Academic Article

Teaching Public Service in the Digital Age: Collectively Building a Global Curriculum to Teach Digital-era Competencies to Public Managers

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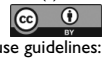
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Abstract

Public administration educators typically fail to incorporate evidence-based or even hypothesized guidance on the necessary digital competencies needed by public leaders and how they should be taught. Recognizing this gap, we apply participatory action research to derive eight competences and supporting teaching tools for digital government teachers. This involved convening focus groups of academics and practitioners to collect data, interviews, and participant observations. These data informed the development of a draft set of digital-era competencies for public leaders and provided a basis for debate and refinement in international focus groups. These competencies were then taught in prototype course settings and further developed and dissemination in the form of train-the-trainer materials and teaching information to over 200 professors from more than 50 countries. The eight high-level competencies emerged from this process. We suggest how to scale up training based on the experience of developing and teaching these competencies, focusing on the institutional and cultural barriers that must be overcome to modernize mainstream public administration education in the digital age. Lastly, we outline lessons learned from developing digital-era competencies to inform faculty and administrators of public affairs schools, as well as certification bodies.

Keywords

digital competencies, train-the-trainer, participatory action research, public administration

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1 Introduction

> "I wish I would have taken one of your electives. Every project in government I am working on now is a digital project" - Former MPA student

The capacity for effective public administration is now entangled with digital technologies, and yet governments struggle to adapt their processes, and modes should adapt to this new reality (Mergel et al., 2019). The rise of artificial intelligence has accelerated a sense of urgency (Sousa et al., 2019; Straub et al., 2023; van Noordt & Misuraca, 2022),

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but governments will need to overcome the same resistance and underlying lack of capacity that has limited efforts to respond to multiple ongoing crises, public demand for digital provision of public services and the shift to remote working (Wilson & Mergel, 2022). These and other challenges and demands have made it clear that digital-era government requires a refining of generalist public administration , so that non-IT personnel understand how transformation can, will, and should impact organizational structures, processes, and work practices. There are also concerns associated with this trend toward digitization, such as environmental impacts, governance, social equity, and threats to democracy which make it important to have a well-versed and competent civil service that can respond to these demands to prevent the erosion of trust in public institutions (Creutzig et al., 2022). Despite this, in most public affairs schools 'digital' is often still considered a niche domain dominated by computer scientists and software developers. It may exist as an elective in public affairs programs but has yet to make it into the core curriculum in most contexts (Manoharan & McQuiston, 2016).

The practical reality of public bureaucracies raises the question whether the current curricula and standards for training future public servants are still valid in the digital age. At the same time, there is a fixed number of instructional hours available in a public affairs school's required courses and thus a finite capacity for what can be taught. This creates significant competition and trade-offs between competencies and even fields of study. Debates about what is taught in required courses are not uncommon - with Core Economics an example of efforts to reframe economic courses (including economic courses in public affairs schools) (Bowles & Carlin, 2023; 2020). Debates also exist over what should be considered required content and courses in the first place. Here, digital is just one of many competing possibilities. For example, Kim and Toepler (2024) make the case that content about the non-profit sector should be required in public affairs schools. Thus, any effort to successfully curate and drive adoption of a set of digital-era competencies must recognize this competition by focusing on what is both minimalist and essential to leave room for other essential knowledge that public leaders also need to acquire.

Several surveys of literature and syllabi of public affairs schools reveal gaps in content relevant to the modern technology required in the workplace (see, Christian & Davis, 2016; Manoharan & McQuiston, 2016; Mauldin, 2016). NASPAA's (2014; 2023: 8) mission-specific required and elective competencies, as well as their professional competencies, do not include digital-era competencies. Instead, they either narrowly focus on technology competencies ("managing and leveraging emergent technologies and dealing with incomplete information") or on using digital tools for teaching as pedagogical instruments, how teaching should be adapted with digital means, challenges regarding Internet connectivity, and opportunities for using social media in teaching - especially as learnings from the pandemic. In this context, professors and trainers of digital competencies have relatively little evidence-based guidance on the necessary digital competencies and how they should be taught.

To close the gap between government's need for competent digital-era public managers and the existing public affairs core curricula we set out to investigate the following research question: what are the digital-era competencies that are essential for digital transformation and how these competencies might be embedded in the core curricula of public affairs programs. Here we show the results of our participatory action research study to ascertain the competencies public managers need for the digital era. We outline how, in international focus groups, we developed and reviewed the eight core competencies and test-taught them in different public affairs programs around the world for Bachelor, Master, and Executive Education students. We then discuss how we subsequently created an open educational resource to distribute the competencies and related open educational resources among professors and lectures across public affairs programs.

The next sections review the existing literature on digital competencies and their current embeddedness in public affairs programs. Then, we outline the research approach undertaken in this project and present the eight competencies derived from the focus groups with international professors and practitioners. The article ends with suggestions for how these digital competencies can be embedded in the core of public affairs programs.

Background: Competencies for the Digital Age

The rise of the Information and Communication Technology (ICT) age has driven and continues to drive change globally and in various sectors, with the public sector being no exception. Yet in many public sector contexts, the widespread adoption of New Public Management (NPM) led to outsourcing, deregulation, and competition between agencies, diminishing state capacity while increasing institutional and policy complexity (Dunleavy et al., 2006; Margetts & Dunleavy, 2024). This loss of capacity and lack of digital-era competencies needed to fulfill public sector missions have hampered government agencies' ability to effectively implement policies in the digital age. This has led to numerous high profile failures such as the UK's NHS modernization in the mid 2000s (Parliamentary Public Accounts Committee Report, 2013), Canada's payroll system update (2017 Fall Reports of the Auditor General of Canada to the Parliament of Canada), and the U.S.' healthcare.gov launch, all of which eroded the public's confidence in government's ability to use technology to solve public problems (see, for example, Anthopoulos et al., 2016).

Mergel et al. (2019) state that digital transformation is heavily influenced by external factors and needs frequent adjustment to maintain relevance for users of services who increasingly expect more and more from governments. Through digital transformation efforts, governments can build trust and improve relationships with citizens who then gain improved satisfaction, while governments themselves benefit from a transformation of their cultures (Idrus et al., 2024). Regardless, as public goods, services, and policies are increasingly digitized, public leaders will be held accountable professionally and politically for their successes and failures.

