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Building Competence with a Targeted Mix of Analog and Digital Methods

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ABSTRACT

This study presented two new degree programs in administration from the German university system as well as lectures focusing on e-government. It examined questions of how competence in this area can be created and what the students' expectations and experience are of the IT Planning Council's modernization projects. The methods used in this case study were modern teaching and learning methods, surveys, and discussions. It transpired that students were still unfamiliar with many of the official e-government projects, and there was no public analysis and detailed evaluation of these public projects, which suggests that the council was not fully exploiting their marketing potential to promote citizen education and participation. This expansion paper refers to current findings in e-government development in Germany and focuses on necessary enhancements in competence training that consider both the needs of the different actors and modern teaching methods. A targeted mix of gamified methods is of central importance for the development of mindfulness and heightened awareness.

Keywords: E-government; digitization; intelligent networking; business computing; awareness raising; privacy and security.

1. INTRODUCTION

Expertise in digital technologies is necessary, but rarely sufficient to generate digital innovation. Organizational innovation processes and outcomes have become less bounded, more permeable, and more complex as they cut across traditional industry boundaries, blur knowledge domains, and involve heterogeneous actors with diverse goals, capabilities, and expertise [61]. Digitization utilizes, changes, and creates information technology (IT). It dismantles long-standing procedures and frameworks, effects fundamental

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adjustments to the way the government, the economy, and society function, and it brings about disruptive developments, the management of which calls for new methods and instruments in addition to early identification of the changes involved [14]. The rapid development of technology forces established organizations to simultaneously foster the technological and strategic dimensions of digitization, and maintaining a competitive edge depends on both adopting the right digital technology and nurturing employee competences to apply the technology [62]. Many fields of application are emerging for use by the state [12]: intelligent networking generates new options for carrying out governmental and administrative activities ("smart government") [23] [28] [29]. Sensor-driven data analysis leads to enhanced infrastructure management and the provision of basic ("smart city") services in urban centers [1] [6] [18] [20] [21]. In terms of demographic change, this will also be relevant for cooperative projects in rural areas ("smart country") [26] [27] with effects manifesting on the regional level [9].

We find ourselves in a world governed by "VUCA"[1] [3] [8], one which is undergoing a process of transformation that is so dynamic [7] that empirical knowledge is following conventional structures into obsolescence at an ever-increasing pace [14]. Digitization is thus having an influence on the work of employees and managers, on collaborative processes, and on the social structure of work as well as on change and learning processes [13]. Digitization offers the individual new, hitherto undreamt-of opportunities. The ability to handle data independently is subjectivizing the search for information and the way information is used [13]. The path to becoming a "smart worker," however, requires the training and development of new "e-competences" [15] [16] [24] that go beyond mere technical skills.

Studies in Germany show that the specific knowledge required for e-government to function is not adequately incorporated into the educational system, either in university courses or in advanced training programs [19]. The educational landscape in e-government is highly fragmented [2]. In the IfG.CC study (2014), 53 percent of administration-related programs made no reference at all to e-government [17]. The relevant courses in business computing and law connected with e-government deal with the digitization of administration as a "niche topic," and trainings at the advanced or postgraduate level also teach different competences, mostly with a legal focus [2].

This paper presents two new administration programs from Germany, which have been the subject of a case study, focusing on the expectations, experience, and evaluation of modernization projects in German e-government, coupled with reflective input from students. The studies are intended to help build competence. The article is structured as follows: section 2 outlines the results of the scientific studies on e-government competence conducted in Germany to date, while section 3 takes a brief look at the two new degree programs in administration and the teaching and learning objectives described in the module handbook. Section 4 describes the case study and its implementation and briefly sets out the topics on

[1] *Volatility, Uncertainty, Complexity, and Ambiguity.*

German e-government allocated as research and presentation assignments to the individual student groups. The lecturer running the course was responsible for choosing these topics, while the students themselves organized the groups, parceled out the assignments, and worked up the content. The survey results are then presented and discussed. Section 5 summarizes the process and looks ahead at possible future developments.

2. SCIENTIFIC STUDIES CONDUCTED TO DATE IN GERMANY

2.1 E-Government Competence

There can be no doubt that all the staff in public administrations require new practical competences in e-government [25] [15]. However, these competences should go beyond the simple ability to operate an application [24]. In general, according to Berner et al. (2015), the digital transformation of public administration from a decentralized, task-focused administration to a data-centered, performance-oriented federal organization depends crucially on whether and how a new generation of specialists and managers can be recruited and trained [4]. Schuppan's competence studies in Germany (2009) showed that there is a demand not only for new specialist competences but also for skills such as the innovative faculty of abstraction, networked thinking, and interdisciplinary cooperation [24]. Putting new demands on administrative staff is nothing new. But e-government is setting new standards insofar as it requires a new kind of interdisciplinary knowledge [24]. The increasingly transorganizational networked service structures require interdisciplinary knowledge and new competences, which cannot be reduced simply to specialist IT knowledge, on the one hand, or management knowledge on the other [24]. To date, there has been little scientific discussion between academia and practitioners of these new competences [24].

