

Twenty-First Century Competencies: How Can Teacher Education Programs Prepare Teacher Candidates for Successful Teaching Career Paths?

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This study investigated teacher candidates' perceptions of 21st-century competencies, compared the perceptions among teacher candidates from different majors and academic achievement levels, examined the relationship between teacher candidates' perceptions of the competencies and their learning achievement, and determined approaches to enhance such competencies. A survey was conducted among 250 teacher candidates from 13 different majors, and six university lecturers were interviewed in an open-admission university in Thailand. The results revealed that the teacher candidates realized the high importance of 21st-century competencies regarding the role of teachers as facilitators, learning management skills, technology and media literacy skills, morality and professional ethics, assessment and evaluation, knowledge and understanding of the social context, communication skills, and research skills. Teacher candidates from different majors and with varied academic achievement levels had the same perceptions of 21st-century competencies in all but two areas: knowledge and understanding of the social context and communication skills. Furthermore, no relationship was found between teacher candidates' perceptions of the competencies and their academic achievement. The results suggest that faculty and other related organizations must realize the importance of developing teacher candidates' 21st-century competencies by creating efficient, high-quality programs, to prepare them for a successful career path.

Keywords: 21st-century competencies, teacher candidate, teacher education, perceptions

The current era of rapid advancements in information technology worldwide requires each country to adapt to changes that directly affect its way of life. Countries also encounter external pressures such as changes in global economic and social contexts. These significant transformations caused by the "Industry 4.0" should, according to Thailand's 20-year national strategy, strengthen the country, while also maintaining connections with the global community, in accordance with the concept of "sufficiency economy" and through the "Pracharat" mechanism. Following the country's policy agenda, the Thai government primarily aims to prepare its citizens for the 4.0 era (Maesincee, 2016).

Since teachers' primary responsibility can be regarded as nurturing the youth into becoming good citizens, this profession is considered critical for the development of

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the country in the Thailand 4.0 policy. The country's progress depends not only on capital or material resources but also on human resources, education, and the abilities of the citizenry, because they are key to the nation's adaptation to contemporary challenges. Increasing the capacity of individuals in society to make a living and providing all children with equal access to good education will make them competent citizens capable of maintaining the stability and sustainability of the nation. Therefore, Thailand's educational system needs to set human resource development goals, and plan, develop, and prepare the workforce to enter the job market upon graduation. Arif et al., (2019) also suggested that choosing a career to pursue in the future is a very complicated decision; therefore, preparing the children for future careers needs to be taken into serious consideration. Adjusting curricula and employing flexible teaching methods can develop and enhance a variety of skills and competencies in preparation for the changes and "borderless competition" of the 4.0 economic and social era (Office of the Education Council, 2017).

According to the National Education Plan 2017–2036, there are four objectives of educational management: 1) develop a quality and efficient education management system and process; 2) develop good citizenship, characteristics, skills, and competencies among Thai people; 3) develop Thai society as a learning society that fosters morality, ethics, unity, and collaboration to achieve sustainable development of the country; and 4) lead Thailand to break free from the middle-income trap and reduce inequality within the country.

For these reasons, the production of excellent teachers is pivotal. The approach to developing quality teachers includes the careful selection of teachers and a training process that attracts talented people with a passion to educate. The teacher training process helps in developing teacher candidates' attitudes toward teaching and strengthens their pedagogical skills. Cohen (2000) suggests that teachers must have a sense of professional commitment and be fully devoted to teaching. Teachers with a strong sense of honesty and commitment to the profession will be enthusiastic, responsible, and diligent.