The literature on digital competencies identifies gaps between theory and practice in the MPA/MPP program curricula, with a disjoint between what is taught, and what are needed in the workplace. Manoharan and McQuiston (2016) analyzed the curriculum of MPA programs to determine an emphasis on IT competencies (e.g., big data, e-government, cybersecurity, privacy), finding that a notable number of programs offer some form of IT education in electives, rather than core courses. A lack of uniform standards contributes to the slow diffusion of IT courses among MPA/MPP programs (Göçoğlu & Demirkol, 2023). In total, they identified "ten forms of IT education being provided in MPA/MPP programs in the United States" (Manoharan & McQuiston, 2016, p. 183), which highlight specific technologies and processes. They then suggest that accrediting institutions should address this variability to close the gap in the public administration literature between what practitioners want in their workforce and traditional forms of IT education.

There is a notable gap between digital competencies needed for public service and MPA training, which is shown by Christian and Davis (2016) who analyzed MPA program offerings and sought to understand the status of IT in MPA curricula, whether current curricula address the importance of IT, and if the importance of IT varies between graduates and employers.

NASPAA, the Network of Schools of Public Policy, Affairs, and Administration, is a US-based accreditation body for public administration and policy courses, accredits roughly 209 programs at 195 schools annually (Roster of Accredited Programs | NASPAA, n.d.). This accreditation centers around the NASPAA Standards, first published in 2009 and updated four times since, most recently in October of 2023. This standard outlines a set of five domains in which competencies should fall but do not specify what those competencies should be. Their rationale behind these standards mentions that "[graduate] students should be able to recognize, adapt to, and make decisions in changing and increasingly complex environments, for example, but not limited to, managing and leveraging emergent technologies, and dealing with incomplete information and conflicting demands." (Official Standards & Policy | NASPAA", p. 8). Aside from referencing information technology supporting classroom instruction, this is the only mention of technology referenced in their standards. Moreover, this reference to leveraging emergent technologies is relatively knew, appearing in third edition published on October 18, 2019 (Detailed Summary of Changes 2019 NASPAA Self-Study Instructions Policy | NASPAA", p. 41). Competencies of a single module assume pre-learnings as part of broader course (such as New Public Management) and require programs to demonstrate adherence to the following five core competencies: "'leading and managing in public governance; participating in and contributing to the policy process; analyzing, synthesizing, thinking critically, solving problems and making decisions; articulating and applying a public service perspective; and communicating and interacting productively with a diverse and changing workforce and citizenry' (NASPAA, 2014: 7)." (Haupt et al., 2017, pp. 611–612).

As noted by Morçöl et al. (2020), only 16.3% of MPA programs and 12.5% of MPP programs certified by NASPAA have a core class on information technology. Additionally, in 2016, only 26 of 170 NASPAA member schools required an information technology class to be taught (Christian & Davis, 2016, p. 165). Much of this stems from a debate over how much public administration courses should emphasize theory versus practice. This gap is further exacerbated by a lack of research into the prerequisite competencies civil servants should hold before digital transformation is possible (Crusoe et al., 2024). This makes it challenging to develop course material geared toward this particular challenge, regardless of the teaching methodology or focus on instilling conceptual versus practical knowledge.

Increasingly, government services, as well as much analytical work, is mediated by digital technologies. This fact, combined with an increase in the complexity of IT contracts and purchasing, the rising reliance on outsourcing and contractors, and the importance of interoperable systems are driving the need for civil servants to become more well-versed in digital areas that were previously a niche skill set (Christian & Davis, 2016, p. 162). Records retention, data management, and transparency and privacy are three areas Christian & Davis identified as being principles related to IT that will remain important for the foreseeable future due to their impact on public management (2016). They also identified the continual transformation impacts of IT, the importance of IT investments, and the role of innovation and creativity in business executive success as especially applicable to the public sector (Christian & Davis, 2016, p. 164). Following a survey with 199 responses from individuals who graduated from 84 different MPA programs, Christian & Davis found alumni of MPA programs "may not be obtaining sufficient training concerning IT from their MPA programs" (2016, p. 165) and only about 15% of NASPAA member schools require an IT course as part of the core curriculum.

More recently, Cordella et al. (2023) expressed frustration with public affairs schools' lack of focus on digital-era public administration . They "call upon digital government scholars to renew their attention on the public administrators'

and civil servants' digital literacy, its evolution, and its conceptualization" and review how the UK Government Digital Service attempted to train public servants more generally.

Perhaps the most remarkable observation from the review of the literature is that while there was broad recognition of the importance of digital era competencies from expert practitioners, public affairs schools' deans, and many faculty members, there have been few successful efforts defining these competencies or embedding them in required courses. The challenge here is perhaps best explained by the fact that "... NASPAA removed the IT requirement from its standards for institutional accreditation because of the subject area's diffuse focus." (see, Manoharan & McQuiston, 2016). On the one hand, digital competencies are so essential they are "everywhere" within public administrations, but this diffuseness makes it hard for faculty to champion their cause within public affairs schools' required (or core) curriculum. One could say the same thing about ethics, which is also essential, and diffuse across a range of challenges in the public arena but has the benefit of being more codified with decades (nay centuries or even millennia) of practice to draw upon.

It is also clear that a lack of digital competencies can damage public administration and public trust in institutions. Netra et al. (2024) show that public managers' formal education is linked to the extent to which they prioritize core service provision and communication with citizens, integral competencies in an era where the rule of law and democracies are scrutinized for being overbearing and under-delivering. A recent article by Crusoe et al. (2024, p. 1) state that "(w)hile existing research has outlined essential prerequisites for successful digital transformation, there is recognition of willful ignorance concerning these prerequisites." According to the authors the prerequisites "rang(e) from the importance of internal champions (Wilson & Mergel, 2022), to changes in governance practices (Janssen & van der Voort, 2016; Magnusson et al., 2020) and structural changes (Andersson et al., 2022; Clarke, 2020)." Janssen et al. are particularly damning in that they identify the "willful ignorance" on the part of public servants and leadership as an important factor and core inhibitor of public sector digital transformation.

Even though several frameworks exist that point to the importance of IT literacy or digital-era competencies, current research and learning evaluations show that they are still not integrated into the core curricula of public affairs schools, as previously shown in the example of the NASPAA core curriculum. One other example of such a framework is promoted by the OECD (2018) on twenty-first Century (Binkley, 2012; Foster, 2023; Geisinger, 2016). While not specifically focused on public administrators it seeks to address how educational institutions should think about competencies for the digital era more generally. Its work is more focused on *how* students should learn, but it nonetheless wrestles with how students should engage in lifelong learning and working while embedded in digital networks.

