

A Documentary Synthesis for Developing a Desirable Graduate Attributes Framework for the Master's Degree Program in Curriculum and Instruction

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Abstract

This study aimed to synthesize the desirable graduate attributes for the Master of Education program in Curriculum and Instruction by integrating Thai policy and standards documents with contemporary international research and academic frameworks published from 2020 onward. A qualitative documentary research design was combined with an integrative literature synthesis. Two groups of sources were analyzed: (1) Thai policy and standards documents, including the National Education Act, the announcement of the Higher Education Standards Committee on learning outcomes, the regulations of the Teachers' Council of Thailand (Khurusapha), and the National Strategy; and (2) international research and competency frameworks addressing graduate attributes, curriculum and instruction competencies, teachers' digital and artificial intelligence (AI) competencies, inclusive education, and education for sustainable development. Documents were examined through qualitative content analysis combining deductive and inductive coding, guided by an a priori framework of four attribute domains. Trustworthiness was supported by criterion-based document selection, source triangulation across document types, an audit trail, and reflexive interpretation. The synthesis indicated four domains of desirable attributes: (1) deep, integrated knowledge of curriculum, instruction, research, digital technology and AI, inclusive education, and sustainability; (2) skills in designing, implementing, evaluating, and researching curricula in authentic contexts; (3) professional ethics, responsibility to learners, and educational equity; and (4) academic leadership, lifelong learning, creativity, and adaptability. The findings provide a basis for formulating program learning outcomes and for designing courses, learning experiences, and assessment aligned with professional standards, the needs of Thai society, and global educational trends.

Keywords: Graduate Attributes, Curriculum and Instruction, Master of Education, Document Analysis, Learning Outcomes

Introduction

Global societal changes, digital technologies, artificial intelligence, and the growing demand for highly competent educational personnel have made the development of graduate curricula unable to focus merely on the transmission of disciplinary knowledge. Rather, graduate curricula are expected to cultivate graduates with in-depth knowledge, advanced cognitive and practical skills, professional ethics, and personal attributes that support lifelong learning, adaptability, and leadership in educational change. These attributes are particularly important for the Master of Education Program in Curriculum and Instruction, as graduates in this field should not only possess knowledge of curriculum and instruction but also be capable of serving as curriculum designers, researchers, innovators, and academic leaders who can respond appropriately to the Thai educational context and broader global transformations (Kart & Şimşek, 2024; Wong et al., 2022).

In the Thai context, the formulation of graduate attributes is grounded in several key policy and standard documents. The National Education Act B.E. 2542 (1999) stipulates that education aims to develop Thai people into complete human beings in terms of physical, mental, intellectual, knowledge, moral, ethical, and cultural dimensions, enabling them to live happily with others (National Education Act, 1999). In addition, the Announcement of the Higher Education Standards Committee B.E. 2565 (2022) specifies that learning outcomes in higher education should include at least four domains: knowledge, skills, ethics, and personal characteristics. These outcomes must be aligned with the identity of the curriculum, the profession, the nation, and the global context (Higher Education Standards Committee, 2022).

Furthermore, programs in curriculum and instruction are directly related to the teaching profession and, therefore, need to be connected with the professional standards framework of the Teachers' Council of Thailand. This framework requires education professionals to possess knowledge and expertise in their respective fields and to conduct themselves in accordance with professional standards and ethical codes (Teachers' Council of Thailand, 2022). Moreover, the National Strategy B.E. 2561–2580 (2018–2037) emphasizes the development of human resources who are virtuous, competent, and qualified, prepared for life in the twenty-first century, and capable of lifelong learning (National Strategy, 2018). These documents thus provide an important foundation for defining graduate attributes that correspond to national standards and development directions.

However, reliance solely on Thai policy and standard documents may not be sufficient for defining the attributes of master's degree graduates in Curriculum and Instruction in a manner that corresponds to contemporary educational trends. International research published after 2020 indicates that advanced graduates should possess attributes related to self-awareness, lifelong learning, research capability, professional development, global citizenship, and social engagement (Wong et al., 2022). At the same time, research in curriculum and instruction emphasizes that key competencies of learners in this field should include curriculum design, curriculum implementation, curriculum evaluation, research, and educational innovation (Kart & Şimşek, 2024).

In addition, the transition toward a digital society and the era of artificial intelligence requires graduates in education to possess digital and AI-related competencies in an ethical manner. Teachers' digital competence is not limited to the use of technological tools; rather, it encompasses the design of learning, creation of instructional media, communication, assessment, and professional development within digital environments (Skantz-Åberg et al., 2022). Similarly, UNESCO (2024) suggests that teachers and educators in the AI era should understand AI, AI ethics, the application of AI for learning, and the use of AI for professional development based on a human-centered approach. These issues indicate that master's degree programs in curriculum and instruction should prepare graduates across academic, professional, technological, and ethical dimensions.

At the same time, contemporary educational trends increasingly emphasize inclusive education, educational equity, and sustainable development. Teacher and educator development should enable graduates to design learning that responds to learner diversity and contributes to educational systems that leave no one behind (European Agency for Special Needs and Inclusive Education, 2022). In addition, educators should be able to integrate the concept of education for sustainable development into curricula and learning management (Imara & Altinay, 2021). These issues broaden the framework of graduate attributes to include social and environmental responsibility, equity, and global citizenship.

Although the aforementioned documents and studies provide important insights into graduate attributes and educators' competencies, a preliminary review reveals several significant academic gaps. First, Thai standards define learning outcomes at a broad level and apply them across disciplines; therefore, they do not sufficiently specify attributes that are particular to the roles of graduates in Curriculum and Instruction. Second, contemporary international studies and competency frameworks often address specific areas separately, such as digital competence, AI competence, inclusive education, or sustainability, without integrating them systematically. Third, there remains a lack of work that connects the Thai standards framework with contemporary international academic trends to develop a field-specific framework of graduate attributes that can be directly applied to outcome-based curriculum design. Therefore, this article addresses these gaps by systematically synthesizing both foundations in order to develop a field-specific framework of desirable graduate attributes that can serve as a conceptual tool for developing the Master of Education Program in Curriculum and Instruction.

Accordingly, this article aims to synthesize the desirable graduate attributes for the Master of Education Program in Curriculum and Instruction by integrating Thai policy and standard documents with contemporary international research and academic frameworks published from 2020 onward. The analysis was guided by the four domains of learning outcomes stipulated in Thailand's higher education standards—knowledge, skills, attitudes/ethics, and personal characteristics—which served as an a priori analytical lens, while the substantive content of each domain was allowed to emerge from the synthesis of the documents. The findings are expected to be useful for formulating learning outcomes, designing curriculum structures, and developing graduates in alignment with professional standards, the needs of Thai society, and global educational trends.

