E-learning: the Future for Land Administration Studies?

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Key words: capacity building, e-learning, developing countries, land administration studies

SUMMARY

In the search for new approaches to respond to the need for good professional and academic education in land administration, e-learning has proven to be a good alternative to traditional classroom education. E-learning can play a crucial role in capacity building in land administration in developing countries and countries in transition. Several aspects of e-learning are highly relevant for academic education in land administration and in particular to support the mission of the United Nations University (UNU) School for Land Administration Studies. E-learning supports student-centred learning approaches and knowledge exchange between students from all over the world contributing to the global land administration knowledge base. Students in remote locations and working adult students have the opportunity to attend online courses without cost for travel and without the need to leave the workplace. E-learning supports lifelong learning and continuous development of land administration professionals. High numbers qualified land administration professionals are needed to implement and maintain sustainable land information systems. Through e-learning large numbers of students can be reached and trained. E-learning and related Web 2.0 technologies are increasingly becoming an element in professional networks and academic partnerships in land administration.

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Sydney, Australia, 11-16 April 2010

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1. INTRODUCTION

FIG' s current work plan, titled "Building the Capacity", focuses on the surveyor's response to social, economic, technological and environmental change. FIG recognises the particular needs of capacity building in developing countries to meet the challenges of fighting poverty and to develop a basis for a sustainable future. The needs for good professional education and the needs for building competent human resources are most relevant in relation to this. Given the needs in education in relation to the available capacity we have to look for new approaches - e-learning is expected to contribute here.

To explore the status of development, applications and experiences in e-learning in the surveying profession an international workshop on 'E-Learning in Surveying, Geo-Information Sciences and Land Administration' has been organised by the International Federation of Surveyors (FIG), Commission 2, on Professional Education, and Commission 7, on Cadastre and Land Management, and the International Institute for Geo-information Science and Earth Observation (ITC) in June 2008 (Groenendijk & Lemmen, 2008). As a follow-up to this workshop, a FIG Publication on e-learning has been prepared by Commission 2 to be presented at the FIG Congress 2010 in Sydney (FIG, 2010) reflecting on the commissions activities in the field of e-learning.

This paper explores the role e-learning can play in capacity building in land administration in developing countries and countries in transition. The paper starts with defining capacity building and related concepts, followed by an overview of programmes and initiatives to support capacity building in land administration in developing countries and countries in transition. In the next section the trends in the land administration profession and the need for capacity development are described. The potential role of e-learning in capacity development is highlighted and its potential for the UNU School for Land Administration Studies is explored in the last part of the paper.

2. CAPACITY, CAPACITY BUILDING AND CAPACITY DEVELOPMENT

Security of land tenure, efficiency of land markets, and effectiveness of land use control are crucial components in any land policy. The activities rely on some form of land administration infrastructure which permits the complex range of rights, restrictions and responsibilities in land to be identified, mapped and managed as a basis for policy implementation (Enemark & Williamson, 2004). Enemark (2003) distinguishes two key

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aspects in building land administration infrastructures: first the establishment of an appropriate land administration system itself; and secondly ensuring that there is a sustainable long-term capacity of educated and trained personnel to operate the system in both the public and private sectors.

The term capacity building has various meanings and can be considered as a dynamic concept. In a more conventional sense the concept relates to education, training and human resource development. De Groot & Van der Molen (2000) define capacity building as follows: The development of knowledge, skills and attitudes in individuals and groups of people relevant in the design, development, management and maintenance of institutional and operational infrastructure and processes that are locally meaningful.

According to Enemark & Williamson (2004) the concept capacity building has changed over the years towards a broader and more holistic view, covering both institutional and country specific initiatives. In their attempt to define this concept better, Enemark & Williamson (2004) started with defining capacity. They adopted the following definition (UNDP, 1998): "Capacity can be defined as the ability of individuals and organizations or organizational units to perform functions effectively, efficiently and sustainably." Capacity is the power of something – a system, an organisation, a person, to perform and produce properly (Enemark & Van der Molen, 2008).

This definition has three important aspects:
− capacity is not a passive state but is part of a continuing process;
− human resources and the way in which they are utilized are central to capacity development; and:
− the overall context within which organizations undertake their functions will also be a key consideration in strategies for capacity development.

Capacity building is seen as a two-dimensional concept covering the two dimensions Capacity Assessment and Capacity Development (Enemark & Williamson, 2004). Capacity Assessment or diagnosis is an essential basis for the formulation of coherent strategies for capacity development. It is a structured and analytical process whereby the various dimensions of capacity are assessed within a broader systems context, as well as being evaluated for specific entities and individuals within the system.