The authors therefore set out to close the existing gap between the government's need for competent digital-era public managers and the existing public affairs core curricula by identifying the digital-era competencies that experts identify as essential for digital transformation, and exploring how these competencies can be embedded in the core curricula of public affairs programs.

Research Design

In the absence of formal guidance for the development of digital-era competencies by the accrediting institutions, we adopted in this research project a participatory action research approach to co-create competencies from a global community of academics and practitioners (Greenwood et al., 1993). This method has been used in education to provide teachers an opportunity to participate directly in research and curriculum theorizing (Carr & Kemmis, 1986) where "activities such as educational research, curriculum development, teaching, and evaluation are fundamental aspects of an action research process" and the goal of improving teaching practice given weight as opposed to purely the production of knowledge (Elliot, 1991). This methodology was chosen due to its applicability for the co-creation of knowledge that is practical and responsive to the needs of a community, this being public administration academics and practitioners. It allows for an iterative approach to build competencies based on real-world feedback while building capacity among participants who are contributing while simultaneously applying the findings in their own classrooms and workplaces.

Through this approach, the authors leveraged the experiences of academics and practitioners in an ongoing collaborative effort to develop digital-era competencies for public affairs schools as well as the supporting materials to teach said competencies. Additionally, the researchers were not passive observers, having a combined roughly 40 years of teaching experience as well as experience consulting or working in the digital government space. The authors have previously developed competencies in their respective institutions and, through this research, also aim to shape the way that other teachers and professionals in the field apply these competencies.

The research questions were the following:

1) What are the minimum viable competencies public managers need to develop in a digital era to do their jobs well?
2) How can those and competencies be integrated into public policy and administration curricula?

Table 1. Participants During Focus Group Discussions.

Country	Academics	Practitioners
Canada	1	4
UK	3	6
Argentina	1	
Austria		1
Brazil	1	
Chile	1	
Estonia	1	
France		2
Germany	2	
Italy	2	
New Zealand	1	
Singapore		1
USA	9	2
TOTAL	*23*	*20*

3) How can professors within these programs effectively teach these digital-era public sector competencies either as stand-alone classes or integrated into their core classes?

To collect data throughout the process, the research team leveraged focus groups (Merton, 1987), interviews, and participant observation (Aktinson & Hammersley, 1998) as the basis for the participatory action research (Greenwood et al., 1993). These came in the form of continuous review sessions with public affairs professors and digital government practitioners. In this environment, in which the absence of IT and digital transformation education in public affairs programs is increasingly recognized as a problem, this research sought to draw on a community of faculty and practitioners' knowledge hailing from a range of higher education and public affairs traditions.

Research process: We initiated the review of the competencies in 2019, just before the pandemic forced many public affairs schools to move their teaching online. We started our initial review by conducting a literature review as well as several rounds of qualitative interviews with highly cited professors in public affairs schools who were researching and teaching on digital government topics.

During this phase, a clear set of design criteria emerged. First, and most obvious, we identified what was essential for public service leaders to understand to be effective in a digital era. As reflected in our first research questions, this always had to be the *absolute minimum* they needed to know, to be as simple as possible to integrate into a core curriculum. Second, we determined what and competencies were likely to be covered in other required courses typically taught at public affairs schools and exclude them to avoid duplication. This, for example, included competencies around data typically covered in a statistics course, or more general ethical issues covered in an ethics course.

Through a combination of purposive sampling and snowball sampling approaches, we identified over 40 experts in the general field of government information and technology and interviewed them about their current digital government teaching and research practices in public affairs schools (see, Table 1 for an overview of the interviewees) (Naderifar et al., 2016). This resulted in an overview of their assessment of the relevant future and competencies that public managers need in the digital era. Initially, the experts interviewed came out of the authors' network and shared the view that digital competencies were lacking in public affairs schools' curriculum. In semi-structured interviews, these experts were then asked what the minimum viable knowledge future public managers need to know to be effective, and what has been demonstrated to be effective in their classes.

We analyzed the interview data by identifying the articulated current practices and future needs. We then reviewed the transcripts and extracted the initial set of digital-era competencies. These were then debated and refined in international focus groups with a wider set of researchers, professors, and public administrators, and the results were integrated into an initial draft of the competencies (Merton, 1987).

In 2020, the process of developing the competencies was coordinated by the core group of three editors, all authors of this paper, based in the US, UK, and Germany by applying an iterative development approach (Le-May Sheffield & & Felten, 2018) leveraging an initial draft list of competencies, using co-creation workshops and a facilitated collaborative writing process. Beginning with a workshop, we continued to generate an initial list of eight competencies and gather feedback on their framing and exact wording. As soon as one of the competencies was written, it was reviewed by the editor group, core readings and exemplary case studies were added, and the resulting output was shared with a selected

group of experts conducting research in the domain of each competence. As an example, for the focus group on the user-centricity competency, current and former design experts working in government were specifically sought out and invited into the process, as well as professors who specialize in the field. These experts in both research and practice were asked to read the text describing the competencies and share their feedback on any missing elements or texts they suggested the students need to read to better understand both the practical approaches as well as the theoretical foundations.

In 2020–2024, then competencies were then successfully taught in three different prototype course settings: (1) Bachelor and Master of Public Administration programs at a university in Germany, as well as (2) mid-career and (3) executive education programs at a university in the US. In addition, the competencies and teaching materials were supplemented with step-by-step teaching plans to facilitate other faculty to adopt them.

During this phase, the competencies and a related open access course syllabus were presented to faculty meetings, groups of public affairs schools' deans, and expert practitioners to gather feedback. Particular attention was paid to sharing and soliciting feedback from faculty and staff members who oversaw the "core curriculum" (e.g., required courses) of public affairs schools. One goal of this part of the process was to validate with academics and practitioners focused on "digital government" that the types of digital-era problems they research or face are addressed by the competencies. The other goal was to engage with more traditional public administration faculty to understand how the competencies and proposed syllabus fit in with required courses and more general and traditionally taught competencies.

Lastly, train-the-trainer materials and workshops were designed to help other faculty embed and adapt the materials into their courses. These supporting materials go beyond describing the competencies and provide supporting case studies, reading materials and learning objectives to enable students to critically engage with each competency.

