Journal of Research and Curriculum Development, Vol.15, Issue.2, July – December, 2025
ISSN: 3057-174X (Online) https://so03.tci-thaijo.org/index.php/jrcd/index

Applying Horizon Scanning in Learning Design to Enhance Digital Competencies for Public Administration Students in Thailand

Ubonwan Bunkaew[1*], **Tanapong Thongsuk**[2], **Thananya Rodtou**[3]
[1,3]Faculty of Liberal Arts and Management Science, Prince of Songkla University, Surat Thani Campus, Surat Thani, Thailand 84000
[2]Independent Scholar
[*]Corresponding author email: ubonwan.u@psu.ac.th

Received: June 30, 2025
Revised: November 13, 2025
Accepted: November 28, 2025

Abstract: This study aims to present the outcomes of applying Horizon Scanning techniques to identify and develop a digital competency framework essential for public administration students in Thailand. The objective is to prepare them to become government personnel capable of supporting the transition toward digital government. The analysis highlights the need to shift educational paradigms in public administration to align with the digital era. It emphasizes the development of digital competencies across four key components: skills, knowledge, attributes, and digital experience. The horizon scanning process revealed key trends, including the move toward agile, citizen-centric, data-driven governance; the influence of emerging technologies such as AI, Big Data, IoT, and Blockchain; and the growing demand for public sector personnel equipped with both technical and general digital skills. This article presents the proposed digital competency framework along with strategic recommendations for curriculum improvement, learning design, and collaborative initiatives aimed at equipping public administration students with the competencies required to advance Thailand's digital government agenda.

Keywords: Horizon scanning, Learning design, Digital competency, Public administration students, Digital government

Introduction

The transition to Digital Government Transformation has become a global agenda and a key strategy for many countries, including Thailand, which is committed to enhancing efficiency, transparency, and public services through intensive application of digital technologies (GovInsider, 2025; OpenGov Asia, 2024). The success of this transition depends on several factors, especially the competencies of public sector personnel, who must possess knowledge, capabilities, and skills aligned with the dynamics of digital technology and changing societal expectations.

Public administration students, as future government personnel, therefore, need systematic preparation to become a crucial mechanism in driving digital government effectively. However, the current situation indicates challenges in producing public administration graduates with the necessary digital competencies that keep pace with rapid technological changes, including a shortage of appropriately skilled personnel (Digitalisation World, 2022) and challenges in upskilling public sector personnel overall (OECD, 2022; World Economic Forum, 2025). Traditional teaching methods may be insufficient for building complex and integrated skills, which include capabilities in Big Data Analytics (GovInsider, 2025), AI Literacy (UNDP, 2023), user-centric digital service design (Tech For Good Institute, 2023), ethical awareness (The Nation Thailand, 2024), and cybersecurity.

A review of relevant literature reveals numerous studies acknowledging the importance of digital competencies in the public sector. For example, the Organisation for Economic Co-operation and Development (OECD, 2022) has emphasized the continuous need for developing digital skills and leadership in the public sector (Tech For Good Institute, 2023). Several research works have identified essential digital skill sets for modern

public sector practitioners, often encompassing both technical skills (Hard Skills) such as data analytics and basic programming, and social and emotional skills (Soft Skills) such as critical thinking, complex problem-solving, collaboration, and adaptability (Global Government Fintech, 2021). Furthermore, recommendations include developing foundational digital skills for career advancement (AI Thailand, n.d.) and enhancing understanding of public digital infrastructure (Digital Public Infrastructure - DPI) (AWS Public Sector Blog, 2023).

However, the concrete application of this knowledge to design learning processes that can anticipate future needs and integrate them into public administration curricula remains an issue requiring further study, especially in the context of developing countries rapidly transitioning to digital, such as Thailand, which may face a shortage of specialized IT experts in public administration programs (Rikharom & Chansanam, 2023). Meanwhile, the concept of Horizon Scanning, a proactive process for identifying, analyzing, and interpreting signals of potential future changes to inform current strategic decisions, has been widely recognized and applied across various sectors, including policy planning, innovation development, and workforce planning (Chaiyasuk et.al, 2025).

In the education sector, horizon scanning holds high potential in helping educational institutions design curricula and learning experiences that precisely and promptly respond to future labour market trends and demands. Studying trends and policy changes at international and national levels is part of this process (UNDP, 2023). However, the systematic application of horizon scanning for learning design aimed at developing digital competencies specifically for public administration students in Thailand has not been clearly evident in past research, creating a significant knowledge gap.