Questions

1. How do Thai policy and standard documents reflect the desirable graduate attributes for the Master of Education Program in Curriculum and Instruction?
2. What attributes or competencies have been proposed by contemporary international research and academic frameworks published from 2020 onward as necessary for master's degree graduates in the field of Curriculum and Instruction?
3. What components should constitute the desirable graduate attributes for the Master of Education Program in Curriculum and Instruction across four domains: knowledge, skills, attitudes/ethics, and personal characteristics?
4. How can the synthesized graduate attributes be used as guidelines for designing and developing the Master of Education Program in Curriculum and Instruction?

Objectives

1. Synthesize Thai policy and standard documents related to the formulation of graduate attributes at the graduate level in the field of Curriculum and Instruction;

2. Synthesize contemporary international research and academic frameworks published from 2020 onward concerning graduate attributes, curriculum developer competencies, teacher and educator competencies, digital competence, artificial intelligence, inclusive education, and sustainable development;
3. Develop a framework of desirable graduate attributes for the Master of Education Program in Curriculum and Instruction based on four domains: knowledge, skills, attitudes/ethics, and personal characteristics; and
4. Propose guidelines for applying the synthesized findings to curriculum development, particularly in formulating program learning outcomes, designing course structures, organizing learning experiences, and assessing graduate attributes.

Literature Reviews

The formulation of graduate attributes for graduate-level programs, particularly the Master of Education Program in Curriculum and Instruction, requires a foundation based on learning outcomes, professional standards in education, and international trends in the competency development of educators. This is because graduates in this field should not be viewed merely as classroom practitioners. Rather, they should possess the capacity to design, develop, evaluate, and conduct research on curricula, as well as to serve as leaders of educational change in an ethical and socially responsible manner.

Graduate Attributes and Learning Outcomes in Higher Education

Graduate attributes refer to the expected outcomes of higher education that should be developed in learners across the domains of knowledge, skills, values, and personal characteristics. Contemporary research indicates that graduate attributes are not limited to academic knowledge but also include self-awareness, lifelong learning, professional development, global citizenship, and academic and research capabilities (Wong et al., 2022). This concept is consistent with Thailand's higher education qualification standards, which require learning outcomes to align with the identity of the curriculum, the profession, the nation, and the global context. These learning outcomes should include at least four domains: knowledge, skills, ethics, and personal characteristics (Higher Education Standards Committee, 2022).

At the master's degree level, learning outcomes should therefore reflect the ability to connect knowledge, apply knowledge to solve professional problems, generate new knowledge, and develop professional practice based on research and empirical evidence. They should not be limited to the accumulation of content knowledge. Accordingly, the formulation of graduate attributes in Curriculum and Instruction should consider academic, professional, and personal dimensions in order to serve as an appropriate foundation for designing program learning outcomes.

Professional Standards and the Roles of Graduates in Curriculum and Instruction

The Master of Education Program in Curriculum and Instruction is directly related to the education profession, particularly in the areas of teaching and learning, learning promotion, supervision, academic administration, and curriculum development in educational institutions. The Teachers' Council of Thailand Regulation on Professional Licenses B.E. 2565 (2022) states that the education profession involves responsibilities related to teaching and learning, learning promotion, educational administration, supervision, and support for instructional processes in educational agencies. It also requires education professionals to pass professional competency assessments and to conduct themselves in accordance with professional standards and ethical codes (Teachers' Council of Thailand, 2022).

From an academic perspective, Kart and Şimşek (2024) proposed that competencies in the field of Curriculum and Instruction should encompass knowledge, skills, and attitudes/values related to curriculum design, curriculum development, curriculum

implementation, curriculum evaluation, research, and educational innovation. This framework indicates that master's degree graduates in this field should be able to serve as curriculum designers, researchers, innovators, and academic leaders who use knowledge and empirical evidence to improve learners' learning and the quality of educational institutions.

Digital Competence, Artificial Intelligence, and Modern Curriculum Development

The rapid advancement of digital technologies and artificial intelligence has expanded the expected attributes of graduates in education to include the ability to use technology for learning design, data analysis, assessment, and continuous professional development. Teachers' digital competence should not be viewed merely as the ability to use technological tools. Rather, it should include the design of digital learning environments, the creation of instructional media, communication, collaboration, and the critical use of technology (Skantz-Åberg et al., 2022).

In the context of AI, UNESCO (2024) proposed that teachers and educators need competencies related to a human-centered mindset, AI ethics, foundational knowledge and applications of AI, the use of AI for learning, and the use of AI for professional development. These issues have significant implications for the development of master's degree programs in Curriculum and Instruction. Graduates should be able to consider both the opportunities and limitations of technology, including its ethical implications, fairness, privacy, and respect for learners' dignity in curriculum design and learning management.

Inclusive Education, Equity, and Sustainable Development

Contemporary educational trends emphasize curriculum and learning design that responds to learner diversity, reduces inequality, and promotes equitable educational opportunities. Frameworks for teacher development for inclusive education indicate that education professionals should be able to understand learner differences, design flexible learning experiences, and collaborate with families, communities, and other stakeholders to support all groups of learners (European Agency for Special Needs and Inclusive Education, 2022). This concept is consistent with the National Education Act (No. 3) B.E. 2553 (2010), which addresses educational provision for learners with disabilities, gifted learners, non-formal education, informal education, and distance education. These provisions reflect the need for diverse and flexible forms of education that respond to learners' contexts (National Education Act [No. 3], 2010).

In addition, education for sustainable development is another important concept for modern curriculum development, particularly in the field of Curriculum and Instruction, which is concerned with designing learning experiences that cultivate learners' responsibility toward society, the environment, and the future. Imara and Altinay (2021) indicated that integrating competencies related to education for sustainable development into teacher education is important for developing teachers who can organize learning in ways that connect sustainability with social change.

Conceptual Framework of the Study

Based on the literature review, this study established a conceptual framework for synthesizing graduate attributes from two main foundations. The first foundation consists of Thai policy and standard documents, which provide legal, qualification-standard, professional-standard, and national human resource development foundations. The second foundation consists of contemporary international research and academic frameworks published from 2020 onward, which broaden the framework of graduate attributes to include competencies related to research, innovation, digital technology and AI, inclusive education, sustainability, global citizenship, and lifelong learning. Data from these two foundations were then synthesized into four major domains: knowledge, skills, attitudes/ethics, and personal characteristics. These domains were used to develop a framework of desirable graduate

attributes for designing the Master of Education Program in Curriculum and Instruction, as shown in Figure 1.

