# DEVELOPING AN E-GOVERNMENT EDUCATION PROGRAMME CURRICULUM BASED ON KNOWLEDGE MANAGEMENT PARADIGMS TO SUPPORT INSTITUTIONAL TRANSFORMATION

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## Abstract

*The recent developments in e-government increasingly emphasize the need for change and transformation in public institutions. Thus the improvement of human capacity and thus educational initiatives are also becoming increasingly important. Accordingly, this paper aims to propose an e-government education programme curriculum that is based on knowledge management paradigms for supporting transformation in public institutions. Representing academic, government and practitioner perspectives all together, we think such proposal can bridge theory and reality, and contribute to the transfer and application of educational learning into real practice. A knowledge management approach plays a key role for such bridging of theory and practice, especially for the purpose of changing the reality. The framework of knowledge management paradigms is provided as the academic base upon which our discussion on knowledge management (education) and e-government development is furthered, and our proposal on an e-government education modeling and sample curriculum is grounded. A knowledge management and e-municipality seminar to be delivered to municipality staff, as well as an e-government and knowledge-management transformation course to be delivered to graduate university students are provided as specific suggestions for public institutions.*

**Key Words:** *e-Government Education, Knowledge Management Paradigms, Institutional Transformation*

**JEL Classification: H75, I20**

## 1. INTRODUCTION

Following the recent developments in e-government that emphasize the need for change and transformation in public institutions, the improvement of human capacity is also becoming increasingly important (Bengshir 2009, Yazıcı, forthcoming). For instance, Bengshir discusses (2009, p. 13) that "since e-government has a significant impact on the structure and processes of public administrations, traditional managerial skills are insufficient for new organizational and managerial needs."

There are various educational initiatives that are provided to address such educational needs for the new managerial and organizational, as well as technical and technological initiatives. In Turkey, for instance, TODAİE regularly provides and improves short e-government education programmes for public officers. "e-Transformation and Management" courses are also offered at Informatics Institute in METU. In addition, preparations & propositions of e-government and e-municipality education programmes are being made by numerous educational institutions – to be delivered via "e-government smart classes" recently established in collaboration with Türksat.

 While the already available initiatives address the e-government educational needs to some extent, there is still a significant lack of educational programme provisions for the e-government development, especially for supporting the realization of institutional transformations in practice. This paper aims to propose an e-government education programme curriculum that is based on knowledge management paradigms for supporting transformation in public institutions. Representing academic, government and practitioner perspectives all together, we think such proposal can bridge theory and reality, and contribute to the transfer and application of educational learning into real practice. A knowledge management approach plays a key role for such bridging of theory and practice, especially for the purpose of changing the reality. Then, our paper continues with the presentation of our academic approach, knowledge management paradigms, as the base upon which our discussion on knowledge management (education) and e-government development is furthered, and our proposal on an e-government education modeling and sample curriculum is based. With suggestions for future work and summary, our paper is concluded.
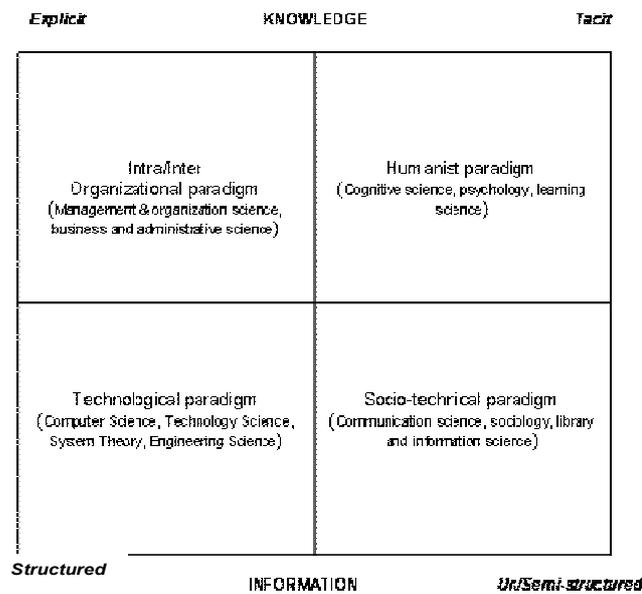
## 2. KNOWLEDGE MANAGEMENT PARADIGMS[1]

Knowledge management subtopics in terms of discipline or education can be grouped as four paradigms:  organizational, humanist, socio-technical and technological. Each of these paradigms reflects its own school of thought about managing information objectively and managing knowledge as subjectively. In addition, these paradigms allow us to assess knowledge management as discipline or science and to put forward misunderstandings about the argument of knowledge management is pre-science. Figure-1 enables us to determine which paradigms can obviously be based on which theories about managing knowledge in organizations.