Schools primarily influence teachers' commitment and desire to continue their teaching career path. In addition to schools, the Teachers' Council, pursuant to Section 53 of the National Education Act, B.E. 2542 (1999), under the supervision of the Ministry of Education, has the power to set professional standards. To this end, the Teachers' Council of Thailand Board issued the Regulations on Professional Licenses B.E. 2559 (2016) and launched an amended version No.2 B.E. 2562 (2019) outlining rules, procedures, and conditions for issuing a new teacher's professional license. Accordingly, applicants are required to pass the teachers' professional competence assessment. With some exceptions, the assessment is not a requirement for those who have obtained, before the academic year 2019, at least a bachelor's degree or the equivalent in the field of education and met the standards of professional knowledge and experience established by the Teachers' Council of Thailand (Thai Government Gazette, 2019).

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A study by Kitjatorntham et al., (2011) on good practices in training Thai teachers in the past revealed that teacher development has to be in line with the demands of the country. They suggested that emphasis should be placed on exchanging knowledge, using group processes, devoting time to practice, encouraging the spirit of being a teacher with supplementary courses, increasing learning resources from a variety of sources, and gaining more professional teaching experience during their internship from professional development schools. With the right resources, training, and planning, these teachers graduating from the teacher education program share common characteristics such as diligence, patience, and responsibility. They are also curious to gain more knowledge and touch students' lives and tend to have faith in the teaching profession.

Sinlarat (2015) compared professional teaching standards in other countries and those in Thailand, found that the content in the latter was too broad, and suggested a need for new-generation teachers who can act as leaders in both the educational field and society. A clear framework for teacher candidates' competencies will serve to develop their 21st-century skills. According to Chomphukam (2019), teacher candidates need to possess 21st-century competencies (e.g., the knowledge and understanding of basic teaching foundation, effective learning management, and social contexts; media and technology, communication, and social skills; social conscience and awareness; and morality and ethics).

McClelland (2004) investigated the relationship between the qualities of individuals in an organization and their skill level, knowledge, and abilities. The intelligence quotient (IQ) and personality tests are inappropriate methods for evaluating competencies. Instead, everyone should be provided with opportunities to perform tasks that can show their abilities rather than be judged by scores on standardized tests.

In accordance with the main objectives under the qualifications framework for higher education and with an aim to be an organization of excellence in education, the Office of the Higher Education Commission (2011) emphasizes preparing a high-level workforce to have at least five necessary 21st-century characteristics—ethics and morality, knowledge and cognitive skills, interpersonal skills and responsibilities, numerical analysis skills, and communication and information technology skills. These characteristics are similar to those that students are expected to develop during their studies and participation in various curricular and extracurricular activities conducted by educational institutions. In addition, they need to be able to demonstrate their knowledge, understanding, and competence through these characteristics.

Educational learning objectives have undergone considerable changes, as evident in the United Nation's sustainable development goal 4.7, which emphasizes education for sustainable development and global citizenship. Such changes are the result of the acceptance of the requirement for educational methods to provide students with various capabilities, including communication, critical thinking, cooperation, and problem-solving. These 21st-century objectives, which are observed in curricular reform and general education, have been encouraged globally, considering changing work and societal requirements. Although this study primarily focused on the assessment, it also

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affirmed the necessity for any principal reform in educational philosophy to guarantee alignment of the fields of pedagogy, curriculum, and evaluation. The purpose of educational systems is to satisfy society's requirements, but they do not necessarily equip citizens to fulfill all such requirements. There is a universal presupposition that those who proceed through an educational system successfully will acquire the abilities both required and respected by society. Educational systems now have new learning areas that are included as particular objectives of the educational experience because of the previous failure to attain the standards expected by society.

A major study to map countries' endeavors to align students with this 21st-century educational system was conducted to help them develop 21st-century abilities. It was carried out by the World Bank, and UNESCO's International Bureau of Education. Direct permission to publish the data was provided by the appropriate governments. The data were collected from a total of 152 nations, of which 53 (35%), including the Dominican Republic, Madagascar, Morocco, and Spain, showcased particular abilities in their vision or mission statements, and/or basic policy documents, but not in their curricula. However, in some nations, curricula were unavailable online. Furthermore, particular skills were mentioned in the curricular documents of 58 (38%) nations, although no progression of the skills was evident. These countries include Chile, Norway, India, New Zealand, and Zambia. Only 17 nations defined how skills develop and advance with time and at various educational standards. These countries include Australia, Iceland, Mexico, and the United Arab Emirates. Twenty-five (16 %) nations showed no evidence of any of the aforementioned indicators. The four most frequently recognized skills in 25 countries, including the Democratic Republic of Congo, Egypt, Iran, and Russia, were creativity, communication, problem-solving, and critical thinking, and were outlined in the national policies of all 152 nations.