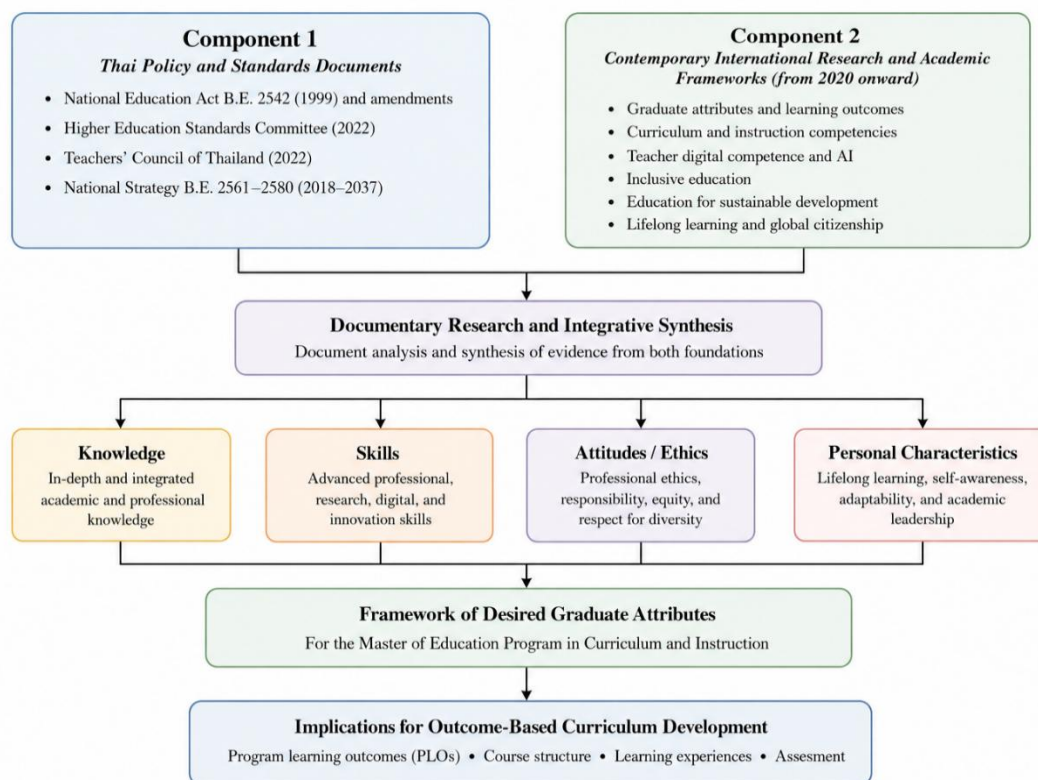


Figure 1. *Conceptual Framework of the Study: Integrating Thai Standards Frameworks and Contemporary International Academic Trends into a Four-Domain Graduate Attributes Framework*

Methodology

Research Design

This study employed documentary research, using document analysis together with an integrative literature review/synthesis to develop a framework of desirable graduate attributes for the Master of Education Program in Curriculum and Instruction. Document analysis is a qualitative research method that involves a systematic procedure for examining, interpreting, and evaluating documents in order to gain understanding of the phenomenon or research issue under investigation (Bowen, 2009). An integrative literature review/synthesis is also appropriate for collecting, analyzing, and integrating knowledge from various types of documents, including empirical studies, academic literature, and policy documents, in order to generate conclusions or develop a new conceptual framework that comprehensively addresses the issue being studied (Snyder, 2019; Torraco, 2005; Whittemore & Knafl, 2005). This research design was aligned with the objectives of the study, as the study did not aim to collect field data from participants but rather to synthesize key content from documents in order to develop a conceptual framework.

Data Sources and Procedures for Document Search and Selection

The data sources were divided into two main groups. The first group consisted of Thai policy and standard documents, including the National Education Act B.E. 2542 (1999) and its amendments, the Announcement of the Higher Education Standards Committee on Details of

Learning Outcomes According to the Higher Education Qualification Standards B.E. 2565 (2022), the Teachers' Council of Thailand Regulation on Professional Licenses B.E. 2565 (2022), and the National Strategy B.E. 2561–2580 (2018–2037). These documents were retrieved from the Royal Thai Government Gazette and legal databases of relevant government agencies. The second group consisted of contemporary international research and academic frameworks, which were searched through academic databases, including Scopus, Web of Science, ERIC, and Google Scholar, as well as websites of international organizations, such as UNESCO and the European Agency for Special Needs and Inclusive Education.

The keywords used in the search included graduate attributes, learning outcomes, curriculum and instruction competencies, teacher digital competence, AI competency framework, inclusive education, and education for sustainable development. The publication period was limited to 2020–2024, and only Thai- and English-language documents were included. The researcher then screened the documents by title and abstract and reviewed the full texts according to the inclusion and exclusion criteria. This process was used to select key documents that were highly relevant and credible for in-depth synthesis. The study employed criterion-based purposive selection rather than a fully comprehensive systematic review in order to obtain documents that represented Thai standards frameworks and international academic trends in each major area of interest.

Document Selection Criteria

The inclusion criteria were as follows: (1) the document was a policy, legal, standard, or strategic document related to education, higher education, teacher professional standards, or human resource development in Thailand; (2) the document was a research article, academic article, literature review, or international competency framework published from 2020 onward; (3) the content was related to graduate attributes, learning outcomes, teacher competencies, curriculum developer competencies, digital competence, AI, inclusive education, or sustainable development; (4) the document was credible, such as an official government document, a document from a professional organization, an international organization report, an academic journal article, or a publication from an academic publisher; and (5) the content could be analyzed and categorized into the four domains of graduate attributes.

The exclusion criteria were as follows: (1) documents that were not directly related to education, curriculum, instruction, or graduate attributes; (2) documents published before 2020 in the group of international research and academic frameworks, except for Thai policy documents that remained in force or were directly relevant; (3) documents without clear sources or whose credibility could not be verified; and (4) documents whose content overlapped with other documents without providing additional insights for the synthesis.

Research Instrument

The research instrument was a document recording and analysis form developed in accordance with the research objectives. The form included the following data-recording categories: title of the document or article, year of publication, type of document, relevant key content, major concepts or competencies identified, and classification of the content into the four domains of graduate attributes. The form was preliminarily reviewed for content validity by experts in Curriculum and Instruction to ensure that it could be used systematically for reading, analyzing, comparing, and synthesizing data from each document.

Data Analysis

Data were analyzed using qualitative content analysis together with thematic synthesis. The analysis combined a deductive approach, based on the predetermined four domains of graduate attributes, with an inductive approach that allowed subthemes to emerge from the documents (Elo & Kyngäs, 2008). The analysis consisted of four steps. First, all documents were read to understand their key content and contexts. Second, data were coded by identifying statements or key content reflecting graduate attributes, such as in-depth knowledge of

curriculum, research skills, digital skills, professional ethics, educational equity, and academic leadership. Third, the coded data were categorized into the four major domains by considering the meaning and coherence of the content. Fourth, the data were synthesized and interpreted by comparing content from Thai policy documents with international research and academic frameworks in order to identify consistencies, differences, and additional issues to be included. This process resulted in a framework of desirable graduate attributes. The overall procedures for document identification, screening, selection, analysis, and synthesis are summarized in Figure 2.