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[1] Adapted from Sağsan (2009)

**Figure 1: Knowledge management paradigms from interdisciplinary perspective**



Considering the Figure 1, knowledge management discipline can obviously be seen as interdisciplinary perspectives. The paradigms include basic sciences, which created knowledge management discipline and reflect a network of school of thought, differentiated approach and perspective but sharing common fundamental assumptions about the nature of information and knowledge with different scholars.

*Technological paradigm* is based on the important assumptions related to technological advancements which have crucial role concerning with providing, sharing and disseminating 'structured information' in the system. Thus technology science, computer science, system theory can be grouped into technological paradigms. These sciences indicate the dimension of the knowledge management technologies and they process only structured information. Technology is a tool or an object for establishing information systems and it enables us to produce new information orderly. These systems for example are involved in information management, information engineering, system engineering, management information systems, decision support systems, web technology systems, database management systems, etc.

*Socio–technical paradigm* is based upon unstructured or semi structured information. The fundamental sciences such as communication, library and information, and sociology are taken place in this paradigm and they can be assessed subjectively because information is processed at the individual level. The paradigm attempt to combine social and technical systems for manipulating information in the system that can occur as unstructured or semi structured forms. The sciences such as communication studies, inter personal communication, librarianship, information resources documentation, archiving, information management, etc can be grouped in this paradigm.

*Inter / Intra-organizational paradigm* emphasizes how explicit knowledge is socially created by workers and collaboratively diffused in/inters organizations. These organizations should be understood here, as 'knowledge creating companies' which is firstly used by Nonaka (1991) and the paradigm should focus on both explicit and tacit knowledge. Knowledge is processed by many activities such as creating, sharing, structuring, using and auditing in organizations objectively. As we consider k-hierarchy here, information is transformed into knowledge and objectivity is stated instead of subjectivity. The topics of organizational learning, organizational culture, structure and change, organization theories, strategic management, process management, leadership theories, human resources management, production management, accounting management, supply chain management, marketing management, macro and micro economy, etc are covered by this paradigm.

*Humanist paradigm* is predicated upon a view of humanity as a potentially dominating force. It is tied to a cognitive process of human being, which is defined by soft sciences and level of abstraction. Thus, the paradigm is certainly subjective and focused on the tacit form of knowledge. The knowledge here is created individually and appears through human information processing that emphasizes the cognitive models. It includes topics such as individual learning, learning theories, motivation theories, human capacity, personalities, etc.