Given the importance of digital competencies for public sector personnel in the digital government era, coupled with the challenges faced by higher education institutions in preparing graduates (Monash University, 2023) and the potential of horizon scanning techniques to guide proactive learning design, this study focuses on applying horizon scanning in learning design to enhance digital competencies for public administration students. The main problem leading to this study is the lack of clear and systematic guidelines for using future forecasting data to develop curricula and teaching methods that can truly and timely cultivate essential digital competencies in public administration students, preparing them for work in the complex and ever-changing digital government ecosystem.

The primary objectives of this study are to (1) identify key future signals impacting the demand for digital competencies of public sector personnel in the Thai context, (2) develop a conceptual framework for applying horizon scanning to learning design in public administration, and (3) present a digital competency framework encompassing the necessary capabilities, knowledge, attributes, and experience for public administration students, to guide curriculum and learning activity development. The anticipated benefits of this study are several.

First, theoretically, the study will help enhance knowledge regarding the application of foresight in higher education design, especially in public administration and digital competency development. Second, practically, the study's results will provide concrete policy recommendations and guidelines to higher education institutions, policymakers, and stakeholders involved in curriculum and public sector personnel development to effectively respond to digital government challenges. Finally, preparing public administration students with appropriate digital competencies will positively impact the quality of public services, enhance the country's competitiveness, and drive sustainable development in the digital era.

Horizon scanning for digital government and learning design for public administration students in Thailand

Horizon Scanning is a method for identifying early signals of potential changes, along with related challenges and opportunities. It is a structured evidence-gathering process aimed at exploring the external strategic environment. Horizon Scanning is a collective intelligence process that brings together perspectives from various sources. It serves as the foundation for Strategic Foresight and is often used at the beginning of foresight activities, involving five steps (UN Global Pulse, 2022): Step 1: Define the scope of the experiment, needs, and resources. Step 2: Scan and collect information. Step 3: Interpret and filter, organize, and prioritize findings. Step 4: Sensemaking, validating information, and identifying critical actions. And Step 5: Reporting and sharing results.

Horizon scanning is a proactive process that enables organizations to anticipate future trends, changes, and potential challenges, in order to prepare and adapt promptly. In the context of Thailand's digital government development, horizon scanning is crucial for identifying the necessary skills and knowledge for future public sector personnel, especially public administration students, who will be a key force in driving this change.

1.1 Anticipated Changes in Governance Models, Public Service Delivery, and Citizen Expectations in Thailand. The results of horizon scanning indicate significant trends in Thailand's governance model, which is expected to move towards a more Agile, Citizen-centric, Data-driven, and Participatory approach (GovInsider, 2025). Public service delivery will transition to Seamless digital formats that are Personalized and Proactive. Citizen expectations of the public sector will increase, demanding Transparency, Accountability, and Ethical considerations in digital service provision (OECD, 2022). These changes suggest that future public administrators must be capable of Co-designing services with citizens and working effectively in environments with diverse stakeholders, which differs from the hierarchical work structures of the past. Furthermore, the ethical dimension of digital governance will become more prominent, requiring public administrators to balance promoting innovation with protecting citizens' rights and algorithmic fairness (UNDP, 2023).

1.2 Transformative Impact of Emerging Digital Technologies on Public Sector Operations. Emerging digital technologies will play a significant role in broadly transforming public sector operations. Horizon scanning points to the influence of key technologies as follows:

1) Artificial Intelligence (AI) will be used for Predictive Analytics, Policy Simulation, Automated Services, and enhancing communication with citizens (GovInsider, 2025). Thailand has given significant importance to AI development, establishing a National AI Committee and formulating a National AI Strategy (Tech For Good Institute, 2023).

2) Big Data will be a crucial foundation for Evidence-based Decision-making and targeted policy formulation (Tech For Good Institute, 2023).

3) Internet of Things (IoT) will play a role in Smart City Management and optimizing resource utilization.

4) Blockchain will be used to enhance data security and transparency in public sector operations, as exemplified by studies on using blockchain for government bond issuance in Thailand (World Economic Forum, 2025).

5) Cloud Computing will be a critical infrastructure for flexible and scalable government services.

The widespread application of these technologies necessitates that public administration curricula move beyond theoretical discussions to practical application and strategic management of these tools within the public sector context. Furthermore, the integration of these technologies will create new and complex challenges and opportunities for public service innovation, requiring personnel capable of continuous learning and adaptation.