As of October 2024, 65 professors from 26 countries and 51 universities have individually confirmed that the competencies have become a permanent part of courses in their programs. In addition, a total of 210 professors and lecturers from 51 countries and 122 universities have participated in the "train the trainer" workshops. Consequently, the number of faculty and universities that have adopted the competencies and syllabus in whole or in part is likely much higher. Faculty who have adopted the materials have also customized them to their local geographic or political contexts and the types of students they teach.

Results: Eight Digital-Era Competencies for Public Managers

During the iterative development process, the authors presented a variety of prompts to researchers and practitioners that helped participants identify learning outcomes, key concepts and associated readings that would inform the competency development. Out of this process a larger list of potential candidates emerged, including diverse options and overlapping concepts. Then, after further discussion and after multiple workshops, often involving the same experts and practitioners who were initially interviewed, the competencies evolved into the following eight digital-era competencies for public managers.

Competency 1: Ability to Apply User-Centricity in Digital Service Design

Public managers need to value the experience of service users and can collaborate with specialists to understand user needs, then design, test, and adopt effective solutions.

While the digital era offers the opportunity to deliver services cheaply at scale, it also distances public organizations from their stakeholders. One positive externality of the physical world is that it forces organizations to meet their stakeholders, enabling them – intentionally or not – to understand some of their needs and concerns. In theory, digital service provision may mean that beneficiaries and public servants never meet face-to-face or talk, limiting the organization's ability to understand the experience of and learn from those they serve. Consequently, this positive externality of the physical world - learning about stakeholders/users - must become an explicit and intentional capability in a digital-era public institution. This requires a distinct shift in thinking that takes a more nuanced approach to service design, starting with researching and understanding users and their needs and moving on through the design, prototyping, and iterative delivery phase (Bason & Austin, 2022). By developing this competency, civil servants will take into account the learnings to be gained from users throughout the service design process and ensure their experience is accounted for.

This competency also tackles another risk in public administration: the assumption that the main challenge of governing is hypothesizing how beneficial social or economic outcomes can be generated, as opposed to operationalizing them or evaluating their impact on people's lives. Without the ability to understand *and then design, test and adopt*, poorly designed policies can proceed unchallenged, and well-designed policies be implemented poorly. This not only diminishes confidence in public goods; it can leave people feeling disrespected, unappreciated, or even discriminated against. There

is growing recognition of the challenge posed by the lack of this capacity in the form of increased administrative burden—added paperwork and time-consuming steps to secure benefits or access to a service—which can be created either intentionally or unintentionally (Giest & Samuels, 2022; Moynihan et al., 2015).

Competency 2: Anticipation of Risks

Public managers need to be able to anticipate and mitigate the privacy, security, and ethical risks that are inherent to governing in a digital era.

From foreign power attempts to distort elections to the use of potentially biased algorithms to sentence convicted criminals, the affordances of digital technology systems enable traditional and create new vectors of risks on which public servants should be made aware. More ominously, these risks have the capacity to scale at speed.

Senior public servants make decisions about the use of digital systems that can create risks or harm for people without realizing the consequences. This requires public leaders - especially those in management who are likely not IT experts - to have a minimum set of , evaluate risks and converse with security experts. This means being aware of the categories of avoidable risks that exist such as security breaches, privacy concerns (Whitford & Yates, 2023), and the engineering of problematic biases into government services. Equally important, while not experts themselves, they need to know when and how to call upon relevant experts, and how to form an assessment of whether or not the expert commentary is trustworthy or sufficiently comprehensive.

Public leaders should have a minimum set of to enable them to spot predictable problems such as avoidable security breaches, and the engineering of problematic biases into government services.

Competency 3: Working in Multidisciplinary Teams

Public managers need to blend traditional public service with modern, digital , and can effectively work within and lead multidisciplinary teams.

One challenge of the digital era is that it brings a number of new, and sometimes specialized, capabilities to the fore. As a result, building multidisciplinary teams - particularly those combining digital, traditional operational and policy - is more essential than ever. The formation and deployment of such teams needs to be more routine, which requires public servants to understand the elements of these teams, how to recruit for and build them, and then how to lead them. Most essentially, however, these teams should seek to break down the barrier between the two most significant castes in government: operations and policy.

The ets of these teams contain a mix of not just technical, design and operations but also legal, policy, and management skill sets that are not naturally occurring inside traditional bureaucratic structures. For example, building and running an online unemployment benefits system for citizens requires building and leading public service teams that contain a wide range of differently skilled professionals who are operationalizing policies and directives, but also discovering how new technological affordances require new policies, and how policies need to be adapted to support emerging users' needs.

The construction of these teams can be difficult for reasons that occur in other settings— like identifying and recruiting appropriate talent—and others that are unique to the government, like crafting new job descriptions and navigating policy hurdles to create cross-functional teams. Once these teams are built, leaders face additional challenges like forming new organizational cultures that bridge between internal government silos and external communities that don't have a history of engaging with the government.

Competency 4: Work in Iterations and Support Continuous Learning

Public Managers need to understand the importance of iteration and rapid feedback loops and can create a working environment that can continuously learn and improve outcomes.

Much of public sector training encourages managers to spend the majority of their time in planning mode before taking action and leveraging material resources to build a new tool or system. This mindset emphasizes predicting and forecasting as much as possible, then getting things right the first time according to their policy mandate. This stems from traditional public works projects such as roads, bridges, and hospitals that use detailed plans that cover every aspect of implementation in an often-sequential order. It is reinforced by a budgeting system designed for a physical world that separates work into capital and operational expenditures and a government caste system that separates operational work from policy work.

While a laudable goal, digital projects rarely go to plan when developed in this waterfall fashion (Pahlka, 2023). The past several decades are riddled with failed public sector technology projects, often in financially and politically costly ways. As a result, this competency encourages an iterative approach that does not eliminate planning but facilitates learning and adaptation along the way.

Thus, this competency is about having public leaders be aware of when they are in a situation of uncertainty where an adaptive, agile approach can help manage risk and facilitate adaptation, versus those situations of high certainty where a planning-oriented, waterfall approach can leverage past experiences to proceed more quickly and efficiently. This means proficiency in understanding both methods, and particularly the rise of Agile project management, which starts with building prototypes that are tested by real users before revising the plan and repeating the process (Mergel et al., 2020; Janssen & van der Voort, 2020). In government, this approach is still in its early days but has been critical to running successful IT projects outside government for over a decade and increasingly inside government more recently.