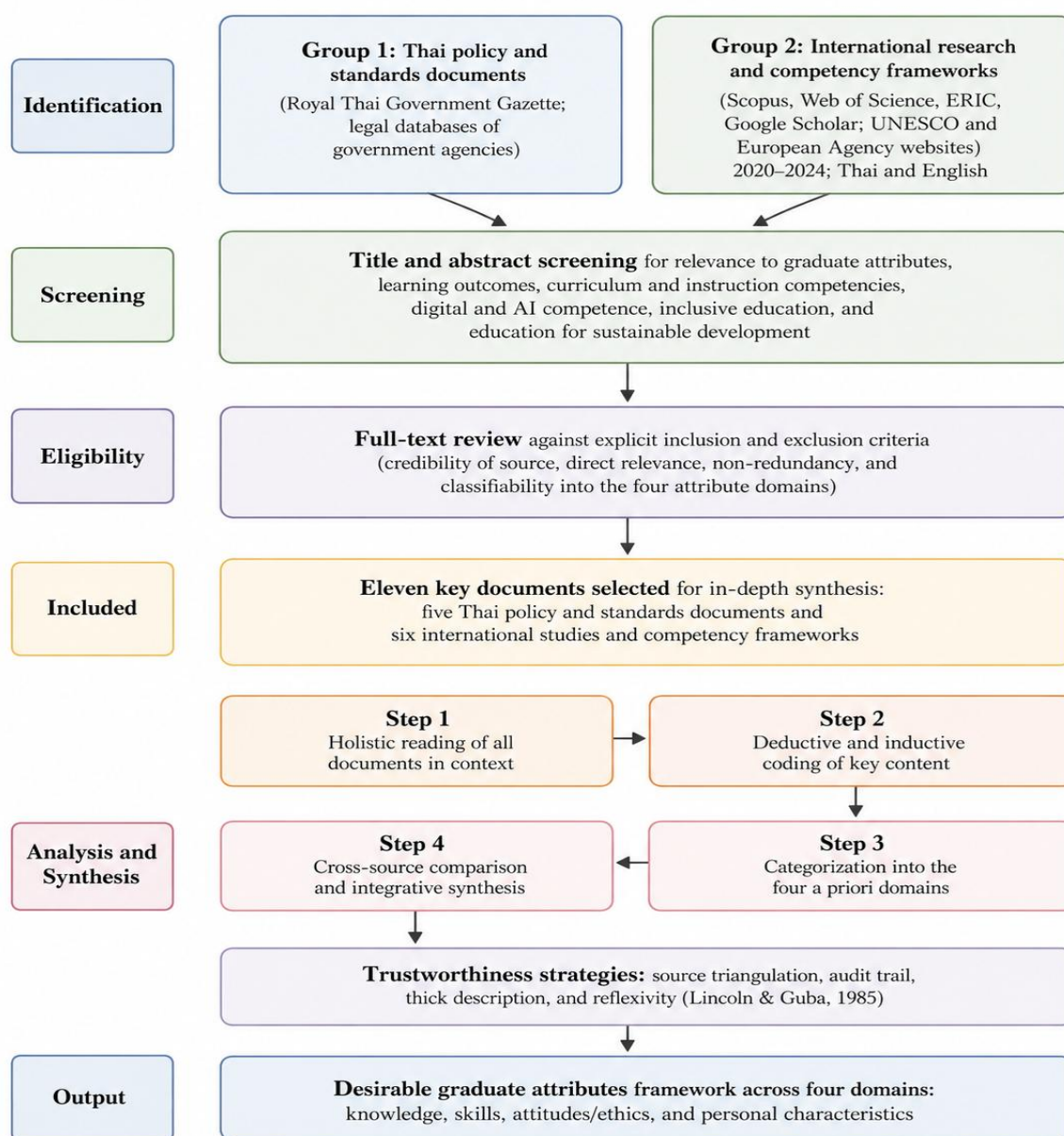


Figure 2. Document Selection and Synthesis Process of the Study
Trustworthiness and Rigor of the Study

To enhance the trustworthiness of this qualitative study, the researcher followed four criteria: credibility, transferability, dependability, and confirmability (Lincoln & Guba, 1985). The following strategies were employed: (1) source triangulation, by comparing data from various types of documents, including laws, standards, professional documents, the national strategy, research articles, and international competency frameworks; (2) an audit trail, by

systematically recording the procedures for document selection, coding, and categorization; (3) thick description, by providing detailed contextual descriptions to allow readers to consider the transferability of the findings to other contexts; and (4) reflexivity, by recognizing the researcher's own standpoint and conceptual assumptions that might influence interpretation.

The researcher also recognized that a synthesis conducted primarily by a single researcher may involve certain limitations related to subjectivity. Therefore, future research is recommended to incorporate an inter-coder check and expert validation or member checking of the synthesized framework in order to further strengthen the rigor of the findings.

Presentation of Research Findings

The research findings are presented in the form of synthesis tables and analytical descriptions. The synthesis tables demonstrate the relationships between document sources and the four domains of graduate attributes. The analytical descriptions explain the meaning of each domain of graduate attributes and identify curriculum-related recommendations for applying the findings to the formulation of program learning outcomes, course structures, learning experiences, and approaches to graduate attribute assessment.

Result

The document synthesis in this study considered key content from two main groups of documents: Thai policy and standard documents, and contemporary international research or academic frameworks published from 2020 onward. The first group served as a foundation for legal requirements, qualification standards, professional standards, and national directions for human resource development. The second group helped broaden the dimensions of graduate attributes in accordance with global educational trends, particularly in relation to research, innovation, digital technologies, artificial intelligence, inclusive education, educational equity, sustainable development, and lifelong learning.

The analysis revealed that, although Thai policy and standard documents provide a clear foundational framework for graduate attributes, particularly the four domains of higher education learning outcomes—knowledge, skills, ethics, and personal characteristics (Higher Education Standards Committee, 2022)—this framework needs to be further specified when considered in the context of the Master of Education Program in Curriculum and Instruction. In this field, graduate attributes should be expanded to reflect the roles of graduates as curriculum designers, learning facilitators, researchers, innovators, and leaders of educational change.

Based on the categorization and synthesis of the data, the desirable graduate attributes can be summarized into four systematically interrelated domains. The knowledge domain serves as the foundation for academic and professional understanding. The skills domain reflects the ability to apply knowledge in practice and create innovation. The attitudes/ethics domain provides the basis for responsibility toward learners, the profession, and society. The personal characteristics domain represents internal attributes that enable graduates to continue learning, adapting, and leading educational change. The details of the synthesis are presented in Table 1.