Importantly, nations have specifically recognized skills other than academic ones because abilities such as entrepreneurship, social skills, and information technology (IT) skills have been identified. Similar results have been obtained by another series of studies that concentrated on the movement toward fostering abilities at the local level. UNESCO's Education Bureau in Bangkok coordinates the Asia-Pacific Education Research Institutes Network (Eri-Net), which consists of 10 or 11 nations. Some countries were of minor significance in the study. These include Australia, China (Beijing, Shanghai), Hong Kong Special Administrative Region, India, Japan, Malaysia, Mongolia, the Philippines, Republic of Korea, Thailand, and Vietnam. According to the participating nations, the principal objective of education is to obtain intellectual skills and knowledge. The most frequently quoted transversal abilities were reflective, innovative, and critical thinking, as well as cooperation, communication, and reasoned decision-making (Care et al., 2018).

With the transition to a knowledge-based socioeconomic system, countries worldwide attempt to develop and adjust to a new education management system called "Education Reform" aimed at improving the efficiency of educational management, standards, and quality workforce to a learning society. Teachers are pivotal in the process of educational reform because they are the front-line group in developing student quality. It remains to be determined what strategies can be employed to motivate and encourage

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students to think in the right way. These strategies will allow students to gain the characteristics or ability to think differently and clearly. Furthermore, it has been noted that the social, political, and economic problems currently occurring in many countries are based on the capabilities of the people. The “teacher” is an important element in the educational development process of the countries. Teaching is, thus, a high-profile profession in which practitioners affect society as they are responsible for the students; therefore, special control over their professional practice is required to increase students’ and society’s confidence. According to Rofiq et al., (2018), any attempt to create high-quality education requires a comprehensive performance, which involves the availability of teachers, facilities, and infrastructure, in addition to the learning system and curriculum. Therefore, the availability of good teachers is essential to establish an educational system of optimum quality.

The Office of The Education Council Secretariat’s (2015) past reports on the state of education revealed an intellectual crisis in teacher training. Many of these problems are still present, such as the lack of continuity in teacher production policies, low quality of teacher education, ineffectiveness in cultivating a teaching spirit, limited pedagogical knowledge and skills, and low quality of teaching practicum. Another critical issue is the inefficient and ineffective educational administration. Centralized administration, redundant and overlapping organizations, a lack of coherence in education development policy, and low resource utilization efficiency lead to a lack of participation opportunities for all parties. This state of affairs results in low-proficiency teachers, a loss of faith and confidence in the teaching profession, noncontinuous policy development, and limited information technology infrastructure. To solve the aforementioned issues, intellectual strategies and relevant education reform are urgently needed.

To achieve the goals of effective teacher production, this study aimed to 1) investigate teacher candidates’ perception of 21st-century competencies, 2) compare the perceptions of 21st-century competencies among teacher candidates from different majors and levels of academic achievement, 3) examine the relationship between teacher candidates’ perception of 21st-century competencies and their learning achievement, and 4) examine approaches to enhancing teacher candidates’ 21st-century competencies. The results would enable the researcher to provide opportunities for professional teaching courses to equip teacher candidates with the knowledge and skills needed for their prospective careers.

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Method

The study was conducted using a mixed-methods approach, a combination of qualitative and quantitative data. The data were triangulated to strengthen findings (Jogulu & Pansiri, 2011) as the results from the interview threw further light on the findings from the questionnaire.