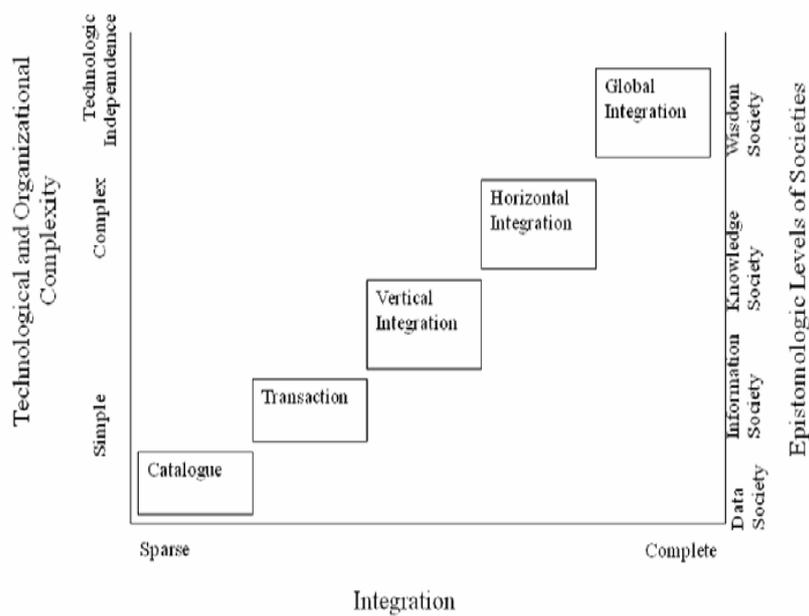## 3. KNOWLEDGE MANAGEMENT (EDUCATION) AND E-GOVERNMENT DEVELOPMENT

As a result, each of these paradigms defines the grounds of knowledge management discipline or education, highlights to develop a *comprehensive* (includes data, information and knowledge) education program and gives us different implications for the study of knowledge management in theory and practice at the universities. Only few knowledge management programs are directly related to the knowledge studies, which is based on the knowledge hierarchy: data, information and knowledge. (Sağsan 2009). Sağsan (2009), Medeni, Aktaş, Tolun (2009), Saito et al (2004) are examples of these educational modeling and curriculum developments based on comprehensive knowledge hierarchy and management. Meanwhile benefiting from various e-government services development and maturity modeling such as that of Lee and Layne (2001), Medeni & Aktaş (forthcoming) proposes one e-government model based on this comprehensive understanding of knowledge, discussion a transition towards knowledge and wisdom society from data and information society (Figure 2).

Accordingly, we can explain a society epistemic-development level according to these four levels. Societies in *Data Society* level, basically benefits e-Government services through catalogs. Citizens in this society apply government services physically. The societies in this level consume other society's products and services, on software and hardware base; and in daily life we cannot talk about a digital base for the e-Government services. *Information Society* comes with the consciousness of technology. Technology becomes a necessity in an ordinary citizen's daily life. Societies in this level direct themselves to use and create new products and services over the existed technologies. In this level e-Government finds a place in Transaction level. *Knowledge Society* is the indicator of a high usage level of Information and Communication Technologies (ICT) to reach knowledge. This society has started to obtain the technologies which will bring competitive advantage. As a consequence, this will help to start exporting its in-house technologies. In this level, e-Government fully appears as horizontally and vertically integrated government. In here we can also define a *Wisdom*

*Society* which knows its data, information and knowledge and it can easily reach any technology without being controlled by that technology and its creator. In this level we can talk about a real integration between other knowledge societies on the global scale.

**Figure 2. Four Level e-Government Model as an Indicator of Knowledge Society Level**

Source" Veri Toplumundan Bilgi Toplumuna Dört Düzeyli Bir Toplum Modeli", Medeni & Aktaş (forthcoming)



## 4. AN E-GOVERNMENT EDUCATION MODELING AND SAMPLE CURRICULUM BASED ON KNOWLEDGE MANAGEMENT PARADIGMS

Following this modeling that comprehensively integrates e-government and knowledge management, curriculum for education of knowledge management could also be used for curriculum for education of e-government. Considering the following common points that are essential principals for both knowledge management and e-government make this integrative usage more meaningful.

1. Emphasizing the integration of technological and technical issues with organizational, managerial and social issues

2. Underlying Institutional and organizational transformation as an ideal aim

As a result the following model (Figure 3) can be suggested for curriculum development of e-government education based on knowledge management paradigms. Accordingly, these four paradigms have tightly coupled relations that enable us to assess it in interdisciplinary perspective. The sciences, which belong to the knowledge management discipline or

education based on these four paradigms, are not limited here. One paradigm's tenets may be influenced from the others' thought patterns. Thus, it is possible to say that, the transitions between the paradigms reveal interdisciplinary fields which can be named as 'shared values in the same ideology'. The term ideology here means 'knowledge management paradigm'. In other words, connectivity within these four paradigms is caused to create new interdisciplinary fields such as management information systems, decision support systems, organizational or social learning, etc. In summary, the characteristic of knowledge management discipline or education based on k-hierarchy is introduced some of '*intersection fields*' between the paradigms from interdisciplinary perspective. The term field is used in this study as "subject activity" and referred to the common branch of knowledge. The concept of paradigm is a broader term than the concept of field, because according to Figure 3, any paradigm can contain many fields.

*1st intersection field* addresses technological and organizational paradigms that essentially produce structured information and create explicit knowledge as an object. 1st intersection field is embedded in the technological and organizational system. New interdisciplinary fields are produced by integrating organizational and technological paradigms. Management information systems, information management, knowledge management systems can be given in the field.

*2nd intersection field* is associated with technological and socio technical paradigm which are focused on structured and semi structured information. Decision support system, expert system, artificial system can be given as examples in this field.