Competency 5: Identify Improvement Opportunities and Navigate Implementation Barriers

Public managers need to be able to identify the opportunities to improve government operations, service delivery, or policymaking and can overcome structural and institutional obstacles to change.

This competency is a recognition of two needs. The first is that, at present, few governments can lay claim to having the human resource, finance, legal, operational and various other capacities designed to either produce public goods in a digital era or work in a digital era. Consequently, public leaders wishing to create multidisciplinary teams and work in iterative ways will need to navigate numerous barriers as their work will likely not conform with existing government policies and norms. Thus, the work of being able to adapt those policies and norms will be just as important as the work itself.

This competency also builds on a traditional public administration competency - the capacity to look at existing public goods and be able to identify and communicate to others how digital era affordances could help improve them.

This competency is a recognition that, at least in the short term, governments are in a period of transformation where negotiation and coalition-building as well as skill development, culture change and the ability to push for reforms, will be helpful in one's role. Public servants need to be both aware of and adept at navigating the aforementioned barriers to bridge between disparate, siloed teams (Clarke, 2017) and be inclusive and visionary enough to help others reimagine how public goods, and the work of government itself, could be reimagined.

Competency 6: Apply Techniques to Make Government Open, Collaborative, and Accountable

Public managers need to be able to apply a range of techniques and tools to make government more open, collaborative, and accountable.

Without an emphasis on openness, digital transformation efforts can lead to a state that becomes opaquer and more inaccessible to the people who live within it. This lack of transparency can stifle innovation, drive up costs, and increase silos between government departments expected to collaborate to meet user needs. One way to address this challenge is to purposefully leverage the affordances of digital technologies to work in the open to not just improve project speed, quality, and accountability (Mergel et al., 2018; Tai, 2021) but also strive to increase transparency and public trust.

Digital technologies offer a litany of ways to enable "open" in multiple ways. This includes: open standards, data, and application programming interfaces (APIs) that create vast new opportunities for collaboration both across and between governments as well as with private and non-profit actors; new digital methods such as written blog posts and recorded videos can explain how policies, services or government itself works thereby helping spread best practices as well as build public trust; publishing data and code in public repositories to enable others to use them for their own benefit or scrutinize them to facilitate accountability; and new ways to run public consultations and solicit public feedback (Hsiao et al., 2018).

By designing and delivering policies and services with this competency in mind, public servants nevertheless face new risks, challenges, and opportunities. Examples of this include situations where old data is lost and the risk of revealing sensitive data through openness, and a vulnerability to systemic biases as the result of informal collaboration systems.

Competency 7: Data literacy for decision support

Public managers need to understand how to use data to inform decisions, design and run services, and create public value inside and outside government.

In recent decades, there have been two powerful shifts around date. The first is that data has moved beyond simply being something to perform analyses on and has transformed into a powerful resource that comes with significant ethical, legal, and technical problems (The Path to Becoming a Data-Driven Public Sector, 2019). The second is that the challenge of data has shifted from having only a little highly curated and trusted data at a public official's disposal to a veritable tsunami of data of highly variable quality. The importance of data and the challenges posed by it are also likely to expand

if and as artificial intelligence becomes a more prominent tool within the public sector (Baidoo-Anu & Owusu Ansah, 2023).

However, despite agreement of the importance of data - even NASPAA standards reflect the need for graduate-level education to prepare students "to identify, collect, analyze and use qualitative and quantitative data to inform decision making that best serves the well-being of the public" ("Official Standards & Policy | NASPAA", p. 8) - this competency seeks to establish a minimum viable knowledge public leaders need to have to address its exploding importance and prevalence.

Critically Public servants now need to be able to anticipate and mitigate problems that arise from the increased reliance on data. Above all this means the capacity to probe and judge the source, quality and biases embedded in a data set they are attempting to use or that might be created by public goods they manager or the policies they oversee (Dingelstad et al., 2022). It will also mean a high-level understanding of a piece of data's lifecycle including aspects like collection, analysis, storage, retrieval and destruction and where risks and opportunities lie in each step. Finally, it also means a basic familiarity with the types of problems data can, and cannot help resolve as well as what the resources and competencies data scientists, statisticians or economists need to be effective.

Competency 8: Assess the Social and Technological Affordances of Digital Technologies

Public managers can understand the current and evolving affordances of digital technologies and assess how they can improve public outcomes.

As technologies advance, the choices about which to use or not use will become more complex over time. While public service leaders have often delegated these decisions to experts in their organizations, they are increasingly discovering they cannot delegate the accountability.

It is now important that these leaders possess a 'new minimum' of knowledge about these technologies to make good decisions that lead to successful project outcomes. An excellent example of such a tradeoff is choosing between a newer technology that as yet to be de-risked (say artificial intelligence) versus technologies and processes that have been deemed 'safe' but may over time become expensive and difficult to maintain and service (such as a decades old proprietary solution used to run a critical public benefit).

Ways to address this challenge include using appropriate decision-making frameworks to map out technology choices, understanding the risk of assuming a particular technology is the right one before any detailed analysis, assessing where technologies can solve problems, understanding sustaining costs, and judging tradeoffs presented by technical experts with a certain amount of critical understanding.

Distribution and Adoption of Digital-era Competencies

After validating the eight competencies, we published them on a website and made them available for free as an open educational resource licensed for reuse under a Creative Commons Attribution International 4.0 License. The only restriction was the need for attribution when professors and public service college professionals reuse any of the content. To promote the competencies and bring them into public affairs schools, we applied for funding from the Public Interest Technology University Network (PIT-UN) in September 2019, and later from Schmidt Futures and Bloomberg Philanthropies in September 2022. With this funding secured, we developed an educators' workshop to train public affairs teachers around the world to reuse the competencies and teaching materials to engage more and different types of student populations (undergraduate, postgraduate, and executive education, as well as public service leaders).

The educators' workshops are designed in a train-the-trainer style: In addition to short inputs about the design of the competencies, it adopted a deeper learning approach (Pereira & Wahi, 2019). The participants review the competencies before they join and adapt them to their own cultural and political context, weaving in the types of readings that reflect their national student body and governmental context. They might use readings cited in the open-access syllabus developed by this research or select readings in their languages that refer to their local government cultures. During the educators' workshop, facilitators then provided feedback (Elbow, 1995) to constructively support the development and adaptation of the course materials to the educator's needs.