Participants

In this study, a survey was carried out among 250 teacher candidates from 13 different majors in an open-admission university in Thailand, using simple random sampling (Cohen et al., 2011). Qualitative research was conducted via online interviews with six university lecturers, one from each group: 1) Early Childhood; 2) Elementary; 3) Mathematics, Science, Computer, and Vocational Education; 4) Social Studies and Arts; 5) Thai, English, and Chinese; and 6) Physical Education and Health Education.

Research instruments

Questionnaire

A five-point Likert-scale questionnaire, ranging from “strongly agree (5)” to “strongly disagree (1),” was designed to gain quantitative insights about teacher candidates’ 21st-century competencies. It covered three main sections:

- 1) Participants’ general information—major and academic achievement level.
- 2) Statements about teacher candidates’ 21st-century competencies in eight areas—role as a facilitator, learning management skills, technology, media, and media literacy skills, morality and professional ethics, assessment and evaluation, knowledge and understanding of the social context, communication skills, and research skills to further develop learning.
- 3) Additional suggestions—an open-ended question for additional concerns or opinions.

The questionnaire was verified for content validity by five experts in the field of teacher education and/or curriculum and instruction, and it revealed a score of 1.0 on the item-objective congruence (IOC) index, thus indicating good validity. Additionally, Cronbach’s alpha coefficients for the items on the questionnaire were calculated as $\alpha = .962$, thereby indicating acceptable reliability with statistically significant differences.

Interview

The interview contained five questions aimed at exploring approaches to enhancing teacher candidates’ 21st-century competencies.

1) Which of the following approaches do you think can enhance teacher candidates’ 21st-century competencies? Please note that you can select more than one option by specifying the sequence of numbers in order to rank the items you deem appropriate.

- | | |
|-------------------------------|-------------------------------------|
| _____ Lectures | _____ Computer-assisted instruction |
| _____ Small group discussions | _____ Class discussions |
| _____ Demonstrations | _____ Role playing |
| _____ Use of case studies | _____ Games and simulations |

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- | | |
|------------------------------|-------------------------------|
| _____ Field trips | _____ Projects |
| _____ Coaching and mentoring | _____ Self-studying |
| _____ Consulting sessions | _____ Others (Please specify) |
| | (.....) |

- 2) During the planning process to promote teacher candidates' 21st-century competencies, who should analyze the need for promoting competencies and how?
- 3) Which competencies are pivotal for teacher candidates to meet professional teaching standards?
- 4) How do you motivate teacher candidates to apply their experiences to promote their competencies?
- 5) What activities should be prepared for teacher candidates to foster their professional development?

The same five experts who evaluated the questionnaire were asked to evaluate the list of interview questions and report the extent to which they believed these items corresponded to the elements they were intended to measure. Consequently, the index of the item-objective congruence was 1.0, thus indicating good validity.

Data collection and analysis

An online Google Forms questionnaire was distributed to 250 students of the open-admission university. One-to-one interviews were conducted with six university lecturers in the initial teacher preparation program via phone calls and the Zoom platform, and permission was obtained to record the interview sessions.

The quantitative data generated from the questionnaire were analyzed using descriptive statistics (mean scores, standard deviations, and percentages). The inferential statistics data obtained from the interviews were analyzed using t-test and one-way ANOVA in SPSS to verify the differences in the perceptions of 21st-century competencies among teacher candidates from different majors and levels of academic achievement. In addition, the correlation between the perceptions was generated using the Pearson's product-moment correlation coefficient.

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Results

The results of the data analyses are presented as follows.

1. The analysis results showed that the teacher candidates' perceptions of 21st-century competencies in eight areas were at a high level, as presented in Table 1.