The competence approach has become important throughout Europe because it can give visible expression to learning outcomes unfolding in non-formal educational processes [2] [11] [17]. In other words, abilities, proficiencies, and skills are increasingly playing a role in education—and not just knowledge itself. The concept of competence is output oriented; for e-government competence in public administration, this implies the acquisition of new knowledge and new skills and proficiencies [24]. Personality traits (dispositions) and values and motivations are also part of the mix [11]. The German concept of competence (*Kompetenz*) goes beyond the English notion of "skill." According to Schuppan (2009), it represents a complex operative system that comprises cognitive and non-cognitive elements, covering technical, social, personal, and methodological competences [24]. A key element in the new e-government competence requirements is that e-government has the potential to transform government and administration [24], so that completely new organizational forms can be established in future for the provision of public services, and data linkage and process tie-ups can be set up with the help of new IT functions. In order to implement such new service structures with their diverse technical and institutional demands and equally important legal requirements, Schuppan (2009) believes that "mixed competences" are increasingly crucial [24].

Mixed competences can be said to comprise knowledge (not only of the technical kind) drawn from different fields, such as information technology, trans-organizational process design, and the legal areas associated with this [24]. In addition to specialist knowledge, the associated methodological knowledge and social and personal skills—including the ability to work in a team or handle conflict—are also required, because advances in networking are at once increasing and altering our social interaction. Work activities and competence requirements are modified as a result not only of organizational and institutional changes but also of increasing digitization in how technical tasks are carried out [24]. In Schuppan's studies (2009), it was evident that self-organizational and self-reflective skills are increasingly required at both the executive and management levels [24]. It is thus becoming necessary to reorient personnel in line with specific competences in all fields of work: this will be expressed too in demands for the training curricula to be adapted—in particular, for the general nontechnical administrative service [19].

2.2 Scientific Studies on E-government in Basic, Specialized, and Advanced Trainings

The public sector needs employees who have an interest in shaping the process of digital transformation and who can help evaluate legal, organizational, economic, and, where relevant, technical possibilities, while being able to use adjunct IT procedures as a matter of course. Employees must keep pace with the broad-ranging and radical use of IT and its ongoing process of development, and they must be able to follow and articulate not only modernization options, user requirements, and security issues but also interfaces that go beyond their own specialist silos [22]. To achieve this, new images of public administration also need to be communicated [19]. The study findings [2] show that increasing digitization is forcing public administrations to act.

In Saxony, for example, traditional administrative procedures have been reviewed and redesigned so that staff can keep up with the varied, far-reaching uses of IT and operate in an official context in electronically enhanced communication rooms [10]. To develop the competence of employees, a total of nineteen skill profiles in the four categories proposed by Becker et al. [2] were used, based on the fact that this study shows concrete recommendations for action that can facilitate the teaching and learning of e-competences. In Saxony, coordinators were also needed to mediate between employees in order to bridge the possible lack of a common language between administrative professionals, organizational experts, and IT specialists. According to Gilge (2017), the personnel aspect of IT-supported administrative modernization can be dealt with on the basis of the nineteen competence profiles, and job advertisements, job descriptions, and qualification programs can be geared to the new requirements [10]. In addition, it is now also possible to identify e-skills that are lost as soon as an employee retires [10] [30].

At the universities of applied sciences, 64 percent of programs of this kind have e-government teaching content, whereas at the universities this subject only features in 24 percent of programs [19]. If e-government is a topic in individual lectures, it

is often added in as an extra element: moreover, it is rarely linked to questions of strategic reform and is not connected at a deeper level to IT potentials and functions [19]. If e-government is a central feature of the study program, IT solutions are foregrounded, making it essentially a computer studies course, with the result that it is impossible to determine the extent to which IT approaches and the fundamentals of administration are combined with one another [19]. Questions relating to IT design and organizational and legal issues are not interlinked, and IT is therefore not looked at in the context of modernizing administrative processes or transforming state mechanisms [19]. Where informatics and administration are taught exclusively in parallel, it is first of all necessary to develop interdisciplinary perspectives [19]. If the content of the courses is to reflect cultural change and modernization projects [19], interdisciplinary ways of thinking and working are required and should be given full-on support.

3. CASE STUDY BACKGROUND

3.1 Establishing Two New Administrative Programs

Brandenburg was the first federal state in Germany to successfully outsource its internal administrative studies as part of a model trialed in the early 1990s: at that time the bachelor's program Administration and Law (LLB) was instituted at TH Wildau as a "normal" (non-internal) course of studies in administration. A few years later, the bachelor's program Municipal Administration Management and Law was added. Both courses of study are now coming to an end, with the last enrollment having taken place in the winter semester 2015/2016. As an alternative for those wishing to study in the field of public administration, TH Wildau has been offering the dual degree program Public Administration in Brandenburg (German abbreviation: ÖV) with a Bachelor of Laws degree (LLB) since the winter semester 2016/2017: this is once again an internal and joint course of study for state and local administrations [31]. The "internal" aspect means that admission to the program is granted exclusively by the relevant appointing authority as the future employer, and that students are remunerated.

The ÖV program runs for seven semesters. Consisting of five theoretical semesters at the university and two practical semesters spent in the different areas of state and local government, it comprises an extraordinary range of legal, economic, administrative, and social science subjects and is conducted in joint seminar groups (combining state and local levels) of a manageable size (two groups comprising a total of around thirty-five students). The acquisition of wide-ranging professional expertise includes in-depth methodological competence in the field of law. The topic of e-government is addressed in the Information Management module, which is offered as a "specialization" taught in weekly four-hour blocks (4 SWS)—this does not take place until the fifth semester, when it is incorporated in the ÖV advanced study phase.