1.3 Anticipated Human Capital Needs of Thailand's Digital Government Ecosystem. Based on the aforementioned trends, it is anticipated that the roles and skill sets in high demand within Thailand's digital government ecosystem will not be limited to technical experts alone, but will also include those who are proficient or knowledgeable across various digital technologies and can apply that knowledge to diverse tasks. This refers to individuals with broad and deep digital understanding who can connect technology with policy, manage digital transformation projects, and lead in digital environments. Thailand's National AI Strategy aims to produce over 30,000 AI personnel within 3 years (National Science and Technology Development Agency (NSTDA) Strategy and Transformation Center (NSSTC), 2023) and projects to upskill public sector personnel at the district level (OpenGov Asia, 2024) reflect the widespread demand for digital skills. However, there remain gaps in essential skills such as lifelong learning, personal attitude, teamwork, trustworthiness, and foundational digital understanding (AWS Public Sector Blog, 2023). And OECD (2022) has recommended that Thailand enhance its efforts in developing digital skills and leadership in the public sector.

This situation points to the need for two main groups of personnel: in-depth technical experts (e.g., data scientists, AI engineers who understand the public sector context) and public administrators with a "T-shaped" profile, meaning they possess a broad understanding of digital concepts coupled with deep expertise in public policy and administration. Furthermore, skill development initiatives at the district level (OpenGov Asia, 2024) indicate that digital competencies are not limited to central government personnel but need to be distributed across all levels of government agencies, which requires scalable and context-appropriate training approaches. The author summarizes key signals from horizon scanning and their implications for learning management for public administration students in Thailand in Table 1.

Table 1: Key signals from horizon scanning and implications for learning management for public administration students in Thailand

Horizon scanning signal	Implications for public administration	Reference
Increase in proactive public services driven by AI	Demand for skills in ethical AI deployment and algorithmic transparency	GovInsider (2025)
Growing citizen demand for Digital Co-creation in services	Need for facilitation and stakeholder engagement skills	OECD (2022)
Convergence of IoT, Big Data, and AI in smart city management	Demand for interdisciplinary understanding and Systems Thinking	GovInsider (2025)
Focus on Data Governance and data privacy	Need for knowledge of data laws, ethical data management, and balancing data disclosure with personal data protection	OECD (2022)

Table 1: (Continue)

Horizon scanning signal	Implications for public administration	Reference
Transition to Digital Public Infrastructure (DPI)	Need for understanding and interaction with core DPI components such as Digital ID systems and Government Data Exchange (GDX) systems	GovInsider (2025)

Source: Author (2025)

From the table, key signals derived from trend analysis directly impact the roles, responsibilities, and essential skill sets for public administration students in Thailand, serving as a reference framework for further digital competency development.

Digital competencies for public administration students

Based on horizon scanning, essential core competencies for public administration students preparing to be public sector personnel in Thailand's digital government can be identified. The author divides these into four main dimensions: Digital Capabilities, Digital Knowledge, Digital Characteristics, and Digital Experience.

2.1 Digital Capabilities: These are the necessary operational and technical proficiencies. This dimension focuses on practical capabilities directly relevant to future public administration in Thailand, encompassing more than general IT skills. It includes:

1) Data Literacy & Analytics: The ability to understand, interpret, analyze, and visualize government data to support evidence-based decision-making and policy formulation (Dokthaisong et.al, 2025), including proficiency in using relevant tools such as statistical software like RStudio, SPSS, or Microsoft Excel (Monash University, 2023).

2) AI Literacy & Application: Understanding core AI concepts, ethical implications, the ability to identify AI use cases in public services, and the potential to manage AI projects or work with AI tools (Dokthaisong et.al, 2025). This also includes "responsible digital thinking" (Rikharom & Chansanam, 2023).

3) Digital Service Design & Delivery: Skills in designing user-centric digital public services, understanding user journeys, and using digital platforms for service delivery (Rikharom & Chansanam, 2023).

4) Cybersecurity Awareness & Risk Management: Foundational understanding of cybersecurity threats, data privacy principles, and risk mitigation strategies in the digital government context (GovInsider, 2025).

5) Cloud Computing Fundamentals: Knowledge of cloud service models (IaaS, PaaS, SaaS) and their application in the public sector for flexibility and efficiency (GovInsider, 2025).

6) Digital Project Management: Skills in managing digital transformation projects, including the application of Agile methodologies (OECD, 2022).