Capacity development is a concept which is broader than institutional development since it includes an emphasis on the overall system, environment and context within which individuals, organizations and societies operate and interact. Even if the focus of concern is a specific capacity of an organization to perform a particular function, there must nevertheless always be a consideration of the overall policy environment and the coherence of specific actions with macro-level conditions.

Capacity Building can be addressed at three levels (Enemark & Williamson, 2004; Enemark & Van der Molen, 2008):

- The Broader System/Societal Level
- The dimensions of capacity at systems level may include a number of areas such as policies, legal/regulatory framework, management and accountability perspective, and the resources available.
- The Entity/Organisational Level
- The dimension of capacity at the entity level should include areas such as mission and strategy, culture and competencies, processes, resources (human, financial and information resources), and infrastructure.
- The Group-of-People/Individual Level
- The dimension of capacity at the individual level includes the design of educational and training programs and courses to meet the identified performance gaps within the skills base and number of qualified staff to operate the systems.

Based on these three different levels of capacity building and the two dimensions, capacity assessment and capacity development, Enemark & Williamson (2004) proposed the following analytical framework for capacity building in land administration:

CAPACITY BUILDING IN LAND ADMINISTRATION		
Level	Dimensions of Capacity Assessment	Dimensions of Capacity Development
Societal/Systems Level	– Policy dimension – Social and institutional dimension – System dimension – Legal and regulatory dimension	– Land policy issues – Land administration vision – Land administration system – Land tenure principles – Legal principles
Organisational/ Entity Level	– Cultural issues – Managerial and resource issues – Institutional issues and processes	– Institutional infrastructures – Spatial Data Infrastructures (SDI) – Professional institutions
Individual Level	– Professional competence – Human resources needs – Educational resources	– Educational programs – Sandwich or franchise programs – Training programs – Continuous Professional Development Programs – Virtual programs – Other measures – Education and Research Centre

Table 1. A conceptual analytical framework for capacity building in land administration (Enemark & Williamson, 2004)

According to this framework academic education and training in land administration is one element in capacity building and refers to capacity development at individual level.

3. CAPACITY BUILDING LAND ADMINISTRATION

Land administration is considered a key issue in achieving sustainable development and addressing poverty, sustainable housing, sustainable agriculture and the management of natural resources. The UN-FIG Bathurst Declaration on Land Administration for Sustainable Development (FIG, 1999) called for a commitment to halve the number of people without effective access to secure property rights in land by the year 2010.

The Workshop on Capacity Building in Land Administration for Developing Countries, organised in 2000 by United Nations and the International Federation of Surveyors (FIG), was an attempt to define what capacity is needed to respond to the issues raised in the Bathurst Declaration (De Groot & Van der Molen, 2000). Education and training of a variety of land administration specialists is a necessary condition for sustained development, alignment, and implementation of the institutional, organizational, and technical tools of land administration (De Groot & Van der Molen, 2000). Capacity building in land administration in developing countries and countries in transition is considered a priority. There is a clear need for large-scale capacity building in land administration to ensure tenure security and service provision and to develop the supporting land information infrastructure.

Capacity building in land administration has gained increased attention through the following years. The FAO Land Tenure Centre in Rome has initiated a project to develop guidelines for self assessment of capacity needs in land administration (Enemark & Williamson, 2004). This project resulted in the FIG Publication 41: Capacity Assessment in Land Administration (Enemark & Van der Molen, 2008).

International donors are increasingly interested to invest in loans and grants for the establishment of appropriate land administration systems. A major donor for land administration projects is the World Bank (Van der Molen et al, 2006). However, the critical issue of capacity building did not always get the attention as it should have in these projects.

The demand for capacity building is considered a major prerequisite for successful project implementation. The role of education and training in building capacity to support land administration and management reform is now well established through the World Bank funded projects. In East Asia the World Bank has been supporting the establishment of new higher education programs and in some case strengthening established programs (Bell, 2009).

In 2006 the UNU School for Land Administration Studies was established. In the framework of the United Nations University, the Faculty of Geo-information Science and Earth Observation (ITC) and the Cadastre, Land Registry and Mapping Agency (Kadaster) both in the Netherlands, joined their forces to become the provider of knowledge in land administration to complement the UN mission.

The portfolio of School for Land Administration Studies includes the following:

- workshops for decision makers
- short training courses for professionals
- MSc Degree Course in land administration
- meetings, workshops and symposia
- advise on capacity building programmes
- network of academic institutions in land administration
- academic partnerships in land administration worldwide
- scientific research

4. A CHANGING PROFESSION AND CHANGING TRAINING NEEDS

The discussion on the changing nature of the surveying profession and the role of land administration has been a key issue for more than a decade within the International Federation of Surveyors (FIG). Many experts in the field have expressed their concerns, analyzed the issue and developed new insights on the nature of the profession and practice. In particular developments in information and communication technology have had an enormous impact on the profession (Groenendijk, 2009). Enemark (2009) entitles the change as the big swing "From Measurement to Management" in the sense that surveyors have extended their technical knowledge by social, legal, economic and environmental understanding.