IT has a fundamental role in the modernization of government and administration [5] [12]—it has nevertheless been somewhat neglected. However, a shortage of skilled workers and increasing competition for qualified IT personnel were further

motivating factors prompting the development of this seven-semester, dual (and thus internal) program in public administration in Brandenburg. The first class to enroll for the Public Administration Informatics (German abbreviation: VI) Bachelor of Science (BSc) degree program matriculated in the 2018/19 winter semester. Graduates of the program will be recognized as being professionally qualified for the higher technical administrative service.

The scope and quality of the VI program ensures that the training can find a wide range of applications in the public sector. Some 70 percent of the course consists of a mix of science and technology with about 30 percent devoted to public administration subjects. The future administrative IT specialists are seen as an interface between information technology and a classical model of administration, in which administrative processes are handled electronically. In the three practical semesters focused on work experience, the students are employed both in the local administrations or in the ministries and subordinate departments where they have been hired. Subordinate departments include the IT service provider (ZIT-BB), the Technical Tax Office, and the Central Police Service [32]. In this new course, e-government is established in three stages in the first, third, and fifth semesters.

The Information Management modules in the fifth semester of the ÖV program and the E-Government 1 module in the first semester of the VI program are not identical, but the content is similar and there are distinct overlaps. Personal feedback from the students indicated that e-government had not featured in the curriculum of the ÖV program prior to the fifth semester. This was the initial motivation for the following study. The author was interested in finding out whether there were differences not only between the ÖV and VI programs as a whole but also between the different semesters (the fifth and first respectively) in terms of the students' expectations and their assessment of key topics relating to e-government in Germany.

3.2 Teaching and Learning Objectives in the Inculcation of E-Government Competences

In both the ÖV and VI degree programs, there is a specific focus on e-government content. In the case of ÖV, it is oriented toward administrative processes and the question of business process optimization, including data protection aspects. In the case of VI, it is geared to technical and organizational requirements, security aspects, and methods for introducing information technology into the organizational and operational structure of public authorities.

The global aspects in the two degree programs cover the following:

- The legal and strategic foundations of e-government (in particular, guiding principles and objectives as well as strategies, definitions of terms, laws, challenges, and design potentials)
- An e-government overview of the different administrative levels in Germany (federal, state, and local government), including international comparisons (EU, worldwide)

- Target groups/actors in e-government as a network of relationships including organizational development and conflicting goals
- Research into specific instances of e-government and how to approach them

The module handbooks for the two programs indicate the following overlaps in the "knowledge" section of subject-specific competences:

- Awareness of the goals, target groups/actors, and content as well as the importance, usage, and requirements of e-government in the national and international context (in particular, Land Brandenburg, Germany, Europe)
- Awareness of selected information and communications technology (ICT) systems as e-government applications along with the associated risks and challenges
- Awareness of e-government strategies, legal frameworks, and information in federal, state, and local practice
- Awareness of e-government projects at federal, state, and local levels and the operational responsibilities in the e-government project phases

With regard to the skills section of the subject-specific competences, the ÖV and VI programs are identical in the following points:

- The ability to specify examples of e-government applications and their usages/opportunities and to describe and assess risks/challenges
- The ability to explain the subject area, requirements, strategies, instruments, possibilities/limits, and risks/quality of e-government and to assess them from a holistic perspective

In terms of personal competences, students should develop social competence in the following areas:

- Applying cooperative and communicative skills in group work and acting in a way that is open to criticism, compromise, and the possibility of conflict
- Presenting effective arguments in response to quality- and process-related questions and developing them further in interaction with fellow students and in dialogue with the lecturer

They should also develop a sense of autonomy, based on the ability to

- independently analyze, evaluate, and, where necessary, optimize their own learning and work processes and the outcomes of these processes;
- understand core approaches and activities in pursuit of administrative reform, assess the possibilities and limitations of different modernization strategies, and develop ideas for coping with problems of acceptance.

4. THE CASE STUDY

4.1 Introduction to Important Themes in German E-Government

Planning Council projects were selected by the lecturer because the Planning Council is the central IT management body for e-government in Germany. As an important component of the Federal Reform II program in Germany, Articles 91c and 91d were added to the Basic Law (Grundgesetz, GG) in August 2009.

Germany was thus one of the first countries to give constitutional status to the structural regulations for information technology, creating the legal prerequisites for more efficient electronic communication, operating seamlessly and without any discontinuities of media, between the federal, state, and local authorities [33]. In addition, the State Treaty on IT between the Federal Government and the Länder came into force in April 2010 with the establishment of a new “IT Planning Council” [34] as the central body governing federal cooperation in information technology.

Bearing in mind the important function of the IT Planning Council in the management and coordination processes of German e-government, projects that had already been completed or were due to end in 2018 were selected as separate research objects for the students. The intention behind this was to ensure that students would be able to successfully conduct their own research. The following IT Planning Council projects were selected:

4.2 Legal Register

The project Online Legal Register Germany was brought to completion by the IT Planning Council. It covered two areas: the Company Register and the electronic Certificate of Good Conduct [35].