Table 1

Descriptive statistics of the teacher candidates' perceptions of 21st-century competencies

Perceptions of the Teacher Candidates	\bar{X}	SD	Level
1. The role as a facilitator	4.26	0.50	High
2. Learning management skills	4.20	0.50	High
3. Technology and media literacy skills	4.22	0.52	High
4. Morality and professional ethics	4.37	0.50	High
5. Assessment and evaluation	4.23	0.53	High
6. Knowledge and understanding of the social context	4.39	0.50	High
7. Communication skills	4.32	0.51	High
8. Research skills to further develop learning	4.21	0.54	High
SUM	4.28	0.45	High

The comparison of the perception of the 21st-century competencies of teacher candidates from different majors and levels of academic achievement showed that there was no statistically significant difference in overall perceptions and in the areas of the role as a facilitator, learning management skills, technology and media literacy skills, morality and professional ethics, assessment and evaluation, and research skills to further develop learning.

The comparison of teacher candidates from different majors using the least significant difference (LSD) test approach showed statistically significant differences ($p < 0.05$) in the area of knowledge and understanding of the social context. First, the teacher candidates in the “elementary” group had higher perceptions of the 21st-century competencies than those in the “early childhood”; “mathematics, science, computer, and vocational education”; and “social studies and arts” groups. Second, the candidates in the “mathematics, science, computer, and vocational education” group had higher perceptions of the competencies than those in the “Thai, English, and Chinese languages” group.

The comparison also showed statistically significant differences ($p < 0.05$) in the area of communication skills. First, the teacher candidates in the “elementary” group had higher perceptions of the 21st-century competencies than those in the “mathematics, science, computer, and vocational education” and “social studies and arts” groups. Second, teachers in the “mathematics, science, computer, and vocational education” group had higher perceptions of the competencies than those in the “Thai, English, and Chinese languages” group. Third, the teacher candidates of the “social studies and arts” group had higher perceptions of the competencies than those in the “Thai, English, and Chinese languages” group.

3. Confirming the relationship between the teacher candidates' perceptions of 21st-century competencies and learning achievement in eight areas using Pearson's product-moment

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correlation coefficient approach, the results showed no statistically significant differences (Correlation = 0.036, $p = 0.588$; Table 2).

Table 2

Correlation between teacher candidates' perceptions of 21st-century competencies and learning achievement

Teacher candidates' perception of 21st-century competencies	Learning achievement	
	Correlation	P-value
1. The role as a facilitator	.003	0.958
2. Learning management skills	.005	0.942
3. Technology and media literacy skills	.058	0.362
4. Morality and professional ethics	.028	0.660
5. Assessment and evaluation	.075	0.240
6. Knowledge and understanding of the social context	.028	0.666
7. Communication skills	.062	0.330
8. Research skills to further develop learning	.091	0.155
SUM	.036	0.588

Considering methods to enhance teacher candidates' 21st-century competencies, the interview results showed that the participants favored demonstrations, case studies, field trips, class discussions, computer-assisted instruction, lectures, coaching and mentoring, projects, small group discussions, games and simulations, role playing, consulting sessions, and self-study. These methods can be combined into a proactive learning process, a learning management approach that emphasizes class participation, knowledge creation, and self-directed learning. It incurs a high level of analytical, synthetic, and creative thinking, which opens opportunities to exchange ideas. More precisely, proactive learning focuses more on the learning process than on the course content, which enables students to understand the content thoroughly and allows them to understand the benefits of what they have learned.

To enhance competencies, supervisors and cooperating teachers should analyze the needs for competency enhancement. It begins with collecting background information and surveying those who have contributed to the development of students' competency in teaching, such as dean of the Faculty of Education/Education, curriculum administrative committee, lecturers, teacher candidates, those currently studying at the Faculty of Education/Education, and the school director, and professional development schools. When asked about the specific competencies, the interviewees agreed that higher-order thinking skills (HOTS) are the first 21st-century competency that should be promoted to increase the standards of the teaching profession—analytical thinking, critical thinking, reflective thinking, problem-solving, creative thinking, and the integration of knowledge. For example, students can be assigned to write two stories about their impressive and unimpressive experiences. Some are randomly selected for role play and the entire class is asked to answer the following questions.