Enemark (2007) summarizes the major key international trends in the surveying education as follows: management skills, versus specialist skills; project organized education, versus subject based education; virtual academy, versus classroom lecture courses; life-long-learning, versus vocational training.

Besides the new requirements from a professional point of view the academic surveying education nowadays is affected by additional determining factors like globalisation, demographic development, and new public management (FIG, 2010; OECD, 2007). Surveyors of today work in an increasingly global market and the profession has grown rapidly beyond cadastral surveying, with increasing application of surveying and mapping technologies in other sectors (Fairly, 2009).

While in great parts of the world land administration systems are in place and the role of surveyors has changed into land professionals, other parts of the world are in the process of creating an effective land administration infrastructure and building up the necessary capacity to manage these systems. In most developing countries and countries in transition there is a lack of institutional capacity to undertake land administration activities in an adequate and sustainable way (Enemark & Williamson, 2004).

5. E-LEARNING

Higher education institutions and other training institutions have been looking for new ways to respond to the changing professional field. The following paradigm shift in academic education is taking place (FIG, 2010):

− From teaching to learning:

Traditional, subject-orientated teaching will be substituted by individual project-orientated and self-organized learning. Teachers' role is changing from presenters and instructors to facilitators, mentors, tutors, coaches, and consulters.

− From timed and on-site lectures to time and site independent education:

Modern educational methods enable self-paced and self-directed learning with a high flexibility on time and site.

− From self-contained studies to life-long-learning:

The increase of worldwide knowledge is estimated to be doubled within four years. Therefore the existing concept of self-contained study courses will be replaced by the concept of continuing professional development.

E-learning is a proper facilitator to manage this paradigm shift in academic education. E-learning methods and tools have been introduced and are now playing an increasing role in land administration education (FIG, 2010). Markus (2008) defines e-learning as follows: "… e-learning is a learning process created by interaction with digitally delivered content, network-based services and tutoring support. This definition focuses on the revolutionary impact of network-enabled technology. Adding more details on methodology: e-learning is any technologically mediated learning using computers whether from a distance or in face to face classroom setting (computer assisted learning), it is a shift from traditional education or training to ICT-based personalized, flexible, individual, self-organized, collaborative learning based on a community of learners, teachers, facilitators, experts ..."

Central in this definition are two aspects of e-learning:
− e-learning as computer assisted learning, and
− e-learning as pedagogy for student-centred and collaborative learning.

These aspects in fact summarise the development of e-learning in time. Early developments in e-learning focussed on computer assisted learning, where part or all of the learning content is delivered digitally. More recently the pedagogical dimension of e-learning has become prominent. (FIG, 2010)

The following is a list of the most important features of e-learning (FIG, 2010):
− E-learning supports learner-centred approaches.
− E-learning gives learners a chance to speed up or slow down as needed.
− E-learning can happen when and where needed.
− E-learning does not require physical presence.
− E-learning promotes greater student interaction and advances collaboration.
− E-learning uses interactive technology to develop fun, engaging, effective simulations.
− E-learning opens global opportunities.

E-learning has become an important aspect of education delivery. In Table 2 an overview ispresented of some major online distance programs offered in the field of surveying, land administration, geo-information science and remote sensing (FIG, 2010).

Program	Description	E-learning specifications
CCRS Tutorials	Remote Sensing training offered by Canadian Centre of Remote Sensing	Interactive training modules
eduGI	Geoinformatic online courses on various subjects. Various European Universities sharing e-courses	Educational Platform (Blackboard); e-lectures, self tests; virtual classroom sessions
ESRI	Instructor-led and self-paced web courses and seminars in a broad field of GIS related topics.	Virtual classroom and Virtual Campus; instructional podcasts; online training resources
E-tutor	GIS for Local level development planning, Indian Institute of Technology/UNDP	Multi-media based tutor
EuroSDR-EuroServ	Advanced GI Sciences courses, European Spatial Data Research Organisation	Short courses on advanced topics; including 2 days workshop at start; various places in Europe
Gimolus	GIS and modeling courses offered by University of Stuttgart.	Virtual landscape using WebGIS
GIS Self Learning Tool	Introductory and advanced topics in GIS; University of Melbourne	A number of internet based interactive multimedia modules
GITTA	GIS(T) modules, Swiss Virtual Campus: Consortium of Swiss teaching institutions	Virtual Campus, multilingual; ECLASS-pedagogical approach
ICRSEdu	Online resources in Remote Sensing, International Center for Remote Sensing Education, USA	Web-based structured core curriculum for remote sensing
LEAP	GIS, GPS, cartography, surveying Curtin University of Science, Australia	Virtual online learning; virtual field trip; various modules; distance and open learning.
UNIGIS	A worldwide network of educational institutions offering distance learning degree courses in GIS.	Website; virtual classroom; virtual office; wiki; web conferences global; virtual and multilingual