Any conversation about digital competencies for public affairs schools must be specific enough to be meaningfully helpful to public officials but general enough to assist public officials in a diverse range of contexts. While the competencies serve as the ultimate foundation for this work, resources also include an open-source syllabus and teaching materials to create a launching point for educators who wish to take components of the curriculum and apply to their degree programs and other educational programs. As such, the competencies seek to serve as a metaphorical Christmas tree, and the reference implementations are an example set of ornaments that could be hung upon it. But the real goal is to have others

develop and hang their own ornaments, representing how the competencies manifest themselves in their countries' context and language.

The project was heavily modeled after the CORE Economics project, which seeks to transform economics education globally through a focus on societal challenges, providing open-access resources, and attracting a more diverse range of students studying the material (Bowles & Carlin, 2023; 2020). In the efforts that followed building the new competencies, the authors and supporting faculty and practitioners identified the following units of a model syllabus to teach the digital-era competencies (See Table 2). This was initially developed by collecting inputs from the authors and a diverse set of participants regarding what they were currently teaching and allows for adaptation to various teaching styles, ranging from case-based learning, seminar discussions, and lectures. This was then implemented and iterated upon in prototype course settings, which were described in the research design section of this paper. In addition, reference implementations of this core course are provided as examples of how to localize the materials for varying use cases and contexts globally (Eaves, 2020; Mergel, 2020).

The resulting syllabus and the competencies were presented to over 60 Deans and Program Directors of public affairs schools and public services colleges in the US, Australia, South America, and Asia to encourage their support in distributing the announcements of the free educators' workshops to their faculty.

In addition, community members and alumni of the educators' workshops volunteered to find funding in their countries to translate the syllabus collaboratively. As a result, the competencies and syllabus are available online in German, Portuguese, French, and Spanish and Turkish in addition to English.

Discussion and Future Research

Here, we sought to reimagine competencies for public administration in the digital age and integrate them into the curriculum for university professors and practitioners. We did so by engaging in a literature review of existing digital competencies and engaging with academics and expert practitioners—particularly those focused on delivering public services and goods—to learn what public managers and leaders need to be effective in the digital era.

Reassessing public managers' competencies requires investment and work to overcome the inertia of established disciplines and curriculum norms. In this regard the competencies presented in this paper can serve as a helpful contribution and should be rightly tested, debated, criticized and, hopefully, adjusted or built upon, especially given the increased dependency on digital technologies, the potential scale of their impact and their societal implications.

Design Criteria of Digital Competencies

First, one powerful element of working with both academics and practitioners was that it revealed what did and did not need to be taught about digital affordances. One common structure for courses on technology is to teach about emergent technologies (e.g., the cloud, blockchain, artificial intelligence). However, the public affairs program should equip public officials with the minimum by which to assess, manage, and question *any* digital-era affordance and we therefore aimed to remain technology-agnostic. An approach that focused on specific technologies was unlikely to yield understandings that could be generally applicable. One drawback of this more generalized approach is that it may appeal less to students and faculty that want to focus on a given trend or narrower topic. But the benefits of a more general approach are several-fold. Such an approach prevents the fetishization of technology, given the real risk that decision makers can become interested not in solving problems but deploying (particularly new and untested) technologies. Competencies that can be more universally applied also better equip public officials to question and understand emerging technologies. There is anecdotal evidence that this has been true with machine learning/artificial intelligence, where faculty have been able to use the competency and syllabus to help students ask appropriate questions about how and when it should be used in a public sector context.

Second, this approach shows the significance of research that is informed by and grounded in practice. The collaboration between academia and practice in particular is key for bridging gaps between these two domains in order to address complex challenges and generate knowledge (Grafström et al., 2023). This was embedded at every stage of research, the formulation of the competencies, and in the creation and application of subsequent materials. Focusing on the central challenge of a lack of digital competencies in public administration education and, therefore, absence of associated among civil servants brought together these two groups to work together toward a mutual goal. This produced competencies that bridged theory and practice, as well as better prepare students for the problems they will face in their public service careers.

Table 2. Model Syllabus - Digital-era Government.

Unit	Learning Outcomes *By the end of the unit, students will be able to…*
Unit 1 What is Digital Era Government?	1 - … situate the emerging theories and practices of the 'Digital Era' government as just the latest in a wave of government practices and explain the key values-based differences between the current wave and the last. 2 - … understand why governments seek to make use of digital technologies. 3 - … identify several challenges that governments face as being 'digital era challenges' 4 - … identify the capabilities that governments should develop to succeed in the digital age. 5 - … define what is meant by digital for this syllabus.
Unit 2 Components of Digital Systems	1 - … explain that digital systems are made of components that are connected to solve problems. 2 - … understand that components are of different qualities and maturities and that governments and public servants have to make choices about which ones to deploy. 3 - … outline a vision of Government as a platform. 4 - … describe the purpose and characteristics of an actual Government as a Platform deployment.
Unit 3 Iteration	1 - … differentiate at least two approaches to project management used by governments. 2 - … explain what waterfall project management is and its origins. 3 - … explain what iterative approaches to project management are and describe their origins. 4 - … describe some of the characteristics of 'Fake Agile' projects whereby traditionally managed projects and overall governance appropriate the language of iteration but not its practices or impact. 5 - … differentiate product management from project management and explain the role of the product owner in public service.
Unit 4 User-focus & design	1 - … explain what good design is, why it matters, and why bad design is costly and counterproductive. 2 - … describe the human-centered design (HCD) methodology (or framework), and related practices and techniques. 3 - … will be able to understand how human-centered design can be useful in a public policy context. 4 - … describe some of the a team would need in order to use human-centered design to address a problem or improve a service. 5 - … apply a basic design exercise to develop a better understanding of a problem. 6 - … describe the meaning and importance of accessibility.
Unit 5 Data Part I - Uses & Opportunities	1 - … identify common archetypal purposes for which governments make use of data. 2 - … explain the key challenges that affect the government's ability to use data successfully. 3 - … identify various types of data that modern governments collect and use.
Unit 6 Data Part II - Harmful Uses	1 - … describe different types of harm that result from choices governments make in relation to data. 2 - … describe different types of harm that result from choices governments make in relation to data. 3 - … describe some of the actions governments can take to minimize data harm. 4 - … understand that there is often a trade-off between the harm prevention measures built into a system and its accessibility and usefulness. 5 - … describe how harmful uses of data can reinforce power structures that perpetuate discrimination and disadvantage in societies.
Unit 7 Working in the open	1 - … explain why governments have traditionally been closed, and what motivated this. 2 - … distinguish modern methods of working in the open from more traditional forms of transparent government, and from closed work. 3 - … identify situations in which working in the open creates value, and where it doesn't. 4 - … explain some steps that a government team could take to work more in the open, and the barriers they may expect to face. 5 - … differentiate the concept of openness that is used by most digital government teams from concepts of participation and co-creation that have evolved from other traditions.
Unit 8 Overcoming Legal, Financial & Organizational Barriers	1 - … anticipate and analyze the most common types of barriers they will encounter when trying to bring about change (both digital and non-digital) within governments. 2 - … analyze cases that examine attempts by public servants to overcome barriers to the delivery of successful digital era public services. 3 - … create solutions to help overcome barriers to digital era change in a government context.