1. Analyze the behavior of the teachers in the story. (Analytical thinking)
2. Which teacher's behavior do you think is most trustworthy? (Critical thinking)

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3. If you were the school director, how would you solve the teachers' problems mentioned in the story? (Problem-solving)

4. Is there any alternative ending? (Creative thinking)

Another example could be the analysis of news because students receive plenty of information quickly and easily in the current technological world. They are sometimes not aware of the reliability of the information as scams are common. Therefore, practicing the analysis of such information will help them develop critical thinking skills by collecting information from a variety of reputable sources before making any judgment and believing it.

Discussion and Conclusions

1) Teacher candidates' perceptions of 21st-century competencies

The teacher candidates realized the importance of 21st-century competencies at a high level overall in each of the eight areas (teachers as facilitators; learning management skills; technology, media, and media literacy skills; morality and professional ethics; assessment and evaluation; knowledge and understanding in the social context; communication skills; and research skills to develop learning). This finding is in line with that of Phomkan (2017) who pointed out the teacher candidates' perceptions of the aforementioned competencies. In addition, the results also support Hund and Bueno's (2015) findings that authentic teaching experiences and meaningful feedback from cooperative teachers in real school settings are critical for professional development in communication skills, interpersonal skills, content knowledge, research methods, and teaching. This perspective could be because rapid social transformation and the development of the teaching profession in the 21st-century society today is particularly challenging and plays an important role in the success of education reform and development. Effective teacher training would result in higher efficiency of the teaching profession. In addition, it would be in accordance with the new concept of performance recently applied in the human resource management process in the government sector.

According to Ayrançi and Başkan (2021), the standard of teachers' proficiency in various areas is explained by the application of teacher competence as a defining notion. Furthermore, an analysis of the fields of teacher competence is included in the literature, in which their proficiency is related to numerous skills, such as "learning to learn," "digital competence," "the sense of initiative and entrepreneurship," and "social and civic competencies." More importantly, it is necessary for teachers to be proficient to help students become competent. Five competencies and performance indicators associated with the Turkish lesson teacher special field competence include: 1) planning and organization (planning the teaching procedure, organizing the learning environment, and utilizing resources), 2) language skills development to enhance students' expressive and comprehension abilities as well as the national language, 3) monitoring and evaluating language development (supervising and assessing the language development of students), 4) school, family, and community cooperation (collaboration with families regarding school culture and social leadership), and 5) professional development in support of the teaching procedure and other professional endeavors.

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Therefore, teachers are actively encouraged to strengthen their competencies in every aspect, to provide students with effective instruction. This push for higher-quality educational institutions is especially relevant to the approach of education management in the 21st century.

2) Comparison of perceptions of 21st-century competencies among teacher candidates in different majors and levels of academic achievement

Teacher candidates in different majors and levels of academic achievement have the same perceptions of 21st-century competencies in six areas: the role as a facilitator; learning management skills; technology, media, and media literacy skills; morality and professional ethics; assessment and evaluation; and research skills to further develop learning. This finding is in agreement with that of both Puengpetch (2019) and Sarnkong and Poowanna (2019). Although the students studied different majors and had different levels of academic achievement, they were aware of the importance of recent social transformations that affect people's lives.

However, the results revealed differences in perceptions in two areas: knowledge and understanding of the social context and communication skills. It is also in line with studies by Phoyen (2019) and Selçuk et al., (2017). This variance may be because the social responsibility of each major is different, and individual abilities to adapt themselves to social contexts are not at the same level.

3) Relationship between teacher candidates' perceptions of 21st-century competencies and their learning achievement

The results showed no relationship between teacher candidates' perception of 21st-century competencies and their academic achievement, which supports Prathumphang's (2018) findings. It is possibly a result of teacher education regulations that are applicable to all; candidates are aware of the competencies they need to develop, regardless of their level of learning achievement.