7) Digital Communication & Collaboration Tools: Proficiency in using digital tools for internal and external organizational communication, collaboration, and citizen engagement (Rikharom & Chansanam, 2023).

These digital capabilities are not static but continuously evolve from basic knowledge to specialized expertise (Urban Institute, 2019). Public administration curricula therefore need to respond to this diversity, possibly by offering different learning pathways or levels of technical depth, as roles in the public sector vary from frontline public service

to policy analysis and IT management. A one-size-fits-all approach to teaching these capabilities may thus be ineffective. Furthermore, the rapid pace of technological change means that specific tools taught today may become obsolete in the future. Therefore, emphasizing foundational principles and the ability to rapidly learn new tools is no less important than teaching current tool usage (Rikharom & Chansanam, 2023).

2.2 Digital Knowledge: This refers to foundational understanding for informed operations. This dimension focuses on the conceptual and theoretical understanding necessary for effective public sector administration in the digital era. It includes:

1) Digital Government Principles & Frameworks: Understanding concepts of e-Government, Digital Government, Open Government, and related international frameworks, such as the OECD (2022) Digital Government Policy Framework, including knowledge of Thailand's Digital Government Development Plan (GovInsider, 2025).

2) Data Governance & Ethics: Knowledge of data management principles, data quality, personal data protection laws (e.g., Thailand's PDPA), Open Data policies, and ethical considerations in data use (OECD, 2022).

3) Ethical AI & Algorithmic Accountability: Understanding AI bias, principles of fairness, transparency, and accountability in algorithmic decision-making in the public sector (Dokthaisong et.al, 2025).

4) Digital Law & Regulation: Familiarity with laws related to digital transactions, cybersecurity, intellectual property in the digital space, and regulatory approaches to emerging technologies (OECD, 2022).

5) Public Sector Innovation & Transformation: Knowledge of innovation models, change management strategies in the public sector, and how digital technology can drive transformation (Rikharom & Chansanam, 2023).

6) Socio-Economic Impact of Digitalization: Understanding the broad impacts of digital transformation on society, including the digital divide, changes in the labour market, economic opportunities, and impacts on inclusivity (UNDP, 2023).

Digital knowledge must be deeply adapted to the legal, cultural, and administrative context of Thailand, while also drawing on international best practices (GovInsider, 2025). Importing knowledge alone without adapting it to the local context reduces effectiveness. Furthermore, the interdisciplinary nature of digital knowledge requires breaking down traditional academic barriers in public administration curricula (McQuiston & Manoharan, 2021). This is because topics such as digital law, AI ethics, socio-economic impacts, and data governance are not traditionally core public administration subjects but are linked to law, philosophy, sociology, and computer science. Effective digital public sector management thus requires an integrated understanding, pointing to the need for more interdisciplinary curriculum development or cross-departmental teaching.

2.3 Digital Characteristics: These are the essential attributes and mindsets for the digital era. This dimension emphasizes soft skills and personal attributes crucial for navigating a rapidly changing digital landscape. It includes:

1) Adaptability & Flexibility: Willingness and ability to learn new technologies, adapt to changing work processes, and embrace new governance models (Rikharom & Chansanam, 2023).

2) Critical Thinking & Complex Problem-Solving: The ability to analyze complex situations involving technology, data, and diverse stakeholders, and develop innovative solutions (Rikharom & Chansanam, 2023).

3) Creativity & Innovation: A propensity to think outside the box, experiment with new approaches, and leverage digital tools to create novel public service solutions (Rikharom & Chansanam, 2023).

4) Collaboration & Teamwork: The ability to work effectively in multidisciplinary teams, often in virtual environments, alongside technical experts, policymakers, and citizens (Rikharom & Chansanam, 2023).

5) Effective Communication (Digital and Traditional): The ability to clearly communicate complex technical information to non-specialist audiences and engage effectively through digital channels (Rikharom & Chansanam, 2023).

6) Ethical Judgement & Integrity (in Digital Context): A strong ethical compass to guide decisions in data usage, AI deployment, and digital service provision, upholding public trust (UNDP, 2023).

7) Lifelong Learning & Curiosity: A proactive attitude towards continuous skill development and keeping abreast of technological advancements (Rikharom & Chansanam, 2023).

8) Resilience & Change Agility: The ability to cope with uncertainty and setbacks encountered in digital transformation initiatives (World Economic Forum, 2025).

9) Citizen-Centric Mindset: A deep commitment to understanding and responding to citizens' needs through digital channels (GovInsider, 2025).