The aim of the Certificate of Good Conduct project was to reduce waiting times for citizens by means of end-to-end electronic processing and to speed up the procedure as a whole so that applications for the certificate can be submitted online directly to the Federal Office of Justice [36].

4.3 E-Government in the Registration System

The IT Planning Council’s citizens’ registration project was one of the management projects, whose aim it was to standardize registration data and facilitate its electronic retrieval, not only for public bodies, for whom it was primarily intended, but also for private entities.

4.4 DVDV 2.0

The idea behind further developing the German Administration Services Directory (DVDV) was to adapt and sustainably expand the existing infrastructure in such a way that it would be able to cope with the technological requirements of the future. It also set out to acknowledge the changing legal framework, including the Federal

E-Government Act, and to achieve synergic effects in the implementation of EU regulations [37].

4.5 Open Government

In an effort to promote Open Government in Germany, this project defined the reference architecture for e-participation software in order to achieve public involvement in digital processes. The reference architecture sets standards for promising online offerings and makes it easier for the federal, state, and local governments to develop citizen participation in decision making and at the same time make it more user friendly and efficient. The open government portal is now in regular operation [38].

4.6 Points of Single Contact 2.0

Since 2009, all EU member states have been obligated to set up “Points of Single Contact” (PSCs) so that service providers can obtain all the necessary information for their projects from a single source and can also handle processes and formal procedures electronically. In Germany, the first implementation saw a large number of different solutions being tried for the provision of PSCs. To harmonize the various modes of implementation put in place by the different Länder and integrate all the individual components to form a single network, the IT Planning Council extended the coordination project “Single Point of Single Contact 2.0 (PSC 2.0)” until June 30, 2019 [39].

4.7 One-Stop Government

One of the first coordination projects was “Modern Citizen Services” [40], which combined various activities aimed at improving or extending the possibilities for citizens and businesses to communicate with the authorities using IT. These activities are linked in with the keyword “multichannel strategy,” which involves integrating different access channels to the public administration and ultimately establishing one-stop government.

The establishment of 115 as a standardized number for contacting administrative bodies [41] is regarded as one of the most successful e-government projects. However, research analysis showed that the Mobile Briefcase Service and the Public Service Terminal were not as successful as expected.

4.8 Digital Business Register

The completed IT Planning Council project Business Register [42] contributed to a reduction in bureaucracy and improved user friendliness, while also leading to cost and time savings for both citizens and public administration. Based on a standard format, electronic distribution services at federal and state level were set up, allowing all the entities involved in registering a business (citizens, municipalities, district authorities, receiving offices) to exchange registration data without any discontinuity of media.

4.9 Kiel Resolutions

The “Kiel Resolutions” on the transfer of software between administrative authorities were introduced in Germany in 1979. In 2013, the IT Planning Council commissioned a preliminary jurisprudential evaluation of the current validity and applicability of these resolutions [43]. Based on this, it became clear that they covered only a small percentage of the various forms of software cooperation commonly used today and led to the drafting of a practical guide [44] on the design of contractual software collaborations.

4.10 Federal E-Gov Infrastructure

The aim of this completed IT Planning Council measure was a preliminary study of the further design and development of a jointly administered federal infrastructure for independent and interdisciplinary e-government processes, including concepts and measures already in existence [45].

4.11 Optimization of ICT Relationships

In 2013, a legal opinion, including a jurisprudential analysis of the foundations of the IT Planning Council and an empirical stocktaking of its information and communication technology relations, formulated nineteen recommendations for action to improve the IT Planning Council’s ICT relationships with the other institutions in the political system, to the extent that these are involved in norm-setting processes that can be attributed to the field of IT or e-government or carry out ICT processes that in turn have a bearing on the competence of the IT Planning Council [46].

4.12 E-Competence

The IT Planning Council’s “E-Government Competence” measure aimed to make better use of the potential of IT within the authorities and for communication with citizens and companies. Based on this, a position paper [22], a guideline [47], a scientific study [2], and a further publication [48] were successively produced in the period up to 2017.

4.13 Digitization of Asylum Procedures

This project was a response to inefficient processes, with increased risks in terms of data quality. There was also the possibility of the system being abused through the use of double identities, coupled with concerns about security threats. There are still follow-up tasks to be carried out on the core data system, with all the interfaces to be converted to the XML standard of public administration [49].[2]

[2] *In German: “XÖV-Standard XAusländer”*

4.14 Survey of Students and Results

In both courses, the students were able to form groups independently and choose a topic. The lecturer gave an initial introduction to the subject and to the IT Planning Council, while the students were responsible for working up the specific topic themselves. Questionnaires were handed out to lecture attendees prior to the presentation of the topic by the respective student group, and these were collected again after the discussion that followed. The lecturer analyzed the analog questionnaires for the purposes of this paper. In addition, there were further statements from students obtained via individual conversations and the final teaching evaluation. While the only possible prior experience available to first-semester students in the VI e-government program was as ordinary members of the public, it turned out that for the fifth-semester ÖV students e-government had not played a role in any of their other courses up to that point, and a few of them found some of the explanations in the seminar rather too technical.

A questionnaire on the student lecture with presentation relied on the evaluation of the following statements:

- I found the content of the presentation interesting.
- The presentation raised my awareness of the subject matter.
- I added to my existing fund of knowledge.
- I will use the new knowledge in future conversations and discussions.
- I will discuss the topic of the presentation with other people.
- The presentation treatment was interesting in design terms.
- I would like to find out more about the topic.
- I found the presentation as a whole convincing.

