the curriculum preparation and implementation to help schools ensure every step of their process correctly and completely. Moreover, it is necessary to use the information from the assessment to continuously improve and enhance the curriculum.

In order for the curriculum management to be effective, schools should have a clear plan, with systematic procedures in line with the process of creating a competency-based curriculum.

A summary of framework for development and implementation of competency-based school curriculum is shown in Figure 2.

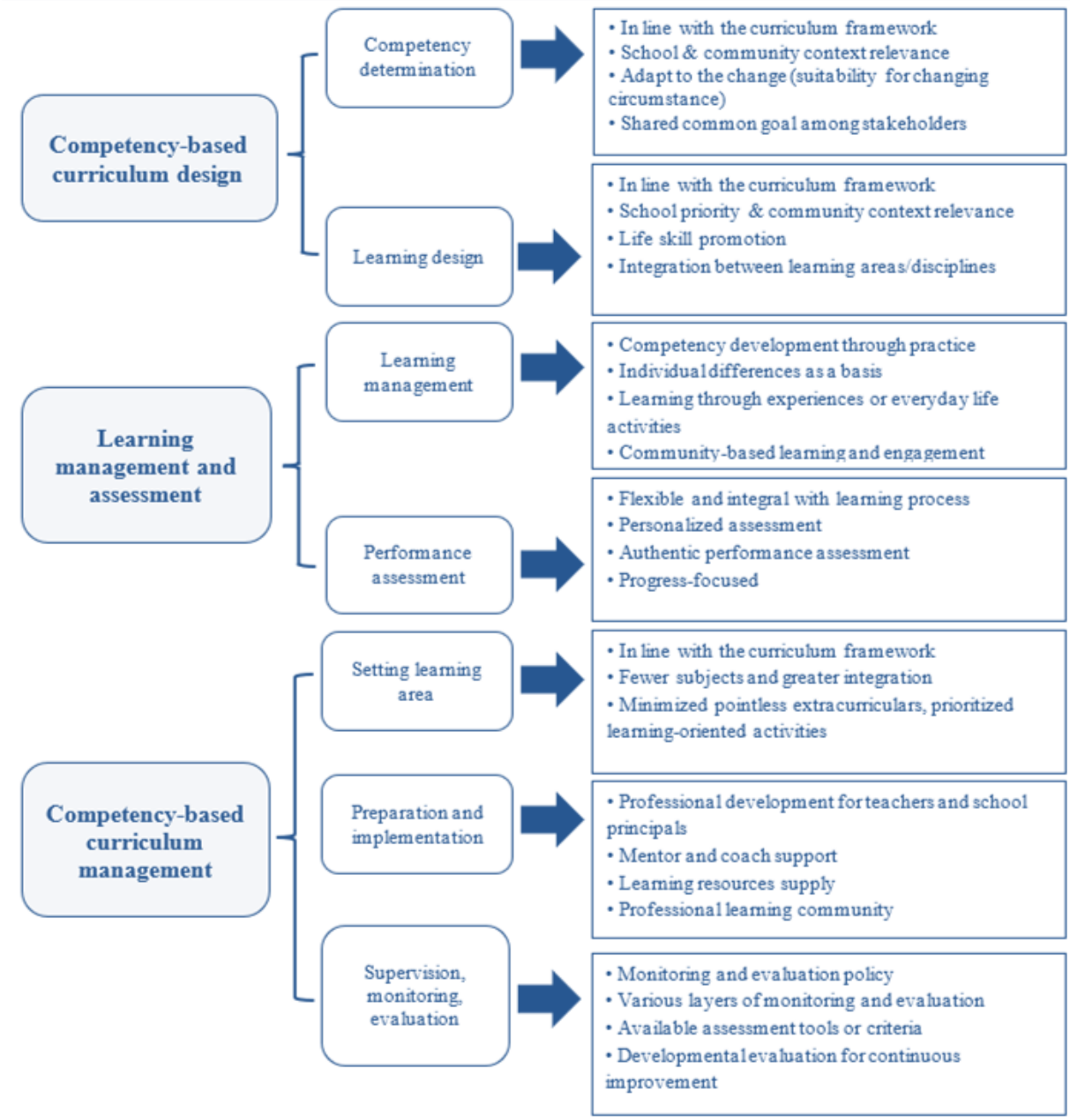

Figure 2 Framework for development and implementation of competency-based school curriculum
(Source: Thummaphan et al., 2022)

According to this framework, the conceptual model that elaborates the important aspects of the competency-based school curriculum design and application has been analyzed and proposed as shown in Figure 3. Basically, the goal of utilizing competency-based curriculum in schools is learners' competency, and in order to achieve that, the implementation

process must adhere to the core principle with the crucial supports that foster successful implementation. To be specific, this model includes three components: 1) competency for learning, working, and living as an outcome of the curriculum; 2) Implementation to achieve the goal by emphasis on core principles with uniqueness of leaners, school, and community, integration of concepts, learning areas, and disciplines, and developmental continuum of competency levels with interconnected of the levels; and 3) critical supports from collaboration of stakeholders, professional development of teachers and educators, and continuous improvements.