**Figure 3: Four-intersection fields and e-Government education based on four-knowledge management paradigms. Adapted from Sağsan 2009)**
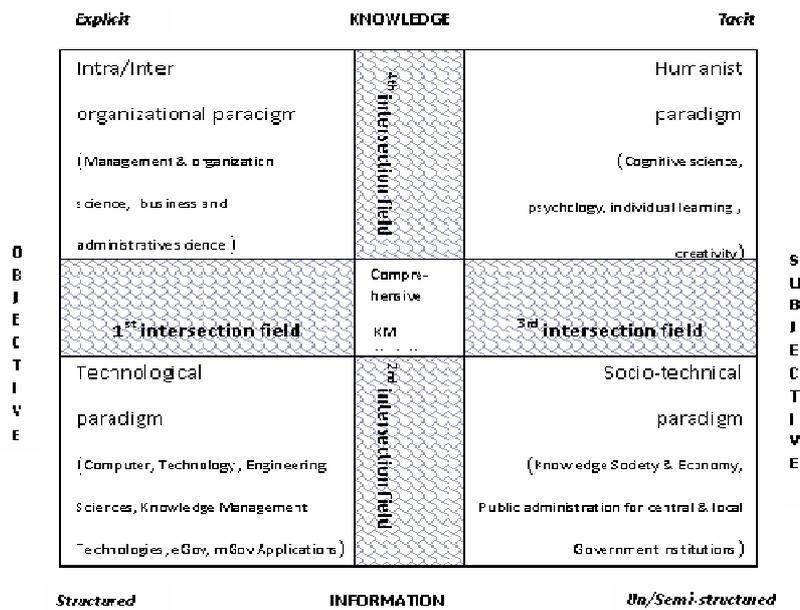
*3rd intersection field* includes humanist and socio-technical paradigms, which produce both unstructured and semi structured information, and creates tacit knowledge. These two paradigms attempt to combine human activities and technical system in terms of socially constructed environment. Despite the fact that, information is an object, it can be easily structured by the technical system. In addition, information is formed in unstructured or semi structured, because it is a subject and ready for interpretation or structuring. Social and individual learning theories, cognitive science, social psychology ore related sciences can be considered in this filed.

Knowledge should be realized at the *4th intersection field*. It contains explicit knowledge as an object, which is created by organizations in the organizational paradigm; and the tacit dimension of knowledge purely creates by individuals to perform tasks through their experiences in the humanist paradigm. Specific knowledge management and other related educational courses are occurred by this intersection field. Organizational learning theories, knowledge theories, communities of practice, human and organizational intellectual capital, innovation theories, can be exampled here.

At the core of this modeling lies a comprehensive understanding of Knowledge Management that integrates all the related social, managerial, institutional, individual, technological and technical aspects of not only theory but also practice. An action-orientation that bridges academia and reality is thus an inseparable part of such modeling. For e-government development, this action-orientation will be directed towards institutional transformation.

Our practical experience also confirms these suggestions in the theory. For instance, some of the co-authors of this paper were involved in the design and delivery of a 3-day seminar programme on a knowledge management training in a public institution in Turkey. At the end of the programme, seminar participants were requested to work on some institutional issues for which knowledge management concepts, techniques or technologies could be applied for improvement. The responses from the participants were beyond our expectations. Not only there were tangible suggestions for the use of advanced technology to improve knowledge flow and document management within the organization, but also suggestions for the use of simple social mechanisms such as improvement of library facilities, organization of various social events have also been made. The most impressive suggestions were made for the spatial and temporal improvement of facilities where daily lunches were cooked and served to personnel. For instance, the rearrangement of table set-ups and lunch-serving times were recommended to encourage communication among different units. For the co-authors, it was indeed encouraging to see that seminar content was internalized well by the participants who then were able to provide specific suggestions and guidelines, some of which would almost not cost any money, for improvements in their institutions. Thanks to also such encouraging experiences, we strongly believe theoretical information can be converted into practical knowledge, and public institutions can be guided towards organizational change and transformation. Thus, an e-government education programme that is based on knowledge management and aims organizational transformation can contribute to the development of institutions and individuals.

We have now initiated a new programme for a municipality in Turkey. A knowledge management seminar that is based upon the same paradigms, principles, content and dynamics as discussed above will be delivered regularly to the municipality staff that are

positioned at various institutional levels. The seminar will be integrated with a well-established citizen-satisfaction initiative and newly-developed staff-satisfaction initiative within the municipality. With the regular assessment of staff and citizen satisfaction, the learning outcomes and organizational implications of the educational seminar will be regularly monitored and traced. Accordingly, the content of the seminar will also be continuously revised. The whole process is aimed to be then regularly repeated. As a result, in the mid and long-term, solid institutional impacts are expected to be realized.