4) Approaches to enhancing teacher candidates' 21st-century competencies

The interview results revealed possible approaches to enhancing teacher candidates' competencies. Some of these are the use of demonstrations, case studies, field trips, class discussions, computer-assisted instruction, lectures, coaching and mentoring, projects, small group discussions, games and simulations, role-playing, consulting sessions, self-studying, active learning, and high-order thinking skills. Bibi (2020) suggested that higher order thinking questions that foster students' critical and analytical thinking should be asked more frequently in the classrooms. The dean, curriculum management committee, lecturers of the teaching practicum course, teacher candidates, current students in the Faculty of Education, school principals, and cooperative teachers should take the responsibility to establish approaches that promote these competencies.

This process could begin with investigating the need for competencies, including finding background information and then reaching a consensus on the

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development of the necessary competencies. Furthermore, the teacher candidates' strengths should be analyzed and enhanced to meet teaching profession standards, in line with McKenzie's (1995) suggestion that good competencies should be beneficial and useful. They should be trained using demonstrations and provided opportunities to apply their practical skills rather than being taught using traditional methods of instruction. The integration of knowledge, analytical thinking, critical thinking, reflective thinking, problem-solving skills, and creativity will enable teachers to draw on their experiences to enhance their competencies. Both favorable and challenging situations could be simulated to allow candidates to practice their higher-order thinking (HOT) skills, scoring rubrics creation, and classroom management. They would, thus, be able to design and conduct learner-centered and integrated instructions as well as HOT-based activities. This experience will help them acquire new knowledge and discern authentic sources from unreliable ones. They will also be able to employ quality, reliable learning resources when designing lessons.

In agreement with Darling-Hammond (2002), and Fletcher and Buckley (1997), this study argues that teacher education is a pivotal factor in enabling high-quality education, which, in turn, influences the success and quality of life of citizens of any nation. Therefore, it is imperative that educators and policymakers strengthen teachers' knowledge and skills by developing effective teacher education programs that focus on cross-curricular instruction, supervision, flexibility in measuring learning outcomes, unlimited study time, one-on-one assistance, and proactive relationships with their schools. It is clear that teacher education programs and schools should have strong relationships and share common knowledge and beliefs in order to transform teaching and educational management. The teacher education models of countries such as Singapore, Finland, and Japan are possible examples that can be emulated.

In conclusion, school faculty and other organizations must realize the importance of developing teacher candidates' 21st-century competencies and create quality, efficient programs to foster these competencies to prepare them for a successful career.

Recommendations for future research

Possible avenues for future research include investigating the specific factors in teacher training instruction that can help enhance their 21st-century competencies. This process could take the form of isolating certain practices to narrow down future policy plans. Other methodologies such as experimental research could also be employed to investigate the readiness of teacher candidates to face modern-day challenges.