The conceptual model for advancing the design and application of competency-based

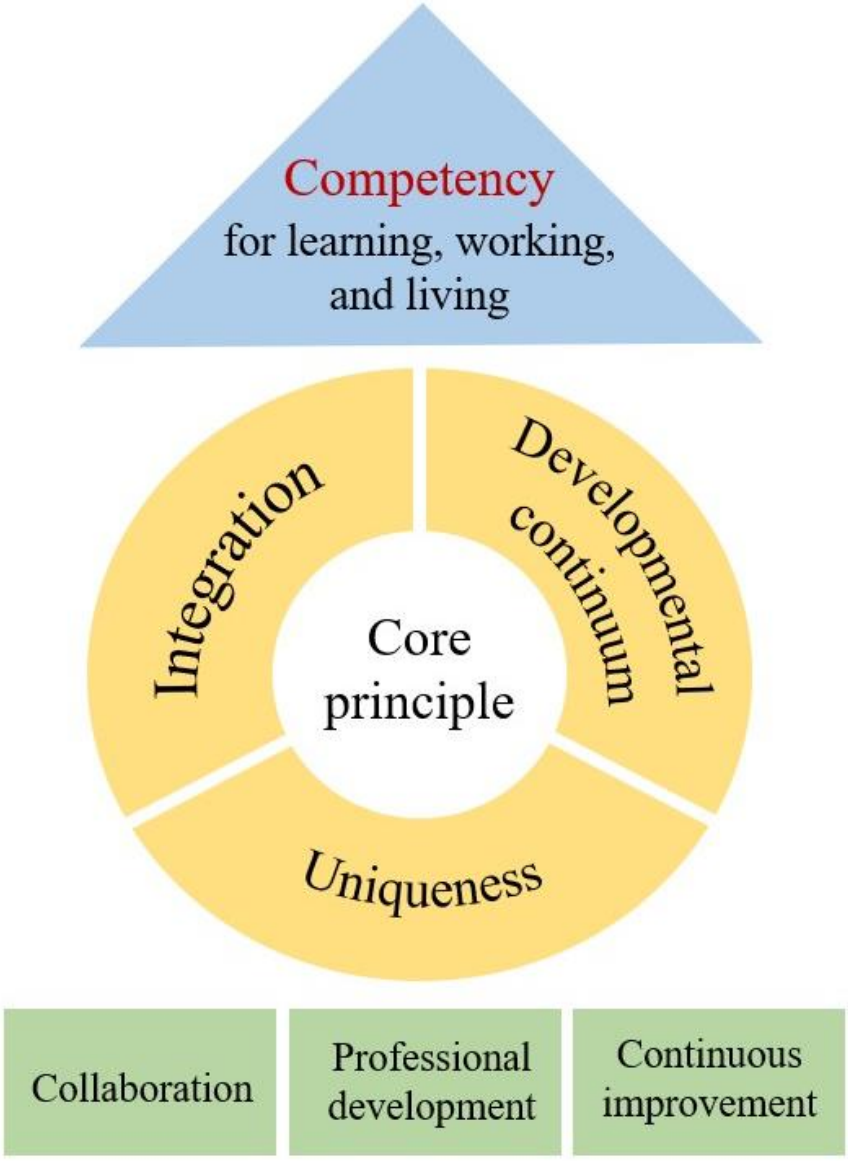

Figure 3 The conceptual model for advancing the design and application of competency –base curriculum in schools
(Source: Thummaphan et al., 2022)

Discussions

1. Opinions of administrators, teachers and stakeholders in pilot schools in the education sandbox towards the (draft) Basic Education Curriculum Framework derived from broad and in-depth data, providing comprehensive and profound findings. From studying the experience of national curriculum development in many countries, the process of hearing opinions on the draft curriculum before it was announced is a common practice (Thummaphan et al., 2021). Obtaining information about stakeholder opinions on a curriculum is a treasure trove of curriculum development because it exposes the shortcomings of the (draft) Basic Education Curriculum Framework, which can be used to improve it completer and more beneficial to education provision. The results showed that the participants agree on the content of the (draft) Basic Education Curriculum Framework, and the results from both the questionnaire survey and the multi-case school discussion group were consistent, indicating that (draft) Basic Education Curriculum Framework is quite appropriate. This is because the (draft) Basic Education Curriculum Framework has been continuously developed and has a fairly wide range of participants involved in the process so that it has been reviewed and improved to a certain extent before the pilot. Moreover, these results show a tendency for practitioners to adopt the (draft) Basic Education Curriculum Framework, which is particularly useful for planning to drive it in the next phase.

Although the participants generally agree on the essence of the (draft) Basic Education Curriculum Framework, there are still a few areas that need further improvement, especially the clarity in the assessment of learners' competency. This is conceivable since teachers do not fully understand the competency-based curriculum concept (Kabombwe & Mulenga (2019), as well as are not yet familiar with how to assess competency in their instructional practices which is consistent with Pamies et al. (2015). As Koloi-Keaikitse (2017) found, teachers felt more skilled in test construction than other assessment practices. They might become unclear when facing competency assessment which involves various aspects. Nevertheless, the areas for improvement are provided by the group of professionals who will be responsible for its implementation, these areas should be taken into account for further development of the (draft) Basic Education Curriculum Framework.