Responses to these statements could be given by checking one of the options on the following point scale:

- Yes
- To some extent
- More no than yes
- No
- I don’t know

It was also possible for students to submit their own comments. The results are presented in diagrammatic form in Figs. 1 and 2. For this purpose, the scale was reduced to three ratings: agree to somewhat agree; somewhat disagree to disagree; don’t know.

Of the topics covered in the two degree programs, the presentations on DVDV 2.0, Digital Business Register, and E-Competence were 100 percent interesting for all students in terms of content and design (see Fig. 1: A, B, and C), while also being viewed as instructive (Fig. 2: B). Yet around 10 percent of ÖV students still did not feel they had sufficient awareness of the topics; in the VI group, the only

discrepancy was found in DVDV 2.0, with just 79 percent of students also feeling properly attuned to the topic (see Fig. 1: D). However, for most students, E-Competence was the only presentation topic they felt they would talk about (Fig. 2: A) or would like to find out more about (Fig. 2: D). A good many students cannot commit to the statement "I will use the new knowledge in future conversations and discussions," and the group of dissenters has clearly got bigger (Fig. 2: C). The topic E-Competence performs best overall.

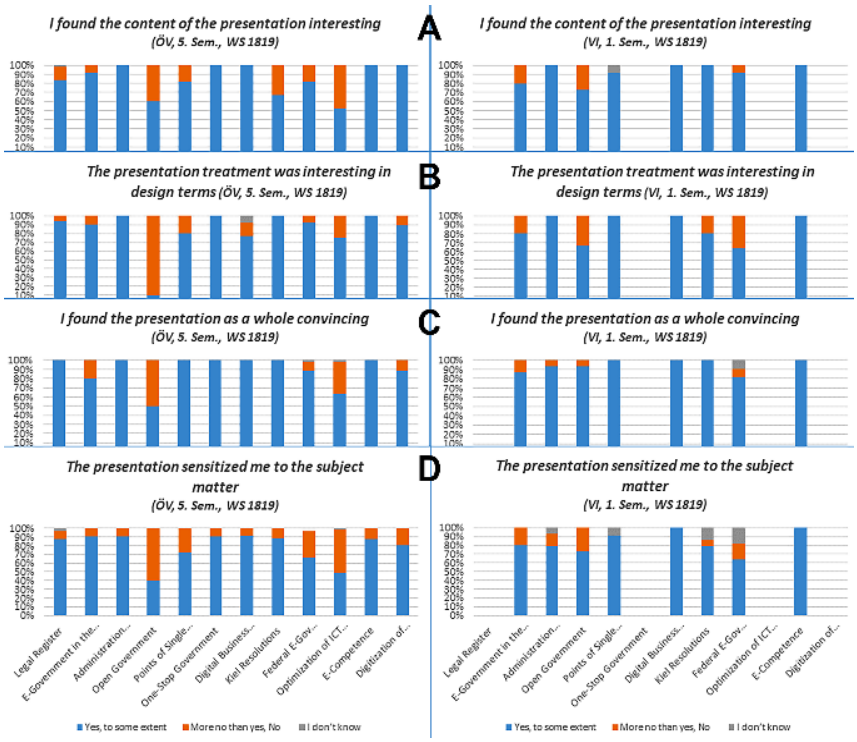

Fig. 1. Survey of students in winter semester 2018/19. Left side, ÖV, fifth semester; right side VI, first semester

In both degree programs, the presentation on the topic "Open Government" fared worse. In the ÖV program, the results were actually extremely poor (Figs. 1 and 2, left, fourth bar from the left in each case)—this was largely due to the type of presentation, which was not structured in a classical form but used a mind map; despite this, a good deal of learning took place (Fig. 2 B). The topic also received a significant number of negative reviews from VI students.

In the ÖV assessments, the topics "Federal E-Gov Infrastructure" and "Optimization of ICT Relationships" received similarly negative ratings, albeit not so extreme. Here, however, the reasons for this were content related: many of the

students regard these topics as too technical and do not feel they are relevant to them or that their awareness of them was improved by the presentation (Fig. 1: D, left, fourth and third bar from the right). Accordingly, only very few people want to go further into the issue of e-government (Fig. 2). This is also one of the more difficult topics on the VI course (Fig. 1, right, second bar from the right) and could not be "conveyed" very effectively—however, the learning effect was 100 percent affirmed (Fig. 2).