Table 1 *Synthesis of Desirable Graduate Attributes Derived from Thai Policy and Standard Documents and Contemporary International Academic Literature*

Sources of Documents/Research	Key Relevant Content	Knowledge	Skills	Attitudes/Ethics	Personal Characteristics
National Education Act B.E. 2542 (1999) and its amendments	Specifies the aims of education to develop individuals into complete human beings with knowledge, morality, ethics, and culture, who are able to live with others. It also emphasizes learner-centered education and lifelong learning (National Education Act, 1999).	Knowledge of educational philosophy and principles, holistic learner development, curriculum, lifelong learning, and sociocultural contexts	Skills in designing learner-centered learning, organizing activities that develop learners according to their potential, and connecting knowledge with real-life contexts	Attitudes that value learners, equity, morality, ethics, and constructive coexistence	Curiosity, responsibility, self-reliance, creativity, and the ability to live and work with others
Announcement of the Higher Education Standards Committee B.E. 2565 (2022)	Specifies at least four domains of higher education learning outcomes: knowledge, skills, ethics, and personal characteristics. These outcomes must align with the identities of the curriculum and institution, the profession, the nation, and the global context, and must be supported by empirical evidence for accountability regarding learning outcomes (Higher Education Standards Committee, 2022).	Knowledge that is necessary and sufficient for practice, knowledge extension, connecting new knowledge, professional development, and living in the digital era	Self-directed learning skills, knowledge construction, digital skills, professional development, and collaboration with others	Ethics, morality, professional codes of conduct, honesty, and actions for the common good	Personality, character traits, values, responsibility, creativity, digital literacy, and media literacy



Sources of Documents/Research	Key Relevant Content	Knowledge	Skills	Attitudes/Ethics	Personal Characteristics
Teachers' Council of Thailand Regulation on Professional Licenses B.E. 2565 (2022)	Defines the education profession as involving teaching and learning, learning promotion, educational administration, supervision, and educational support. It also requires applicants for professional licenses to pass professional competency assessments and conduct themselves in accordance with ethical codes (Teachers' Council of Thailand, 2022).	Knowledge according to teacher professional standards, learning management, learning promotion, administration, supervision, and learner development	Teaching practice skills, professional competency assessment, supervision, professional communication, and learner development	Commitment to professional ethics, appropriate conduct, responsibility toward learners, and preservation of the dignity of the profession	Professionalism, maturity, credibility, responsibility, and being a professional role model
National Education Act (No. 4) B.E. 2562 (2019)	Expands the role of the Ministry of Higher Education, Science, Research and Innovation in promoting, supporting, and regulating higher education, science, research, and innovation so that the country can keep pace with global changes (National Education Act [No. 4], 2019).	Knowledge of higher education, science, research, innovation, and global changes affecting curriculum and instruction	Research skills, innovation creation, use of empirical evidence, and curriculum design that responds to change	Attitudes that are open to change and value research, innovation, and academic excellence	Being a modern curriculum developer who thinks innovatively and connects disciplinary knowledge with global contexts



Sources of Documents/Research	Key Relevant Content	Knowledge	Skills	Attitudes/Ethics	Personal Characteristics
National Strategy B.E. 2561–2580 (2018–2037)	Emphasizes human resource development to produce good, competent, and high-quality people who are ready for twenty-first-century ways of life, including awareness of and adaptation to changes, technologies, and innovations (National Strategy, 2018).	Knowledge of human resource development, global changes, technology, innovation, and sustainable development	Twenty-first-century skills, digital skills, analytical thinking, adaptability, problem solving, and lifelong learning	Public-minded attitudes, social responsibility, commitment to the common good, and awareness of national development	Being a good, competent, and high-quality person with discipline, eagerness to learn, adaptability, and readiness to contribute to society
Kart and Şimşek (2024) — Competencies in Curriculum and Instruction	Identified competencies in the field of Curriculum and Instruction using the Delphi technique with experts and proposed a competency model comprising 22 items across knowledge, skills, and attitudes/values. The model emphasizes in-depth knowledge, curriculum development, research, evaluation, and educational innovation.	In-depth knowledge of curriculum and instruction, curriculum design, curriculum development, curriculum evaluation, learning theories, and educational research	Skills in curriculum analysis, design, implementation, curriculum evaluation, research, and innovation development	Attitudes that value systematic curriculum development, the use of academic evidence, and learner development	Being a curriculum developer, educational researcher, innovator, and leader of academic change



Sources of Documents/Research	Key Relevant Content	Knowledge	Skills	Attitudes/Ethics	Personal Characteristics
Wong et al. (2022) — Graduate Attributes in Higher Education	Mapped graduate attributes in universities in the United Kingdom and identified four main discourses: self-awareness and lifelong learning, employability and professional development, global citizenship and engagement, and academic and research capabilities.	Academic and professional knowledge, research knowledge, global knowledge, and understanding of multicultural contexts	Research skills, academic communication, collaboration, professional development, and social engagement	Global citizenship attitudes, social responsibility, openness to diversity, and continuous self-development	Self-awareness, lifelong learning, global citizenship, and the capacity for professional self-development
UNESCO (2024) — AI Competency Framework for Teachers	Proposes an AI competency framework for teachers covering five dimensions: a human-centered mindset, AI ethics, AI foundations and applications, AI pedagogy, and AI for professional development. The framework emphasizes safe, ethical, and human-centered use of AI.	Foundational knowledge of AI, educational applications of AI, limitations of AI, data, privacy, and impacts on learners	Skills in using AI for learning design, assessment, professional development, data analysis, and critical use of AI	Ethics in AI use, responsibility for learner data, fairness, transparency, and consideration of human dignity	AI literacy, digital prudence, ethical decision making, and being a human-centered curriculum designer



Sources of Documents/Research	Key Relevant Content	Knowledge	Skills	Attitudes/Ethics	Personal Characteristics
Skantz-Åberg et al. (2022) — Teachers' Digital Competence	Reviewed the concept of teachers' professional digital competence and indicated that digital competence is not merely the ability to use tools. It also involves learning design, communication, content creation, critical use of technology, and continuous professional development.	Knowledge of digital technologies, information literacy, media literacy, and the design of digital learning environments	Skills in using technology for teaching, media production, communication, online collaboration, and assessment with digital tools	Attitudes that are open to technology, responsible use of technology, and concern for digital safety	Being a lifelong digital learner with flexibility, adaptability, and professionalism in digital environments
Imara and Altinay (2021) — ESD in Teacher Education	Reviewed research on integrating education for sustainable development competencies into teacher education and indicated that teacher education should enable teachers to promote sustainability through curriculum, learning, and social change.	Knowledge of sustainability, relationships among education, society, the economy, the environment, and the Sustainable Development Goals	Skills in integrating ESD into curricula, designing activities for sustainability, systems thinking, and solving social problems	Attitudes of responsibility toward society, the environment, future generations, and fairness among people and communities	Responsible citizenship, long-term thinking, awareness of the impacts of education, and leadership for sustainable change



Sources of Documents/Research	Key Relevant Content	Knowledge	Skills	Attitudes/Ethics	Personal Characteristics
European Agency (2022) — Inclusive Education	Proposes a competency framework for inclusive education to develop teachers and educational personnel who can respond to learner diversity and support education systems that leave no one behind (European Agency for Special Needs and Inclusive Education, 2022).	Knowledge of learner diversity, special needs, equity, universal design for learning, and multicultural contexts	Skills in designing flexible curricula and instruction, adapting learning, using assessment for development, and collaborating with families and communities	Attitudes that respect differences, believe in the potential of all learners, and aim to promote educational equity	Empathy, openness, flexibility, cultural sensitivity, and advocacy for educational opportunities