These characteristics are often harder to "teach" through traditional lecture methods and require learning environments that emphasize experience, reflection, and collaboration (LINCS, 2017). Assessing these characteristics also poses a challenge for traditional assessment methods and may require innovative approaches such as portfolio-based assessment, peer assessment, and observation of performance in simulated or real-world situations (Monash University, 2023).

2.4 Digital Experience: This refers to practical application and hands-on learning. This dimension emphasizes the necessity of real-world, practical experience to enhance learning and prepare students for real-world challenges.

1) Policy Simulation Labs using Digital Tools: Engagement in simulations that use data analytics and AI to model policy outcomes and test interventions (Monash University, 2023).

2) Digital Government Project Involvement: Involvement in real or simulated digital government projects, from conceptualization to implementation and evaluation (Harrisburg University, 2025).

3) Internships & Work Placements: Opportunities for internships in tech-driven government agencies, GovTech companies, or relevant private sector entities (AWS Public Sector Blog, 2023).

4) Capstone Projects: Capstone projects requiring students to solve digital transformation challenges in the Thai public sector, possibly involving prototype development, policy briefs, or strategic plans (Harrisburg University, 2025).

5) Hackathons & Innovation Challenges: Participation in activities focused on developing GovTech solutions or solving public problems with technology (OECD, 2022).

6) Engagement with Digital Public Infrastructure (DPI): Interaction with and understanding of core components of DPI such as Digital ID systems, payment systems, and data exchange platforms (GovInsider, 2025).

Effective experiential learning requires strong collaboration between universities and government agencies and industries to create authentic learning environments and mentorship (OpenGov Asia, 2024). The "experience" component should be integrated throughout the curriculum, starting with small, guided practical exercises and culminating in more complex and independent capstone project experiences (Seideman, 2015). The digital competency framework for public administration students derived from horizon scanning is shown in Table 2.

Table 2: Digital competency framework for public administration students from horizon scanning

Competency dimension	Competency/ Specific scope	Description/ Key components	Examples/ Activities	Reference
Capabilities	Data Analytics	- Ability to collect, process, analyze, and visualize government data for decision-making.	- Using R software to analyze public datasets. - Creating data dashboards with Tableau.	Dokthaisong et.al (2025)
	AI Literacy	- Understanding basic AI concepts. Application in public administration and ethical implications.	- Case study analysis. - Using AI in citizen services. - Identifying AI bias risks.	
Capabilities	Digital Service Design	- Skills in designing user centric digital public services.	- Developing digital service prototypes to solve local agency problems.	Rikharom & Chansanam (2023)
Knowledge	Digital Governance	- Understanding principles, frameworks, and laws related to digital government and data.	- Studying Thailand's Digital Government Development Plan and comparing with international best practices.	GovInsider (2025)
	AI Ethics	- Knowledge of ethical issues, fairness, and responsibility in AI use in public administration.	- Discussions on ethical AI governance guidelines in Thailand.	Tech For Good Institute (2023)
	Public Sector Innovation	- Understanding innovation models and change management strategies in public administration.	- Analyzing case studies of successful public sector innovation projects in ASEAN.	Claremont Lincoln University (2023)

Table 2: (continued)

Competency dimension	Competency/ Specific scope	Description/ Key components	Examples/ Activities	Reference
Characteristics	Adaptability	- Ability to learn and adapt to rapidly changing technologies and environments.	- Participating in workshops on emerging technologies and their applications in public administration.	Rikharom & Chansanam (2023)
	Critical Thinking	- Ability to analyze complex data and situations for rational decision-making.	- Evaluating the impact of digital policies using various analytical frameworks.	
	Collaboration	- Skills in teamwork with diverse stakeholders in a digital environment.	- Interdisciplinary group projects to solve digital government challenges.	
Experience	Capstone Project	- Applying all knowledge and skills to solve real problems in the Thai digital government context.	- Developing a digital transformation strategic plan for a specific government agency.	Harrisburg University (2025)
	Internship	- Gaining direct experience working in government agencies or organizations related to digital technology.	- Interning at the DGA or GovTech companies developing solutions for the public sector.	AWS Public Sector Blog (2023)
	Simulation	- Learning through real-world simulations, such as crisis management with digital tools or digital policy negotiation.	- Participating in disaster response simulations using digital platforms.	Monash University (2023)

Source: Author (2025)

Strategies for developing digital skills in public administration students

Based on horizon scanning and the established digital competency framework for public administration students, to ensure students are prepared for the challenges and opportunities in the digital government era, higher education institutions need clear strategies for digital skill development, encompassing curriculum improvement, teaching innovation, fostering a digital-first culture, and building strategic partnerships. The strategies are as follows:

1. Curriculum Modernization: Integrating skills gained from horizon scanning into the core public administration curriculum is central to student preparedness. Concrete recommendations include:

1) Adding New Core Courses: Introduce specialized courses such as "Governance and Digital Transformation," "Data Analytics for Public Policy," and "AI Ethics and Public Sector Applications" to meet identified skill demands (Dokthaisong et.al, 2025).