Minimum Set of Skills are Needed

Another contribution is the minimum set of that are needed for civil servants, that, as identified, were not being consistently taught in MPA and MPP programs. This was identified as a guiding research question early on to ensure the development of the digital competencies made novel contributions to public administration courses rather than duplicate what already

existed within them. The constraint to focus on what was minimally viable allowed researchers and participants to iterate and engage in constructive dialogue throughout the research process to conclude with the eight competencies that can now be infused into the curriculum by educators in universities around the world.

Application of Competencies in Teaching

One observation made was that public affairs schools should not be in the business of creating technologists. They are also not in the business of training economists, statisticians or ethicists. Jack Donahue, who oversaw the required courses at the Harvard Kennedy School aptly talked about how students did not become statisticians, ethicists or economists. Rather the required courses sought to develop students' capacity to "detect bullshit" in each domain, and sufficient knowledge to reliably identify experts who could be called upon to validate or invalidate such concerns. Here in lies a second constraint, that the digital competencies in this article seek to accomplish something similar in the domain of public administration in a digital era – establishing a minimum viable knowledge about the intersection of technology and public administration that can be realistically integrated into programs geared towards training policy and public administration generalists, not seek to create technology specialists.

Because of this, public affairs scholars should be thinking beyond how technology can help them teach, and instead explore what frameworks and models can help public officials think and exercise judgment about public administration questions in a digital era. While information technology and other digital technologies will always need specialists, they are now sufficiently pervasive and determine the shape and functions of both what public goods are possible and how they are created, the *current* (to say nothing of future) public servants and leaders need basic fluency in this domain.

Alignment with Existing Competencies

While the authors of and participants in this process returned to first principles and, therefore, were unburdened by existing competencies, it would be a mistake to claim that the competencies in this paper are completely novel. As one senior faculty member noted during a research colloquium, the competencies produced by this paper would not be entirely out of place in a pre-digital era. Public servants should always have been concerned with privacy and security, with understanding users, and possibly even running multidisciplinary teams. This alignment with previous competencies should be construed as a source of strength and a recognition that the underlying purpose and function of government has not changed. However, the emphasis and choice of competencies do relate strongly to the new affordances digital technologies have created for governments. While public servants could have iterated when creating new public goods and policies, the speed and number of iterations made possible by digital technologies - where gathering real-time data on citizens is a possibility or devising and testing hypothesis in a single day with potentially tens of thousands of users - fundamentally alters how this competency should be understood. Similarly, securing citizens information in a filing cabinet has a fundamentally different set of competencies than thinking about how and if to secure citizens' data in the cloud.

We encourage other researchers and instructors to incorporate these competencies into their teaching of public administration, to distribute the supporting syllabus and/or conduct their processes to determine what digital era competencies should be taught in required courses of public affairs schools. In addition, we encourage researchers to assess both the impact learning these competencies have on the performance of public managers as well as methodologies and pedagogies for how these competencies can be most effectively taught in various contexts.

Limitations

Participatory action research (PAR) as a methodology has a few notable limitations. First, the commitment required by community members to participate in the project may be limited and reduce the efficacy of the approach (Gillis & Jackson, 2002; MacDonald, 2024). Here, we had the advantage of recruiting and working with a group who was willing to continuously provide input and return to discuss the competencies they are themselves experts in. Second, this effort was led by researchers with direct experience as public sector educators, which is not always common in PAR (MacDonald, 2024), which may or may not have created a certain bias in the way that we approached the project and evaluated its outcomes. While this advanced the research by providing access to the community in which we sought participants, this is not necessarily replicable in similar studies and could require longer timelines and trust-building to achieve results. We therefore aimed to be as transparent as possible in the process and documented the outcomes, validated them repeatedly by researchers and practitioners.

Additionally, the initial interviews were weighted towards the global north, a fact the researchers were aware of and is a limitation of the initial research that may negatively impact its globally applicability. We continue to reach out to professors in the global south.

Finally, there is no evidence of the impact of the digital-era competencies developed in this article on government operations. Faculty members who participate in "train the trainer" workshops who teach the competencies and supporting materials have been surveyed about the effectiveness of these materials, but the authors do not have direct access to the students of these faculty participants. Future research needs to address this to validate whether the competencies can impact the efficiency and success of digital government projects by those former students who went through MPA programs that incorporated the digital-era competencies.

Conclusions

Digital are already of central importance to public sector managers. Public affairs schools need to ascertain how they can best prepare their students to be effective leaders of digital era public institutions. There is ample and growing evidence that such are important and that they are lacking in public affairs schools.

This study offers several main contributions to research. First, it describes a participatory action research process by which the researchers, working with other academics and practitioners, sought to determine what digital-era competencies public administrators need to be effective in their roles. This process may be of assistance to other researchers and administrators of public affairs schools as they seek to update and change competencies taught in their institutions' required curriculum.

Second, it seeks to fill the current gap in digital era public administration competencies by providing eight competencies that serve as a minimum viable knowledge public leaders need to possess to be effective. These eight competencies can serve as a starting point for a broader discussion among researchers, instructors and practitioners alike, about if and how core public administration competencies may need to be updated for the digital era. Finally, the paper sets out a set of competencies whose impact should be empirically tested by researchers in the future.

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Jordyn Fetter, is a graduate of the Masters of Public Administration program at the Institute for Innovation and Public Purpose (IIPP) at University College London. Before joining IIPP, Jordyn served in the U.S. Air Force and held roles at AFWERX, the U.S. Air Force's innovation hub, and Second Front Systems, a public benefit software company.