Table 2 *A Summary Framework of Desirable Graduate Attributes for the Master of Education Program in Curriculum and Instruction*

Graduate Attribute Domains	Synthesized Results of Desirable Graduate Attributes
Knowledge	Graduates should possess in-depth and integrated knowledge of curriculum and instruction, learning theories, curriculum design and development, learning management, measurement and evaluation, educational research, learning innovation, digital technologies and AI, inclusive education, educational equity, sustainable development, educational policy, professional standards, and the changing contexts of Thai and global societies (Higher Education Standards Committee, 2022; Kart & Şimşek, 2024; UNESCO, 2024; Wong et al., 2022).
Skills	Graduates should possess skills in designing and developing competency-based curricula, designing active learning, organizing learner-centered learning, assessing learning outcomes, conducting research and developing innovations, analyzing data for educational decision-making, using digital technologies and AI critically, engaging in academic communication, collaborating with others, providing academic supervision and consultation, and applying knowledge to solve educational problems in real-world contexts (Kart & Şimşek, 2024; Skantz-Åberg et al., 2022; UNESCO, 2024; Wong et al., 2022).
Attitudes/Ethics	Graduates should have positive attitudes toward the teaching profession and educational development; uphold morality, ethics, professional codes of conduct, academic integrity, research ethics, and ethical use of technology and AI; and demonstrate responsibility toward learners, educational equity, respect for diversity, concern for human dignity, and the use of knowledge for the benefit of society (Teachers' Council of Thailand, 2022; European Agency for Special Needs and Inclusive Education, 2022; UNESCO, 2024).
Personal Characteristics	Graduates should demonstrate the characteristics of academic leaders and curriculum developers, including lifelong curiosity, self-awareness, self-regulated learning, creativity, critical thinking, flexibility, adaptability to change, reflective practice, global citizenship, social responsibility, the ability to work with communities and various sectors, and readiness to lead educational change (Imara & Altinay, 2021; National Strategy, 2018; Wong et al., 2022).

The synthesis revealed that the graduate attributes for the Master of Education Program in Curriculum and Instruction should retain the four-domain structure based on Thailand's higher education learning outcomes framework (Higher Education Standards Committee, 2022). However, when considered in relation to international academic trends, these attributes should be expanded to encompass research capability, curriculum innovation, the ethical use of digital technologies and AI, inclusive education design, the integration of sustainability, and

the development of global citizenship (European Agency for Special Needs and Inclusive Education, 2022; Imara & Altinay, 2021; Kart & Şimşek, 2024; UNESCO, 2024; Wong et al., 2022).

Therefore, master's degree graduates in Curriculum and Instruction should not be defined merely as "individuals with knowledge of curriculum and instruction." Rather, they should be positioned as curriculum designers, learning facilitators, researchers, innovators, and leaders of educational change who are able to critically and socially responsibly connect Thai professional standards with global educational trends.

Discussion

The synthesis indicates that the desirable graduate attributes for the Master of Education Program in Curriculum and Instruction should be framed as an integrated framework that connects Thai educational and professional standards with contemporary international academic trends. Thai policy documents provide an essential foundation in terms of legal requirements, qualification standards, professional standards, and national directions for human resource development. In contrast, international research and academic frameworks broaden the dimensions of graduate attributes to include research, innovation, digital technologies, artificial intelligence, educational equity, lifelong learning, and sustainability.

First, in the knowledge domain, the synthesis suggests that graduates should possess in-depth knowledge of curriculum and instruction, together with knowledge related to research, innovation, digital technologies, and changing social contexts. This finding is consistent with the Announcement of the Higher Education Standards Committee B.E. 2565 (2022), which states that learning outcomes in the knowledge domain should be sufficient for practice, further development, and professional advancement in the digital era (Higher Education Standards Committee, 2022). It also aligns with Kart and Şimşek (2024), who argued that learners in this field need knowledge of curriculum design, development, implementation, and evaluation, as well as research for innovation. Therefore, graduates' knowledge should not be limited to theoretical understanding but should be applicable to the analysis and solution of real educational problems.

Second, in the skills domain, graduates should possess advanced skills in curriculum design, learning management, learning outcome assessment, research, data-informed decision-making, and the critical use of digital technologies and AI. This is consistent with Thailand's higher education learning outcomes framework (Higher Education Standards Committee, 2022) and with Skantz-Åberg et al. (2022), who pointed out that teachers' digital competence encompasses learning design, communication, media creation, assessment, and professional development in digital contexts. Similarly, UNESCO (2024) emphasizes the use of AI to support learning and professional development while taking into account ethics, equity, and a human-centered approach.

Third, in the attitudes and ethics domain, graduates should have positive attitudes toward the teaching profession and educational development, uphold professional codes of conduct, academic integrity, research ethics, and ethical use of technology and AI. This finding is consistent with the Teachers' Council of Thailand Regulation B.E. 2565 (2022) (Teachers' Council of Thailand, 2022) and the definition of ethics in the Announcement of the Higher Education Standards Committee B.E. 2565 (2022) (Higher Education Standards Committee, 2022). Therefore, the curriculum should design learning experiences that enable students not only to "know ethics" but also to make ethical decisions and act ethically in real professional situations, particularly in contexts where AI increasingly plays a role in learning.

Fourth, in the personal characteristics domain, graduates should demonstrate the characteristics of academic leaders, reflective practitioners, lifelong learners, creative thinkers, flexible and adaptable individuals, and socially responsible professionals. This finding is

consistent with the National Strategy B.E. 2561–2580 (2018–2037) (National Strategy, 2018) and with Wong et al. (2022), who proposed that graduate attributes should include self-awareness, lifelong learning, professional development, global citizenship, and academic and research capabilities.

From a critical perspective, the synthesis revealed systematic differences between the two groups of documents, and these differences are explainable rather than incidental. Thai policy and standards documents are regulatory instruments: they are designed to apply across all disciplines and institutions, to remain in force over long periods, and to support quality assurance and accountability. Consequently, they define learning outcomes at a broad, generic level and are slower to incorporate rapidly emerging issues. International research and competency frameworks, by contrast, are produced within academic and policy communities that respond quickly to technological and social change; they are therefore more specific and future-oriented, but they tend to address single areas—such as digital competence, AI, inclusive education, or sustainability—in relative isolation. This explains why the Thai framework provided a stable four-domain structure but limited field-specific substance, whereas the international literature provided rich substance but no integrated structure aligned with Thai regulatory requirements.