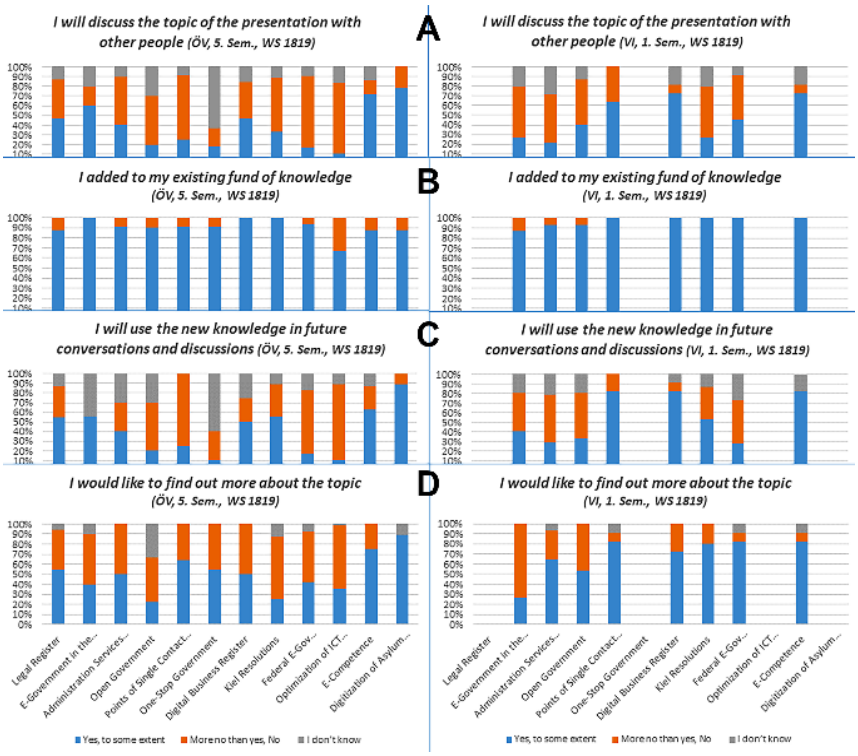

Fig. 2. Survey of students in winter semester 2018/19. Left side, ÖV, fifth semester; right side VI, first semester

Other topics that the ÖV students found convincing were "Legal Register," "Points of Single Contact," "One-Stop Government," and "Kiel Resolutions" (Fig. 1: C, left). Most students also found the presentation effective in terms of raising their awareness (Fig. 1, left). Although the overall rating of the registration system is somewhat worse (Fig. 1: C, left, second bar from left), the question of whether the new knowledge will be used in future conversations and discussions does not score negatively (Fig. 2: C, left), even if the majority do not want to find out more about the topic (Fig. 2: D, left).

The same is true for “Kiel Resolutions,” a topic that the ÖV group was mostly unfamiliar with, with the result that all the students experienced a learning effect (Fig. 2: B, left, fifth bar from the right). Here, the topic had been dealt with so comprehensively that hardly any questions remained unanswered, and there was thus very little need expressed beyond that for more in-depth study (Fig. 2: D, left). A similar effect was evident with the VI group with regard to the registration system (Fig. 1 and Fig. 2, right, first bar left side).

4.15 Summary Review of the Results of the Case Study

The student self-assessments in the ÖV (fifth semester, 69 students) and VI (first semester, 33 students) programs presented in the previous section—with feedback on the individual lectures and presentations by fellow students—might be influenced not only by their previous knowledge and experience (user experience) but also by their own expectation levels (user expectation). In addition, this case study is subject, in scientific terms, to further limitations owing to the selection of topics and the number of participants involved. Moreover, the group preparation of the specific topic also introduces a subjective component relating to individual understanding of the material. Nevertheless, such a study is still “worthwhile” in order to provide direct “experience” of the competence approach and to enable it to be consolidated.

The process can also give visibility to topics that are of great interest in overall terms, be it “E-Competence” at the individual level or “Digitization of Asylum Procedures,” which relates to ongoing discussions in society. In addition, it became clear that many of the projects completed under the auspices of the IT Planning Council are not well known and that there is thus very little analysis of these projects or existing manifestations of them in the public realm or indeed in the information produced by the IT Planning Council. To this extent, it should come as no surprise that “E-Government” has played no significant part as yet in other courses and that the necessary interdisciplinarity is nonexistent.

What is more, old patterns continue to be preserved in the ÖV program—and thus also in the minds of learners—according to which basic technical knowledge relating to digitization and a technical background in organization are not necessary for administrators in their future work. Since the VI program is explicitly based on information technology, the situation is somewhat different here. It should be noted, however, that interdisciplinarity needs to be integrated at all costs into this program.

Different forms of competence are relevant for e-government, especially since administrative work involves a broad spectrum of tasks on different levels, covering different functions. As we know, the basic types of competence include specialist, social, personal, and methodological skills, which should certainly be linked to one another on an interdisciplinary basis as digitization increases and becomes more all-embracing.

5. SUMMARY OF THE EARLIER CASE STUDY

The article refers to the situation in Germany and investigates the state of the discussion there but does not draw an international comparison—which would go beyond the scope of this conference contribution. Only a few scientific studies deal with e-government competences, although IT is gaining importance as an integral part of the professional skillset [24]. Survey results have shown that certain competences are in short supply in some cases: here the integrative understanding of IT and e-government processes—i.e., mixed competences—is regarded as particularly important [24].

In this case study, student teams from the two new administrative degree programs ÖV and VI were to familiarize themselves with the IT Planning Council's modernization projects, work up the findings, present them to their fellow students, and discuss them. As the students were developing the topics, it became clear that they were as yet unfamiliar with many of the projects completed under the auspices of the IT Planning Council, and there was no public analysis and detailed evaluation of these projects, which suggests that the council is not exploiting their marketing potential to the full.