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References

- Arif, S., Iqbal, J., & Khalil, U. (2019). Factors influencing students' choices of academic career in Pakistan. *FWU Journal of Social Sciences*, 13(1), 35-47.
- Ayranci, B. B., & Başkan, A. (2021). Competence areas as a new notion instead of teacher competencies. *The Asian Institute of Research Education Quarterly Reviews*, 4(1), 1-14. <http://doi.org/10.31014/aior.1993.04.02.221>
- Bibi, W. (2020). Relating teachers' questioning techniques with students' learning within the context of Bloom's taxonomy. *FWU Journal of Social Sciences*, 14(1), 111-119.
- Care, E., Kim, H., Vista, A., & Anderson, K. (2018). *Education system alignment for 21st century skills: Focus on assessment*. Bookings.
- Chomphukam, P. (2019). Evaluation model of teacher candidates' competency in the 21st century. *Journal of Education Research Faculty of Education*, 14(1), 105-121.
- Cohen, A. (2000). The relationship between commitment forms and work outcomes: A comparison of three models. *Human Relations*, 53(3), 387-417. <https://doi.org/10.1177%2F0018726700533005>
- Cohen, L., Manion, L., & Morrison, K. (2011). *Research methods in education* (7th ed.). Routledge.
- Darling-Hammond, L. (2006). Constructing 21st-century teacher education. *Journal of Teacher Education*, 57(5), 1-15. <https://doi.org/10.1177%2F0022487105285962>
- Fletcher, S. & Buckley, R. (1997). *Designing competence-based training* (2nd ed.). Kogan page.
- Hund, A. M., & Bueno, D. (2015). Learning in out-of-class experiences: The importance of professional skills. *Psychology Learning & Teaching*, 14(1), 62-69. <https://doi.org/10.1177%2F1475725714565232>
- Ishrat, R. & Rahman, W. (2019). Effect of attitude and individual perception on knowledge sharing in Peshawar university: An empirical study. *FWU Journal of Social Sciences*, 13(2), 75-93.
- Jogulu, U. D., & Pansiri, J. (2011). Mixed methods: a research design for management doctoral dissertations. *Management Research Review*, 34(6), 687-701.
- Kitjatornham, W., Unthiwarothai, P., Kiewkoh, S., & Yaemthim, W. (2011). *An analytical study of the past, present, and future opportunity and expectation of preservice teacher education in Thailand*. National Research Council of Thailand.
- Maesincee, S. (2016). *Blueprint and action plans: Thailand 4.0 model in driving Thailand towards stability, wealth, and sustainability*. https://planning2.mju.ac.th/government/20111119104835_planning/Doc_25590823143652_358135.pdf
- McClelland, D. (1976). *A guide to job competency assessment*. McBer.
- McKenzie, P., Mitchell P., & Oliver P. (1995). *Competence and accountability in education*. Arena.
- Office of the Education Council. (2015). *Status of production and development of teachers in Thailand*. Prikwarn Graphic Co., Ltd.
- Office of the Education Council. (2017). *National education plan 2017-2036*. Prikwarn Graphic Co., Ltd.

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- Phomkan, T. (2017). Characteristics of 21st century teachers in schools with cross-cultural students, Chiang Rai province. *Kasalongkham Research Journal*, 11(2), 95-109.
- Phoyen, K. (2019). Creative Thinking: Talent that teachers should create to student. *Journal of Education, Silpakorn University*, 17(1), 9-27.
- Prathumphaeang, P. (2018). *Relationship between roles of administrators and enhancement of the 21st century skills for teachers in schools under Loei primary education service area office 2*. (Independent Study, Master of Education in Educational Administration, Sukhothai Thammathirat Open University). <https://opac01.stou.ac.th/cgi-bin/koha/opac-detail.pl?biblionumber=161621>
- Puengpetch, S. (2017). A study of desired characteristic of teacher candidates in the 21st century. *Proceedings at the 4th National and International Conference on Curriculum and Instruction, Faculty of Education, KhonKaen University, Thailand*, 176-185.
- Rofiq, Z, Surono, S., Triyono, M. B., & Purwoko, B. S. H. (2018). Developing the standard competencies for vocational teacher candidates of mechanical engineering. *Journal of Physics: Conference Series*. <http://doi.org/10.1088/1742-6596/1273/1/012032>
- Sarnkong, R., & Poowanna, B. (2019). *Leadership skills in the 21st century of undergraduate students, Faculty of Education, Rajabhat Maha Sarakham University*. Rajabhat Maha Sarakham University. <https://opac.rmu.ac.th/cgi-bin/koha/opac-detail.pl?biblionumber=127631>
- Selçuk, G., Kadi, A., Yildirim, R., & Çelebi, N. (2017). A study on teacher candidates' competencies in classroom management. *Acta Didactica Napocensia*, 10, 63-68.
- Sinlarat, P. (2015). *Educational professional standards*. Dhurakij Pundit University.
- Thai government gazette. (2020). *Announcement of the Teachers Council of Thailand Committee on the description of teacher knowledge and professional experience in accordance with regulations on professional standards* (No. 4) B.E. 2562 (2019), vol. 137, Special Edition 109, 7 May 2020.
- The Office of the Higher Education Commission. (2011). *The qualifications framework for higher education*. Ministry of Education, Thailand.