2) Updating Existing Courses: Integrate digital perspectives into traditional public administration courses, such as public finance with GovTech budgeting tools, human resource management with digital workforce planning, and public policy analysis with data-driven methodologies (Monash University, 2023).

3) Interdisciplinary Approach: Promote joint courses or minors with departments of computer science, data science, law, and design to foster a holistic understanding (McQuiston & Manoharan, 2021). This will help address the shortage of specialized IT experts in public administration programs in Asia.

4) Specialization Tracks: Consider offering specialization tracks within the curriculum, such as "Digital Governance Leadership" or "Public Sector Data Science".

Curriculum reform must be an agile and continuous process, not a one-time overhaul, as technological changes occur rapidly (Claremont Lincoln University, 2023). Mechanisms for regular review and updates based on continuous horizon scanning are essential. Resistance to change within academic institutions may be a significant obstacle. The success of curriculum modernization therefore relies on strong leadership, faculty buy-in, and incentives for faculty digital development (Dokthaisong et.al, 2025).

2.Teaching Innovation and Promoting Active Learning Methods: Changing teaching methods is essential to cultivate the identified competencies.

1) Problem-Based Learning (PBL): Utilize real-world digital governance challenges from Thailand or ASEAN as the basis for learning (LINCS, 2017). For example, students can solve problems of designing digital solutions to improve specific public services or addressing digital access issues for certain communities. PBL supported by digital tools has also shown effectiveness at the university level (D'Elia, 2025).

2) Case Studies: For example, analyze successful and unsuccessful digital government initiatives from ASEAN (Chen & Kimura, 2024) and globally to extract lessons learned.

3) Authentic Assessments: Shift from traditional exams to assessments that require students to apply skills using digital tools, such as writing policy briefs based on data analysis, developing digital communication strategies for government agencies, or creating prototypes for digital services (Monash University, 2023).

4) Experiential Learning: Incorporate simulations, role-playing, digital policy labs, and direct participation in projects (Old Dominion University, 2025).

5) Flipped Classrooms and Blended Learning: Use technology to deliver foundational content outside the classroom, reserving in-class time for interactive discussions, problem-solving, and collaboration.

Effective implementation of these teaching methods requires significant faculty development and support, as many instructors may be more familiar with traditional lecture-based methods (Seideman, 2015). Technology itself can be a powerful tool to support these teaching innovations, such as online collaboration tools for PBL, simulation software, and data analytics platforms for authentic assessment (Monash University, 2023).

3. Fostering a Digital-First Culture within Higher Education Institutions:

Creating an environment where digital tools and mindsets are embedded in learning is crucial. This includes providing necessary digital infrastructure, software, and learning resources (International Trade Administration, 2025). Encouraging faculty and students to use digital tools for research, collaboration, and communication (Claremont Lincoln University, 2023). Promoting digital ethics and responsible online behaviour among students and staff. And supporting faculty in developing their own digital competencies (Patel, 2024). A digital-first culture is more than just providing technology; it is about embedding digital ways of thinking and working into the institution's DNA, from administration to teaching and research (Rikharom & Chansanam, 2023).

4. Building Strategic Partnerships by Enhancing Collaboration for Skill Development: A multi-stakeholder approach is essential. This includes:

1) University-Government Collaboration: Collaborate with agencies such as the Digital Government Development Agency (Public Organization) (DGA), the Office of the Civil Service Commission (OCSC), and the Ministry of Digital Economy and Society (MDES) (OpenGov Asia, 2024) to obtain information for curriculum development, guest lectures, internship opportunities, and collaborative research on digital government challenges.

2) University-Industry Collaboration: Partner with technology companies (e.g., AWS, local GovTech companies) to access cutting-edge technologies, industry expertise, real-world case studies, and potential career pathways.

3) International Collaboration: Learn from and collaborate with international organizations (e.g., OECD, UNDP, WEF) and leading international universities with strong digital governance programs (Chen & Kimura, 2024).