The aim of the process was to bolster the specialist competence of the students to combine skills and knowledge specific to organizational, processual, and task- and workplace-based requirements and reflect on these aspects viewed through the prism of digitization. The group work is intended to enhance the social competence of the students, enabling them to act in ways appropriate to the situation, work in a team, and handle any conflicts that may arise. The lecture and presentation format is meant to promote the communicative abilities of the students. The research on the topic and the joint preparation should also boost the personal competence of the students, including the qualities of self-assessment, self-organization, and personal initiative. The methodological competence of the students is enhanced by the (independent) acquisition of new knowledge, skills, and abilities, extending through to software support and technical tools. In our analysis of this competence, it became apparent that students are not very keen on experimental approaches and prefer a classical style of presentation. Overall, it was evident that competence in technical and organizational matters was in need of consolidation. Efforts should be made too to integrate interdisciplinary aspects into the different courses in the degree programs.

Each presentation was evaluated by students using a questionnaire, which was then analyzed by the lecturer for the purposes of this paper. In summary, the results show that the selected topics were mainly rated as interesting in terms of content, the presentations predominantly regarded as convincing overall, and the learning effects viewed as positive by the overwhelming majority of students. The individual results suggest that the evaluation is affected not only by a student's own previous knowledge and experience (user experience) but also by his or her personal level of expectation (user expectation). Based on this, surveys and evaluations will be expanded to include these aspects more effectively in the future and will be carried out in a more systematic manner in digital form.

6. NOTES ON FURTHER DEVELOPMENT

Electronic government is about the introduction of information and communication technology (ICT) into government functions and procedures with the aim of increasing the efficiency, transparency, and participation of citizens in public life [50]. Through electronic administration, municipalities have direct interaction with citizens and companies, be it vehicle registration, daycare places, or access to business documents, etc. [50]. The new dynamic relationships proposed by Stoica and Ghilic-Micu (2020) between governments / public administrations and citizens and companies require simple, integrative, secure processes [50]. Online services may provide a better understanding of the needs and competences of those involved.

Finding out the main obstacles hindering the implementation of e-government in the pursuit of efficient administrative development is of interest worldwide. The results of the study by Garad & Qamari (2021) on Yemen as a developing country show that the most important obstacles to the implementation of e-service quality are as follows [51]: a lack of qualifications, the digital divide, a weak technological infrastructure, a lack of financing, the lack of a regulatory framework, development strategies, legal frameworks, government instability, and trust in electronic services [51]. Although the infrastructural aspects in industrialized nations are probably less critical than in developing countries, many of the obstacles mentioned above can also be found there. Let's return to the situation in Germany.

Germany is a federal state with a federal government and administration as well as sixteen independent state governments and administrations, in addition to municipalities, which also have a sovereign right of self-determination [52]. The Act to Improve Online Access to Administrative Services—otherwise known as the Online Access Act (OAA)—which came into force in 2017, obliged the federal and state governments to offer their administrative services electronically via administrative portals by the end of 2022 [52]. Overall, this goal has not yet been achieved: the OAA is situated in an overly complex multilevel German public sector and a highly fragmented digital landscape, as Fleischer and Carstens (2022) pointed out [53].

Specifically, this includes two tasks: digitization and networking [52]. On the one hand, administrative services at the federal, state, and municipal levels must be digitized [52]. On the other, an IT infrastructure must be created that enables every user to access the administrative services with just a few clicks [52]. User orientation has top priority in OAA implementation, meaning that all digitization processes should be geared to the needs of users. However, our investigations of implemented online public services showed that there is a need for better understanding [54]. The OAA seeks to boost the process of digitally transforming public services that was initiated in Germany two decades ago but has met with a series of delays [52].

Over the last decade, usability has become a crucial requirement for developing interfaces and the technical skills to cope with all the tasks of any product and

service development team [54]. The importance of data privacy and information security has become crucial owing to the increasing connectivity and complexities of devices and systems in which interfaces are integrated [54]. Increasing data privacy and information security requirements constitutes a major challenge when it comes to developing usable products and online services [54]. Usability, data privacy, and information security are essential for online public services aimed at implementing digital citizenship, as defined in the EU Digital Targets for 2030 [54]. However, usable privacy and information security are by their nature inter-disciplinary, and insufficient thought has been given to how to combine these frequently contradictory aspects of software development, both in practice and in academic curricula [54]. The new book by Ruiz Ben and Scholl (2023) on these topics helps introduce these interdisciplinary skills into this neglected area of e-government [54]. Moreover, the development of online public services requires bureaucratic and legal knowledge as well as awareness about the diversity of users' digital skills and needs as citizens—consequently, raising people's awareness with new methods should be of interest [54].

Since employees are involved in all facets of the digital transformation of the public sector, they play a crucial role in the successful implementation of the transformation process [55]. Koelmann et al. (2023) calls for employees to be equipped with the necessary resources to actively participate in the design of a digitized public sector, which, according to the authors, makes the acquisition of e-government skills essential [55]. However, the authors observe an increasing gap between the level of required and acquired e-government competences in the workforce of public-sector organizations in developed countries, particularly in countries like Germany [55]. According to Koelmann et al. (2023), this is also due to the fact that the authorities are not able to select and take advantage of the training offers that are individually suitable for them [55]. In order to enable a structuring of the decision-relevant criteria when selecting further training offers for e-government skills, the authors developed a "morphological box" as the main outcome of their study, based on detailed interviews, which depicts the conceptual dimensions of such offers [55]. This should bring together the perspectives of relevant stakeholders from the German public sector.