It is crucial to encourage and facilitate participants active involvement for knowledge management that could generate individual and organizational impacts, as a result of such education programme. Finally, the progress (the impact as a result of the education) should be regularly monitored and measured at regular intervals (for instance every 6 months for 1-3 years) after the education. This may not be possible in every case; for instance, a regular graduate-level programme delivered in a higher education institution may not have the same advantages of continuity, compared to the regular training programme in the municipality, as suggested above.  Again, while the suggested municipality programme can also be generalized into a knowledge-based e-municipality short-seminar programme, similar implications and impacts may not be always expected, as the transfer and realization of the learning would depend on various institutional dynamics such as organizational culture, managerial support, and environmental determinants.

Still, a university course delivered in a term with a 3-4 month duration (rather than a 2-3 day seminar delivered twice or thrice a year) can also have significant individual and organizational impacts. Thus, finally, a proposal for a sample curriculum of e-government and knowledge-based transformation to be delivered in a university, can be found at the Appendix. Again, based upon these suggestions and proposals provided previously, a sample curriculum for (knowledge-based) e-municipality can also be developed.

## 5. FUTURE WORK AND CONCLUSIONS

Recognizing the need for e-Government education in order to facilitate institutional (that includes individual) transformation, this paper has proposed an e-government education modeling and provided sample curriculum & programme suggestions. The specific suggestions include a knowledge management and e-municipality seminar to be delivered to municipality staff, as well as an e-government and knowledge-management transformation course to be delivered to graduate university students.

 It should be noted, however, that interlink between public sector transformation and e-Government development has not been able to be fully established in Turkey (Balci, Kirilmaz 2009). Thus, the support of educational programmes for the realization of such transformation with in public institutions and e-Government initiatives could also be limited.

Relying on our previous education and research experience, we are still optimistic that significant change can be initiated and transformation can be realized in specific institutions that can cultivate and enable the right circumventing conditions. These specific examples can then be established as role models or suggested and shared as good practices and lessons-learned for others, as a result of which, diffusion of these educational innovations to other public institutions could become possible.

Further research would also contribute to making this diffusion of education innovation possible. For example, applying an action research methodology, academic and practical research work that specifically address different societal levels and interactions within e-government development and institutional transformation processes ranging from intra-personal to inter-country levels can be conducted. As a result of applying such practice-oriented scientific research methodology, for instance, the ever-developing role of public institutions in the era of Information Society can be better identified and utilized.

The concept of "Information Society" is translated into Turkish as "Knowledge Society". The reason of this translation can be considered to be the fact that knowledge has more value than information, as it incorporates not only having personal abilities and technological capacities to access existing knowledge (information), but also a more active, intensive effort to create new knowledge. For such new knowledge creation, systematic and disciplined learning and education initiatives also play a crucial role. Furthermore, the knowledge should be valuable and useful for wisely taking societal actions in order to improve individuals, institutions, and societies.

As a result, new work descriptions and roles can be identified for educational institutions such as defining a transformational education model for engaged universities (Blewett, Keim, Leser, and Jones, 2008). After all, the word "knowledge" comes from the same family of words and is included within the same framework of connotations and association of ideas that include science and scientist, and wisdom among others (Cangızbay, 2000: 137).

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**APPENDIX**

*NEW COURSE PROPOSAL* (Adapted from an unsubmitted new course proposal to METU, Informatics Institute)

**COURSE TITLE:**

**E-Government and Knowledge-Based Transformation**

**CATALOG DESCRIPTION:**

This course aims to provide guidelines, methodologies, mechanisms for supporting development and transformation in public or private institutions, based on Knowledge Management paradigms and Action Research principles. Balancing the technological/technical and social/managerial aspects of academia and practice via a lens of knowledge management, the course has a specific focus on governance models in institutions, as well as on electronic and transformational government (e-government & t-government). Action Research will enable process and outcomes of this academic course to have implications for practice, too.

**FREQUENCY AT WHICH THE COURSE WILL BE OFFERED:**

As a weekend course that would be appealing for participants/students that have full-time employment or duties elsewhere, once every year in the Spring semester

**BACKGROUND REQUIREMENT(S):**

This course targets graduate students in various disciplines such as the Informatics, Science and Technology Policies, as well as Engineering (especially Industrial and Computer Engineering Departments), Library and Information Science, Communications, Education, and the Business Administration Departments. The course itself provides information on a wide range of interlinked subjects, based on introductory information on knowledge management. Thus, previously attending relevant courses with an introduction to knowledge management would be helpful, although not compulsory. A previous knowledge on research methodologies as well as work experience would also be additional assets for the course.