4) Alumni Network: Engage with alumni working in digital government roles for mentorship and curriculum feedback.

Sustainable partnerships require clear mutual benefits, defined roles, and a long-term commitment that goes beyond ad-hoc interactions (AWS Public Sector Blog, 2023). These partnerships can also create avenues for "co-production" of knowledge and solutions, were students and faculty work with government and industry on real digital government problems, benefiting all parties (Harrisburg University, 2025). The author summarizes teaching approaches and key components of public administration curricula in Table 3.

Table 3: Teaching approaches and key components of public administration curricula

Gap	Identified competency	Proposed curriculum improvement	Teaching approach	Desired learning outcome	Reference
Lack of practical data analysis skills	Data Analytics	- Mandatory course on data management and data visualization for public policy using R and Tableau.	- Authentic assessment with real datasets.	- Students can independently analyze and present findings from public datasets.	Dokthaisong et.al (2025)
Insufficient understanding of AI ethics in public administration	AI Ethics	- Case studies covering ethical dilemmas in AI deployment in ASEAN governments.	- Debate seminars.	- Students can critically evaluate ethical implications of AI use cases.	Tech For Good Institute (2023)
Need for improved collaborative problem-solving	Collaboration	-Interdisciplinary PBL project designing a public feedback system for a Thai municipality.	- Team-based learning with peer assessment.	- Students can effectively collaborate in diverse teams to develop feasible digital solutions.	LINCS (2017)
Lack of user-centric digital service design experience	Digital Service Design	- Workshops applying Design Thinking for digital public services.	- Hands-on Learning and prototyping.	- Students can apply design thinking principles to create digital service prototypes that meet user needs.	Rikharom & Chansanam (2023)

Source: Author (2025)

Conclusion

In an era where the world and Thailand are moving towards digital government to enhance efficiency, transparency, and public service delivery, government personnel need digital competencies that respond to technological changes and public expectations. Public administration students, as future government personnel, must therefore be systematically developed, especially in building complex skills related to data analysis, AI knowledge, user-centric digital service design, and an awareness of ethics and cybersecurity. Applying the process of "futures scanning" to identify trends and challenges of digital government reveals three key trends: the transformation of governance towards agile, citizen-centric, data-driven, and more participatory forms; public services transitioning to seamless and more personalized digital formats; and increased public expectations for transparency, accountability, and ethics in service delivery. Based on these trends, public administration students need the ability to co-design services with citizens and collaborate with diverse stakeholders, and they must also understand emerging digital technologies such as AI, Big Data, IoT, Blockchain, and Cloud Computing. Therefore, public administration curricula should move beyond theoretical learning towards practical application of digital technologies to prepare "T-shaped" personnel—individuals with broad technological knowledge coupled with deep expertise in policy and administration. The study concludes that the digital competencies of public administration students can be categorized into four main dimensions: digital capability, digital knowledge, digital attributes, and digital experience, to prepare students for this transition. Higher education institutions should have a clear strategic plan, focusing on curriculum modernization, adding digital-related courses, promoting interdisciplinary learning, and integrating learning innovations such as problem-based learning, case studies, flipped classrooms, and experiential learning. Furthermore, fostering a digital culture within the educational environment through the use of digital tools and establishing partnerships with government agencies, the private sector, and international organizations for curriculum development, internship opportunities, and joint research are crucial for producing government personnel ready to effectively and sustainably drive Thailand's digital government.

References

AI Thailand. (2022). *AI Thailand National Artificial Intelligence Action Plan for Thailand's Development*. https://ai.in.th/en/about-ai-thailand/

AWS Public Sector Blog. (2023). *AWS launches skills to jobs tech alliance Thailand to spur the growth of the next generation of digital workforce in Thailand*. https ://aws.amazon.com /blogs/publicsector/aws-launches-skills-to-jobs-tech-alliance-thailand-to- spur- the-growth-of-the-next-generation-of-digital-workforce-in-thailand/

Chaiyasuk, S., Rugchatjaroen, K., Sirisunhirun, S., Sajjarax D. N., Amornsiriphong, S., & Ploywan, P. (2025). Overcoming data barriers: Digital inclusion and equitable public services for people with disabilities in Thailand. *F1000Research, 14*, 473.

Chen, L., & Kimura, F. (Eds.). (2024). *Empowering online public service in Asia: The digital frontier*. Economic Research Institute for ASEAN and East Asia.