2. The framework for development and implementation of competency-based school curriculum of pilot schools in education sandboxes consists of both competency-based curriculum design; learning management and assessment, and curriculum management, which is considered as covering the important processes of school curriculum development and is consistent with the concept of Bua-Sri (1999). It has been mentioned that the curriculum development process begins from the creation of a prototype curriculum to the evaluation of it. The approach appears to be more domain-based (like Rajurkar et al., 2019) than step-based because it is based on field-based empirical data that addresses issues with curriculum development and implementation. All components of the framework are given a lot of weight since the curricula being developed or about to be prepared by schools are unique or distinct

from those that have already been practiced. Hence, every component is therefore a key component of this framework. Moreover, the conceptual model proposed by this research provides a different perspective for looking at school curriculum development and implementation. Rather than looking at the procedures like other models (Tyler, 1949; Taba, 1962; Bua-Sri, 1999; Sinlarat, 2018), it highlights the crucial aspects as components of school-based curriculum development and implementation for reaching the learners' competency development goal.

The key concepts used for creating a competency-based curriculum of schools provide interesting information. It found that a variety of concepts are used in school curriculum design such as active learning, integrated learning, personalized learning, which is quite consistent with the concept of competency-based education, particularly, the definition of competency-based education which states that students learn actively with different learning styles and at various paces (Levine & Patrick, 2019). Moreover, these concepts are consistent with Reigeluth & Karnopp (2020) who have proposed several competency-based learning models such as learning by doing and personalized learning. They also are in accordance with a policy to solve the problem of disadvantaged children in accessing educational services by providing flexible education in order to be in line with the social conditions' different cultures of children and community contexts (Tumthong, Sirasoonthor & Buosonte, 2014; Mkonongwa, 2018), and the concept of community-based learning that emphasizes giving learners the opportunity to learn what they want from the community as well as learn from practice and from solving problems in the community creatively (Chutsuriyawong & Nillapun, 2016; Owen & Wang, 1996). The concepts that the schools use to design school curriculums reflect their perception of the principles of competency-based education, and demonstrate the initial connection between concepts and practice, which requires a long-term follow-up study in order to see more of the operating conditions in the real situation. These viewpoints, however, are primarily from the standpoint of educational service providers rather than from that of users, i.e., students and communities. This would be especially helpful if further research was conducted on the perspectives of the service recipients in education and see whether there was a consistency between the service providers' and clients' perspectives.

An important limitation in this research is the time frame for bringing the (draft) Basic Education Curriculum Framework into the development of competency-based school curriculum. Despite the fact that the pilot schools willingly participate in the project and keep up with developments regarding the (draft) Basic Education Curriculum Framework, the time it takes for schools to establish and execute their school curricula is short. The knowledge gathered from pilot schools' perspectives on those topics will be richer if they have more time practicing curriculum. After the design, implementation, and assessment phases of employing school curriculum are over, more study is still needed because this will give a more complete picture.

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Conclusion and suggestions

The study of the framework for competency-based school curriculum development and implementation of the pilot schools in the education sandbox led to the understanding of the transformation of national curriculum into the school practices in the context of competency-based education as an important educational innovation of Thailand. The framework for the development of competency-based curriculum for schools covers three main issues: competence-based curriculum design; learning management and assessment and learning evaluation and curriculum management. Moreover, the conceptual model provides theoretical concepts for driving school curriculum to promote learners' competency including outcome, core principle, and support. These are important components that schools can use in the implementation of competency-based curriculum development.

There are some critical recommendations for policy and practice. The Office of the Basic Education Commission should formulate a policy to promote participation in the area and support resources, especially mentors in the preparation of school curriculum. Also, the Office of the Basic Education Commission, the Education Sandbox steering committees, schools and related agencies should adopt the framework and model as guidelines for the preparation and implementation of competency-based school curriculum.

Due to the limited period of time for conducting research and the implementation of curriculum development of the pilot school is still in the early stage, there should be an in-depth study of the practice of developing and implementing competency-based school curriculum of pilot schools in education sandboxes. This will result in more detailed and comprehensive information. Additionally, by conducting participatory research involving collaboration between researchers, schools, and stakeholders in curriculum development, implementation, and evaluation, it should be determined the effectiveness of the utilization of the framework and model.

New knowledge and the effects on society and communities

This framework is based on empirical evidence rather than theoretical composition. Therefore, the components are critical aspects that practitioners in the field concern and practice. The conceptual model is a theoretical principle that helps build knowledge in the design and use of competency-based curriculum at the school level. These framework and model are the theoretical concepts that contribute to the school curriculum development body of knowledge in the context of competency-based curriculum, particularly how school can translate policy to practice---from national competency-based curriculum framework to school curriculum operation. Since they are primarily derived from data obtained from local practitioners in diverse school contexts, it is possible that they can be used in various schools, which can promote the development and implementation of the school curriculum more successfully.

Acknowledgement

Thanks to the Equitable Education Fund (EEF) for funding support for the implementation of this project.

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