These observations also highlight the limitations of relying on Thai standards alone. The four domains of the Higher Education Standards Committee (2022) are defined generically for all fields of study; teacher professional standards emphasize licensure and professional conduct rather than curriculum-development expertise; and emerging priorities such as the ethical use of AI, inclusive education, and education for sustainable development are only limitedly represented in current Thai policy documents. The present study helps to fill this gap by integrating the two foundations into a single field-specific framework. Compared with existing frameworks, the strength of the proposed framework lies in its integrative character: unlike Wong et al. (2022) and Kart and Şimşek (2024), which focus respectively on generic graduate attributes and on curriculum and instruction competencies, and unlike UNESCO (2024), Skantz-Åberg et al. (2022), the European Agency for Special Needs and Inclusive Education (2022), and Imara and Altinay (2021), which each address a single competency area, the proposed framework connects these strands to one another and anchors them explicitly in Thai legal and professional standards, thereby increasing its direct usability for outcome-based curriculum design in the Thai context.

The findings concerning digital technologies and AI also deserve deeper critical attention, because the integration of AI into education involves genuine tensions rather than straightforward benefits. Graduates in Curriculum and Instruction will need to navigate at least four such tensions: the tension between personalized, data-driven learning and the protection of learner privacy and data ownership; the tension between the efficiency gains of AI-assisted planning, assessment, and content generation and the risk of eroding teachers' professional judgment and learners' authentic engagement; the tension between the affordances of generative AI and the preservation of academic integrity; and the tension between technological innovation and equity of access for learners and schools with limited resources. A curriculum informed by the proposed framework should therefore treat AI not merely as a set of tools to be mastered but as a contested professional terrain that requires ethical reasoning, critical evaluation, and human-centered decision making (UNESCO, 2024).

In addition, the assessment of complex attributes—such as ethical judgment, adaptability, and academic leadership—requires more concrete strategies than general references to authentic assessment. For example, ethical judgment and the ethical use of AI can be assessed through structured analyses of ethical case scenarios and scenario-based performance tasks scored with analytic rubrics; adaptability and lifelong learning can be assessed through longitudinal learning portfolios accompanied by reflective journals that

document how students revise their curriculum designs in response to feedback and changing conditions; academic leadership can be assessed by having students lead an authentic curriculum development or improvement project in a school or educational program, with triangulated evidence from peer, supervisor, and stakeholder feedback; and research capability can be assessed through supervised action research that culminates in a public academic presentation. Specifying such evidence in advance makes the four domains of the framework observable, assessable, and accountable, in line with the requirements of Thailand's higher education standards (Higher Education Standards Committee, 2022). Nevertheless, because the framework was developed primarily through document synthesis, it should be regarded as a provisional framework that requires further empirical validation by relevant stakeholders.

Overall, the four-domain framework of graduate attributes developed in this study helps make Thailand's learning outcomes framework more specific to the field of Curriculum and Instruction. The findings have implications for curriculum design at three levels: formulating program learning outcomes that specify graduates' abilities to design, develop, evaluate, and research curricula based on empirical evidence; designing course structures and learning experiences that integrate research, innovation, technology, AI, inclusiveness, and sustainability; and assessing graduate outcomes through authentic tasks, curriculum development projects, action research, portfolios, and professional reflection.

New Knowledge from the Research

The primary new knowledge generated by this study is a field-specific, integrated framework of desirable graduate attributes for the Master of Education Program in Curriculum and Instruction, which differs from existing frameworks in three respects. First, unlike Thailand's higher education learning outcomes framework, which defines the four domains of knowledge, skills, ethics, and personal characteristics generically for all disciplines (Higher Education Standards Committee, 2022), the proposed framework specifies the substantive content of each domain for the field of Curriculum and Instruction. Second, unlike contemporary international frameworks that each address a single area—generic graduate attributes (Wong et al., 2022), curriculum and instruction competencies (Kart & Şimşek, 2024), digital competence (Skantz-Åberg et al., 2022), AI competencies (UNESCO, 2024), inclusive education (European Agency for Special Needs and Inclusive Education, 2022), or education for sustainable development (Imara & Altinay, 2021)—the proposed framework integrates these strands into a single coherent structure. Third, because the framework is anchored in Thai legal and professional standards while incorporating contemporary international academic trends, it can be used directly as a prototype for developing outcome-based graduate curricula: program committees can adopt the four domains as the architecture of program learning outcomes, use the synthesized attribute statements as the substantive content of those outcomes, and, with appropriate adaptation, transfer the same procedure to related graduate programs in education.

The synthesized desirable graduate attributes can be used as a foundation for developing the Master of Education Program in Curriculum and Instruction as an outcome-based curriculum. The four domains of graduate attributes should be translated into program learning outcomes, courses, learning activities, and assessment methods in a coherently aligned manner through constructive alignment. This is consistent with the Announcement of the Higher Education Standards Committee B.E. 2565 (2022), which requires curricula to specify learning outcomes and demonstrate accountable evidence of learning achievement (Higher Education Standards Committee, 2022).

At the level of program learning outcomes, the curriculum should define PLOs that reflect graduates' ability to integrate knowledge of curriculum and instruction, research, innovation, digital technologies and AI, inclusive education, and sustainability. These PLOs

should specify observable and assessable behaviors, such as the ability to design, develop, evaluate, and conduct research on curricula based on empirical evidence (Kart & Şimşek, 2024).

At the level of course structure, the curriculum should organize courses around five key dimensions: (1) foundations of curriculum and instruction, (2) educational research and innovation, (3) digital technologies and AI for learning, (4) inclusive education and sustainable development, and (5) academic leadership and professional development. These dimensions would enable the curriculum to respond to qualification standards, teacher professional standards, and global educational trends (Teachers' Council of Thailand, 2022; Wong et al., 2022).

At the level of learning activities, the curriculum should emphasize practice-based learning and learning from real contexts. Examples include curriculum analysis, competency-based curriculum design, development of learning innovations, ethical use of technology or AI, action research, discussion of ethical case studies, and professional reflection. These activities are consistent with the concept of teachers' digital competence (Skantz-Åberg et al., 2022) and the AI competency framework for teachers (UNESCO, 2024).

At the level of assessment, the curriculum should employ authentic assessment by considering evidence of learning that reflects graduates' competencies. Such evidence may include curriculum design projects, research reports, innovation products, portfolios, academic presentations, and performance-based assessment in real or simulated professional situations. This approach is consistent with master's degree learning outcomes, which emphasize learners' ability to connect knowledge, generate new knowledge, and systematically apply knowledge to solve professional problems (Higher Education Standards Committee, 2022).

In addition, the curriculum should integrate inclusive education and sustainable development across courses, learning activities, and assessment methods. This integration would enable graduates to design curricula and learning experiences that respond to learner diversity, reduce inequality, and promote social and environmental responsibility. This is aligned with the framework for teacher development for inclusive education (European Agency for Special Needs and Inclusive Education, 2022) and research on education for sustainable development (Imara & Altinay, 2021). In summary, the synthesized framework can serve as a foundation for curriculum mapping that systematically connects graduate attributes, PLOs, courses, learning activities, and assessment methods, as illustrated in Figure 3.