Claremont Lincoln University. (2023). *Digital leadership: Benefits and strategies for organizational leaders*. https://www.claremontlincoln.edu/news-blog/news- blog/ digital-leadership-strategies/

Digitalisation World. (2022). *Digital transformation still a work in progress for 94% of public sector organisations*. https://digitalisationworld.com/news/69886/ digital- transformation -still-a-work-in-progress-for-94-of-public-sector-organisations

Dokthaisong, B., Thongthip, B., & Chamnina, E. (2025). Using AI to reform bureaucracy and develop workforce skills in the digital era: A case study of Thailand. *South Eastern European Journal of Public Health*, 841–848. https://doi.org/10.70135/seejph.vi.5579

D'Elia, P., Stalmach, A., Di Sano, S., & Casale, G. (2025). Strategies for inclusive digital education: Problem/project-based learning, cooperative learning, and service learning for students with special educational needs. *Frontiers in Education, 9*, 1447489. https://doi.org/10.3389/feduc.2024.1447489

Global Government Fintech. (2021). *Thai government targets public with tokenised bond issuance*. https://www.globalgovernmentfintech.com/thailand-government-tokenised -bond/

GovInsider. (2025). *Advancing Thailand's digital government: AI, data, and resilient infrastructure for citizen services*. https://govinsider.asia/indo-en/event/securing-thailands-future-cyber-resilience-and-legacy-system-transformation

Harrisburg University. (2025). *Digital transformation course*. https://www.harrisburgu.edu /professional-dev/digital-transformation-course/

International Trade Administration. (2025). *Thailand digital education*. https://www.trade.gov /market-intelligence/thailand-digital-education

LINCS. (2017). *Digital literacy: Problem-based learning*. https://lincs.ed.gov/sites/default /files/TSTMDigLiterProbBaseLearn-508.pdf

McQuiston, J., & Manoharan, A. P. (2021). E-government and information technology coursework in public administration programs in Asia. *Teaching Public Administration, 39*(2), 210-226.

Monash University. (2023). *What is policy analysis? Concepts, tools and methodologies*. https://www.monash.edu/indonesia/news/ what-is-policy-analysis-concepts- tools -and-methodologies

National Science and Technology Development Agency (NSTDA) Strategy and Transformation Center (NSSTC). (2023). *Artificial intelligence (3)*. https://nsstc.niar.org. tw/en/highlights /analysis/2023-12-01

Old Dominion University. (2025). *Digital transformation & technology*. https://www.odu. edu/digital-transformation-technology

Open Gov Asia. (2024). *Thailand: Vision and strategies for a thriving digital economy*. https://opengovasia.com/2024/12/16/thailand-vision-and-strategies-for-a-thriving-digital-economy/

Organisation for Economic Co-operation and Development (OECD). (2022). *Open and connected government review of Thailand*. OECD Publishing.

Patel, K. (2024). *Building digital skills in the public sector at scale – The time is now*. https://www.government-transformation.com/transformation/building-digital- skills-in-the-public-sector-at-scale-the-time-is-now

Rikharom, R., & Chansanam, W. (2023). Essential competencies for digital workforce of provincial office in Thailand using Delphi technique. *Journal of Information Science Theory and Practice, 11*(4), 51-81. https://doi.org/10.1633/JISTaP.2023.11.4.4

Seideman, M. (2015). *PBL: From civic engagement to student reflection.* https:// www. edutopia.org /blog/pbl-civic-engagement-student-reflection-melissa- seideman

Tech For Good Institute. (2023). *Navigating Thailand's AI law: Development at a crossroads*. https://techforgoodinstitute.org/blog/expert-opinion/navigating-thailands-ai- law-development-at-a-crossroads/

The Nation Thailand. (2024). *Thailand establishes National AI Committee to boost competitiveness*. https://www.nationthailand.com/business/tech/40048295

UN Global Pulse. (2022). *Horizon scan manual: A step-by-step guide*. https://www.unglobalpulse.org/document/horizon-scan-manual-a-step-by-step-guide/

United Nations Development Programme (UNDP). (2023). *Submission to the Global Digital Compact*. https://www.un.org/digital-emerging-technologies/sites/www.un.org.techenvoy/files/GDC-submission_UNDP.pdf

Urban Institute. (2019). *Foundational digital skills for career progress*. https://www. urban.org/sites/default/files/publication/100843/foundational_digital_skills_for_career_progress_3.pdf

World Economic Forum. (2025). *GovTech Network Home*. https://initiatives. weforum.org/govtech-network/home