**COURSES IN RELATION TO THE PROGRAM:**

This course fits well into Distance Learning. Digital learning facilities can be used to deliver lectures to members of various academic, public and private institutions. For instance, e-government smart classes at TODAİE, and Universities of Gazi, İstanbul, and Fatih, as well as Türksat could be used to deliver the course.

**COURSE OBJECTIVES AND GOALS:**

Knowledge management subtopics in terms of discipline or education can be grouped as four paradigms: organizational, humanist, socio-technical and technological. Each of these paradigms reflects its own school of thought about managing information objectively and managing knowledge as subjectively. As a result, each of these paradigms defines the grounds of knowledge management discipline or education, highlights to develop a comprehensive (includes data, information and knowledge) education program and provides different implications for the study of knowledge management in theory and practice. Respectfully an e-government model based on this comprehensive understanding of knowledge can be suggested, discussing a transition towards knowledge and wisdom society from data and information society. Following this modeling that comprehensively integrates e-government and knowledge management, curriculum for education of knowledge management could also be used for curriculum for education of e-government. Considering the following common points that are essential for both knowledge management and e-government make this integrative usage more meaningful.

1. Emphasizing the integration of technological and technical issues with organizational, managerial and social issues

2. Underlying institutional and organizational transformation as an ideal aim

A major benefit of such curriculum development is then the provision of a conceptual framework to guide transformation in practice. The synergy among academia, industry and state institutions reinforces the realization of such transformational benefit. As a result, it is aimed that the students/participants of this course will become well-equipped for a realized or anticipated transformation in their respective institutions.

**COURSE OUTLINE (Main requirements in bold):**

1. Introduction: Knowledge Society & Economy, Public Institutions (Central & Local), e-Government, e-Governance, Citizen Focus
2. Management of Knowledge in Institutions & Individuals: Concepts and processes of organizational knowledge management & learning and creativity
3. Need for Transformation, previous examples, Action Research Methodology
4. **Participants (Individual and Institutional) Introductions: Preparation for Initiating Institutional Projects**
5. Knowledge of Management and Organizations: Project, Innovation, Change Management
6. E-Government applications: E-Government Gateway, authentication (password and e-signature) applications, integrated services….
7. **Presentations: Sharing institutional cases of best practices, lessons learned; Encouragement of class participants for active involvement in contributing to**

**development of knowledge management and e-government applications in their institutions**

8.  Advanced Knowledge Management Technologies
9.  Knowledge Management Techniques & Mechanisms: Measurement of Intangible Assets-Tacit Knowledge, Citizen/Customer/Employee Satisfaction, Knowledge Mapping; Developing a roadmap for institutional implications as Institutional Projects,
10. **Workshop: Progress monitoring in Institutional Projects, sharing of initial results**
11. Special e-Government Topics: e-municipality, e-justice, e-tax, e-health, e-learning, geographical information systems, knowledge base for legal institutions, mobile-government, ubiquitous-government...
12. Future of e-government and other knowledge-based societal institutions, next-generation applications, new concepts
13. **Seminars: Institutional Projects**

## TEXTBOOKS AND CLASS MATERIALS:

- Presentations and Proceedings of 2008 National e-Government Conference organized by Türksat, and 2009 eGovShare Conference organized by TODAİE.

- Lecture notes.

- Editor's collection of e-Government Documentary by TRT (to be confirmed).

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## COURSE CONDUCT:

Students will be given study materials on a variety of issues relevant to knowledge management and e-government. The materials will be textbook chapters and articles, published in the academic and practitioner literature, documentaries, and some online materials. The course will be conducted in a manner that encourages open involvement and active participation for reflection, collaboration, learning and knowledge creation, and seeks continuous improvement not only for student but also instructor. It is crucial to encourage and facilitate participants' active involvement for knowledge management that could generate individual and organizational impacts, as a result of this education programme.

## GRADING:

Attendance and class participation                                      15%

| | |
|---|---|
| Participants (Individual and Institutional) Introductions | 10% |
| Presentations (Sharing best practices, lessons learned) | 15% |
| Workshop (Progress monitoring) | 15% |
| Seminar (Institutional Projects) | 20% |
| Final Exam | 20% |
| Additional assignment and home work | 5% |