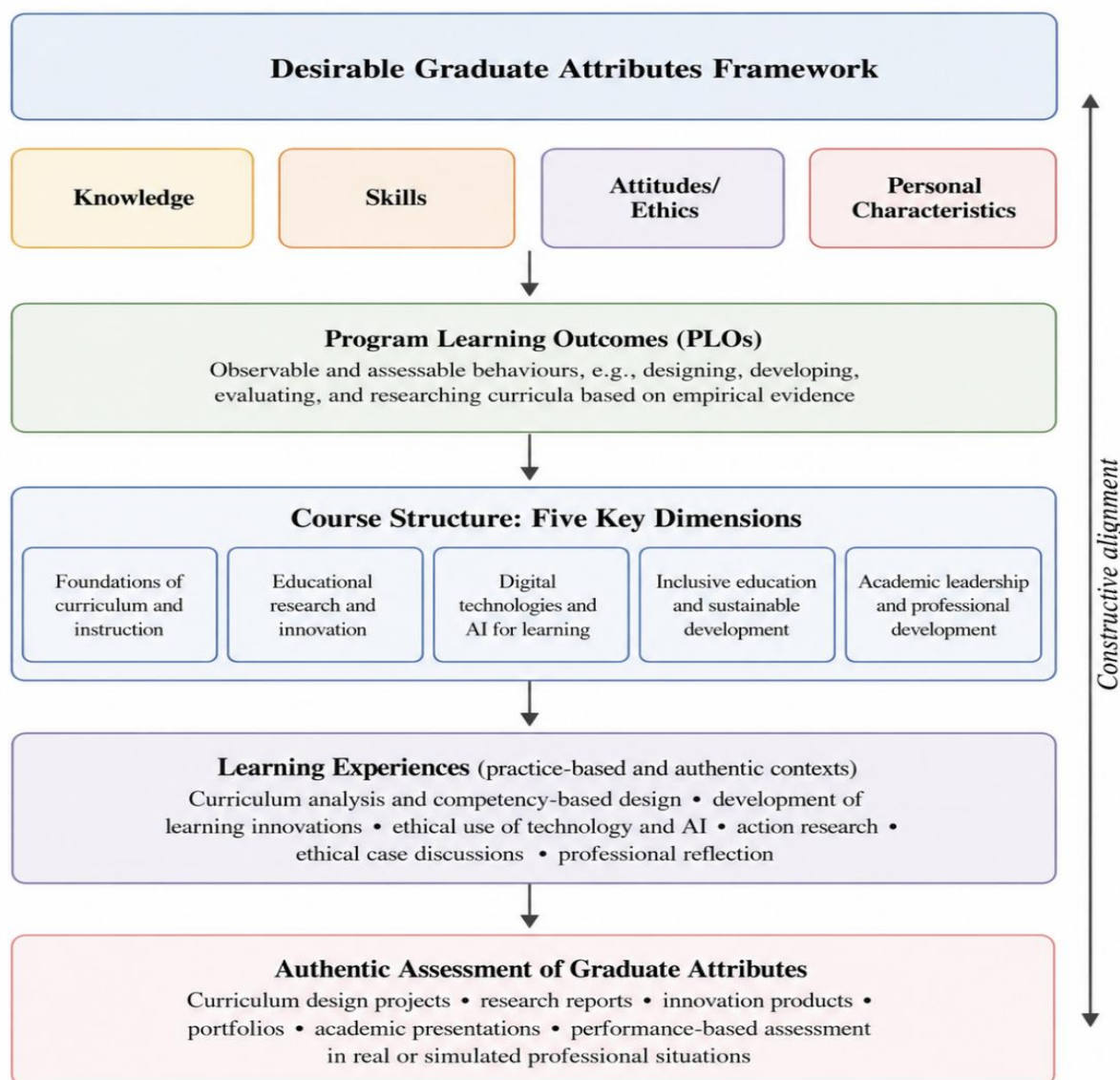


Figure 3. Curriculum Mapping Based on the Desirable Graduate Attributes Framework for the Master of Education Program in Curriculum and Instruction

Conclusion and Recommendations

Conclusion

This article aimed to synthesize the desirable graduate attributes for the Master of Education Program in Curriculum and Instruction by integrating Thai policy and standard documents with contemporary international research and academic frameworks published from 2020 onward. The synthesis indicates that the formulation of graduate attributes at the master's degree level should not rely solely on domestic standards frameworks. Rather, it should be expanded to encompass major global educational trends, including research, innovation, digital technologies, artificial intelligence, inclusive education, educational equity, sustainable development, and lifelong learning.

The desirable graduate attributes can be summarized into four domains. The knowledge domain emphasizes in-depth and integrated knowledge of curriculum, instruction, research, innovation, technology, and changing social contexts. The skills domain emphasizes the ability to design, develop, implement, evaluate, and conduct research on curricula or learning

management in real contexts. The attitudes/ethics domain emphasizes responsibility toward learners, the profession, society, equity, and ethical use of technology. The personal characteristics domain emphasizes academic leadership, lifelong learning, creativity, adaptability, and readiness to lead educational change. In summary, graduates of this program should be developed not merely as individuals with knowledge of curriculum and instruction, but as curriculum designers, learning facilitators, researchers, innovators, and leaders of educational change.

Limitations of the Study

This study has several limitations that should be acknowledged. First, the synthesis was conducted primarily by a single researcher. Although an audit trail, source triangulation, thick description, and reflexive practices were employed, the absence of an independent second coder and of formal inter-coder reliability testing (e.g., Cohen's kappa) means that the coding and interpretation may still be subject to researcher reflexivity bias. Second, the resulting framework is theoretical and document-based: it has not yet been empirically validated through expert judgment, stakeholder consultation, or implementation in an actual curriculum, and it should therefore be regarded as a provisional framework. Third, the study employed criterion-based purposive selection rather than an exhaustive systematic review, and the international sources were limited to Thai- and English-language documents published from 2020 onward; relevant perspectives published in other languages, or influential earlier works, may therefore have been omitted. Finally, the framework was developed with specific reference to Thai policy, professional standards, and social contexts, which may limit its direct transferability to other national settings without adaptation.

Recommendations for Future Research

Future research should: (1) examine the appropriateness and feasibility of the graduate attribute framework through systematic expert validation, such as a Delphi or mini-Delphi panel, expert meetings, or member checking with specialists in curriculum and instruction; (2) strengthen methodological rigor when refining or extending the framework by employing multiple independent coders and reporting inter-coder reliability, for example using Cohen's kappa; (3) investigate the perspectives of instructors, graduate employers, alumni, and graduate students in order to confirm the framework's alignment with practical needs; (4) develop and validate concrete instruments for assessing complex attributes, such as scenario-based performance tasks, analytic rubrics, and portfolio protocols; and (5) apply the framework to the design of a prototype curriculum and evaluate its implementation in real contexts in order to confirm its practical value for the development of the Master of Education Program in Curriculum and Instruction.

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