A networked society calls for networked governance [56]. The development of e-government—for example, in Ukraine—is impossible without the appropriate training of relevant qualified professionals, which is why a master's program in e-government, developed within the framework of a joint Ukrainian-Estonian project on an e-governance curriculum, was implemented [56]. For Germany, too, Koddebusch et al. (2023) emphasizes that people only actively participate in the transformation process when e-government skills (e-skills for short) are promoted [57]. Although the importance of e-skills is obvious, the education and training landscape in Germany does not do justice to the diversity of the needs evident in the workforce in the public sector [57]. The question remains as to whether this is adequately covered in the university curriculum.

The e-government competencies must therefore also be expanded to encompass data protection (law) and information security. However, such previous

awareness-raising measures and training have not yet had a lasting effect [58]. The methods for such skills development need to be renewed. At TH Wildau we have therefore spent years testing new methods of mindfulness and skills development in information security with students from a wide range of courses [59], because many studies and investigations in the area of information security reveal a careless handling of sensitive data and insufficient information security awareness. Despite increasing digitization, which has a huge impact on society as a whole, we tend not to pay enough attention to the risks associated with it [59]. However, research shows that the mere transfer of knowledge is not enough to cause behavioral changes. Rather, a systemic approach that can bring about the necessary emotionalization and reflection through analog game-based learning is helpful [59].

We also dedicate our activities to employees in SMEs, as these companies are increasingly the focus of cyber attackers. The extensive and complex project "Awareness Labor SME (ALARM) Information Security" aims to remedy this. The awareness-raising measures were developed for SMEs but can also be applied in e-government without much additional effort. The aim is to provide an overall scenario for ongoing, free personnel-development measures that will raise awareness of information security among employees in Germany and thus improve the level of security and defensive measures [60]. The three-year project brings together different actors and a variety of methods, with a focus on conducting interviews and online surveys with companies; developing tailored game-based awareness training; testing and dealing with on-site attacks; and creating measurements and evaluations, maturity-level declarations, guidelines, and low-threshold security concepts [60]. A targeted mix of analog and digital methods is of central importance for the development of mindfulness and increased awareness.

7. CONCLUSION

Digitization for a smart world is thus having an influence on how we live, be it in private or business environments. However, becoming "smart" requires the training and development of new digital competences that go beyond mere technical skills. In addition, abilities, proficiencies, and skills are increasingly playing a role in education—and not just knowledge itself. Personality dispositions, values, and motivations play a part in building "mixed competence." It is thus becoming necessary to reorient personnel and instill specific competences in all fields of work. Even in Germany, digitization is making progress, albeit more slowly than expected. However, digitization today also means an increase in cyberattacks of all kinds designed to steal personal information and customer data or to carry out financial blackmail. This is why the usability, data protection, and information security of the systems, as well as the attentiveness of their users, are crucial for digitization, especially for any online services and platforms that aim to implement digital citizenship and promote employee engagement in companies. Digital skills need to be constantly developed, and this is not possible without regular awareness raising in the area of information security. Training measures should not forego analog materials; rather, a mix of memorable analog and digital learning

methods combined with the active exchange of experience is of great importance in raising awareness over the long term and fostering skills development.

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COMPETING INTERESTS

Author has declared that no competing interests exist.

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Research and Academic Experience: After studying Physics/Meteorology in Mainz and Berlin, she worked as a researcher on a number of projects for the German Research Foundation (DFG), developing numerical models. She did her doctorate in Meteorology at Berlin's Freie Universität. Afterwards, she was a unit head within the Berlin Senate administration. In 1994, she was a professor at the University of Applied Administrative Sciences Bernau, and in 1997 also at TH Wildau. From 1998 to 2001, she was head of the IT user service in the Brandenburg State Office for Data Processing and Statistics. In 2001, she returned to TH Wildau as an ambitious researcher and professor for Business Informatics and Administrative IT in the Faculty of Business, Computing, and Law.

Research Specialization: Her objects of interest are project management, including e-government and international orientation, process management, including acceptance and quality management, risk management and change management, business applications such as enterprise resource planning systems and document management systems, multimedia, including learning technologies virtuality, and intercultural aspects, IT security, and IT baseline protection. Moreover, her research mainly focuses on IT and didactics, infrastructures for promoting learning, individual and organizational learning, digital media in education, and PPBBL (Problem and Project-Based Blended Learning).

Number of Published papers: She has published 154 papers in several reputed journals.

Special Award: She won the university's research prize in 2011.

Any other remarkable point(s): In 2010, she founded the WILLE Institute (Wildau Institute for Innovative Teaching, Lifelong Learning, and Constructive Evaluation), which is part of the Centre of Technology Transfer and Advanced Learning (TWZ e.V.). In 2013, she did a research semester at the University of Washington's iSchool in Seattle, USA. In 2014, she had her university professorship converted to a five-year research professorship. Her aim in this new position was to focus on developing and deploying a holistic understanding of technology in an area that will in the future be more strongly characterized by diversity. She retired in September 2023; however, she will continue to work on projects at TH Wildau and offer further training and certification through WILLE for employees from universities, public administrations, and SMEs with a focus on information security and management systems; data protection and security; awareness raising; and project management.

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