Amanda Clarke is Associate Professor at Carleton University's School of Public Policy and Administration. Her research examines digital era public administration, public data governance and government-citizen relations. She is author of Opening the Government of Canada: The Federal Bureaucracy in the Digital Age (University of British Columbia Press, 2019). She is recipient of a Government of Ontario Early Researcher Award and included in Apolitical's list of the Top 100 Most Influential Academics in Government.

Tom Steinberg is a nonprofit CEO turned grantmaker and digital government specialist. He founded civic tech pioneers mySociety and developed data and technology policy for the UK government before becoming a senior executive at two of the UK's largest institutional funders. Tom is also an Ashoka Fellow, and a board member at the International Consortium of International Journalists.

Appendix A: NASPAA Standards

NASPAA Standard	Sub-standards
1. Managing the Program Strategically	1.1. Mission Statement: The program will have a statement of mission that guides performance expectations and their evaluation 1.2. Performance Expectations: The program will establish observable program goals, objectives, and outcomes, consistent with its mission and of which students' learning is one, but not the only component. 1.3. Program Evaluation: The program will collect, apply, and report information about its performance and its operations to guide the evolution of the program's mission and the program's design and continuous improvement with respect to standards two through seven.
2. Matching Governance with the Mission	2.1. Administrative Capacity: The program will have an administrative infrastructure appropriate for its mission, goals, and objectives in all delivery modalities employed. 2.2 Faculty Governance: An adequate faculty nucleus—at least five (5) full-time faculty members or their equivalent—will exercise substantial determining influence for the governance and implementation of the program

(continued)

Table A.1. (continued)

NASPAA Standard	Sub-standards
3. Matching Operations with the Mission: Faculty Performance	3.1. Faculty Qualifications: The program's faculty members will be academically or professionally qualified to pursue the program's mission. 3.2. Faculty Diversity: The program will promote equity, diversity, and a climate of inclusiveness through its recruitment, retention, and support of faculty members. 3.3. Research, Scholarship and Service: Program faculty members will produce scholarship and engage in professional and community service activities outside of the university appropriate to the program's mission, stage of their careers, and the expectations of their university.
4. Matching Operations with the Mission: Serving Students	4.1 Student Recruitment: The program will have student recruitment practices appropriate for its mission. 4.2 Student Admission: The program will have and apply well-defined admission criteria appropriate for its mission. 4.3 Support for Students: The program will ensure the availability of support services, such as curriculum advising, internship placement and supervision, career counseling, and job placement assistance to enable students to progress in careers in public service. 4.4 Student Diversity: The program will promote diversity and a climate of inclusiveness through its recruitment, admissions practices, retention efforts, and student support services.
5. Matching Operations with the Mission: Student Learning	5.1. Universal Required Competencies: As the basis for its curriculum, the program will adopt a set of required competencies determined by its mission and public service values. The required competencies will include five domains: the ability: • to lead and manage in the public interest • to participate in, and contribute to, the policy process • to analyze, synthesize, think critically, solve problems and make evidence-informed decisions in a complex and dynamic environment • to articulate, apply, and advance a public service perspective • to communicate and interact productively and in culturally responsive ways with a diverse and changing workforce and society at large. 5.2. Mission-specific Required Competencies: The program will identify core competencies in other domains necessary and appropriate to implement its mission. 5.3. Mission-specific Elective Competencies: The program will define its objectives and competencies for optional concentrations and specializations. 5.4. Professional Competencies: The program will ensure that students apply their education, such as through experiential learning and interactions with practitioners across the broad range of public service professions and sectors.
6. Matching Resources with the Mission	6.1. Resource Adequacy: The program will have sufficient funds, physical facilities, and resources in addition to its faculty to pursue its mission, objectives, and continuous improvement.
7. Matching Communications with the Mission	7.1. Communications: The program will provide appropriate and current information about its mission, policies, practices, and accomplishments—including student learning outcomes sufficient to inform decisions by its stakeholders such as prospective and current students; faculty; employers of current students and graduates; university administrators; alumni; and accrediting agencies.

NASPAA Universal Required Competency	Relevant Digital Competencies
1. Ability to lead and manage in the public interest	1. Ability to apply user-centricity in digital service design 2. Anticipation of risks 3. Working in multidisciplinary teams 4. Work in iterations and support continuous learning 5. Identify improvement opportunities and navigate implementation barriers 6. Apply techniques to make government open, collaborative, and accountable 7. Data literacy for decision support 8. Assess the social and technological affordances of digital technologies
2. Ability to participate in, and contribute to, the policy process	2. Anticipation of risks 4. Work in iterations and support continuous learning 5. Identify improvement opportunities and navigate implementation barriers
3. Ability to analyze, synthesize, think critically, solve problems and make evidence-informed decisions in a complex and dynamic environment	1. Ability to apply user-centricity in digital service design 2. Anticipation of risks 5. Identify improvement opportunities and navigate implementation barriers 7. Data literacy for decision support 8. Assess the social and technological affordances of digital technologies
4. Ability to articulate, apply, and advance a public service perspective	1. Ability to apply user-centricity in digital service design 5. Identify improvement opportunities and navigate implementation barriers 6. Apply techniques to make government open, collaborative, and accountable 8. Assess the social and technological affordances of digital technologies
5. Ability to communicate and interact productively and in culturally responsive ways with a diverse and changing workforce and society at large	1. Ability to apply user-centricity in digital service design 3. Working in multidisciplinary teams 4. Work in iterations and support continuous learning

Appendix B: NASPAA Standards Compared to Digital Competencies

NASPAA Standards - Universal Required Competency:

1. Ability to lead and manage in the public interest
2. Ability to participate in, and contribute to, the policy process
3. Ability to analyze, synthesize, think critically, solve problems and make evidence-informed decisions in a complex and dynamic environment
4. Ability to articulate, apply, and advance a public service perspective
5. Ability to communicate and interact productively and in culturally responsive ways with a diverse and changing workforce and society at large

Digital Competencies:

1. Ability to apply user-centricity in digital service design
2. Anticipation of risks
3. Working in multidisciplinary teams
4. Work in iterations and support continuous learning
5. Identify improvement opportunities and navigate implementation barriers
6. Apply techniques to make government open, collaborative, and accountable
7. Data literacy for decision support
8. Assess the social and technological affordances of digital technologies

NASPAA has universal required competencies which are shown in five domains.