Table 2. Overview of major online distance programs offered in the field of surveying, geo-information science and remote sensing (FIG, 2010)

Higher education institutions in field of land administration and surveying are offering a wealth of quality e-learning material and courses available to students at a global level (Groenendijk & Lemmen, 2008; FIG, 2010).

Figure 1. Capacity building and global knowledge exchange through e-learning (Photo: Jeroen Verplanke, ITC)

The OECD Report on E-learning in Tertiary Education (2005) offers a good insight in the state-of-the art of e-learning in higher education, including its short comings. The report concludes that e-learning is becoming increasingly prominent in higher education. "However, after the hype of the new economy, growing disenchantment with e-learning has replaced over-enthusiasm". A number of reasons for failure in e-learning have been noted, of which the following are of interest in the framework of this paper:

− distinctive high quality interactive models of online pedagogy that explore the potentials of the medium have yet to emerge,
− early prototypes rested on unit cost savings, with uniform courseware and low intensity communication in place of face-to-face teaching,
− producers from English speaking nations failed to design learning materials and methods sensitive to cultural and linguistic variations,
− status is a vital commodity in higher education markets, and online programs were handicapped by perceptions that the degree had less status than a face-to-face program even when offered by leading universities,
− inclusion/exclusion in relation to ICT networks and knowledge have become key dividing line in shaping relations of power and inequality.

6. E-LEARNING AND THE SCHOOL OF LAND ADMINISTRATION STUDIES

The UNU School for Land Administration Studies offers a variety of training and learning formats: workshops, short courses, MSc and Postgraduate programs, PhD Programs, joint education and research programs in partnership with universities in developing countries and in countries in transition. The use of e-learning is being encouraged: new online course modules are being developed and the use of e-learning technology in education and its potential in collaborative online learning are being explored.

Using the main features of e-learning as mentioned in paragraph 5 as guiding principles, the potential of e-learning for the UNU School for Land Administration Studies can be described as follows:

6.1. E-learning supports student-centred learning

The Master of Science and Postgraduate Degree Courses in Land Administration offered by the UNU School of Land Administration Studies are based on a student-centred learning approach. Students attending these courses are mainly mid-career professionals from developing countries and countries in transition, with some years of professional experiences and a great variety of cultural backgrounds.

In a student-centred learning approach, collaborative e-learning tools such as wikis, blogs and discussion boards are excellent tools to facilitate exchange of information, sharing of experiences, and group work. The Learning Management System, Blackboard, is the e-learning platform that supports these tools. Several other e-learning tools such as You Tube and Google Earth support student-centred learning and knowledge exchange and should be further explored.

Students represent a wealth of experiences in different aspects of their local land administration systems including land policy, land registry, land tenure, land markets, land laws. When facilitated well, and e-learning offers excellent opportunities for this, unique country specific knowledge can be shared by all and systematic reflection can result in new insights and motivate further learning. Teachers could make use of the knowledge of students not only for student learning and capacity development, but also to support their tasks in capacity assessment. The interaction with students and the explicit description of their experiences will create a continuous growing and up-to-date knowledge base on the key issues in the land administration sector and the work place of students. Web 2.0 tools support this form of learning and knowledge building.

6.2. E-learning enables high flexibility on time and site for teachers and students

The natural constituencies for distance education are people in remote locations and working adult students who benefit from the flexibility of time and place. Many land professionals in the developing countries and countries in transition lack the time and resources to leave the office for longer periods of time. Online distance courses are in this case an excellent alternative for face-to-face courses. E-learning means savings in time and finances, and planning study time according to one's own possibilities. Online distance courses are offered by the UNU School for Land Administrations Studies in basic disciplines. Advanced, short or tailor made online distance courses are being developed.

In this context it might be good to highlight one of the great advantages of a digital medium: the reusability of learning material, also referred to as multi-usable courseware or learning objects. Sharing, upgrading and redeveloping learning materials is simple and easy, and the learning objects can be used in multiple contexts for multiple purposes; in short courses (online, face-to-face or in blended courses), as elements in regular MSc and PG course programme and in joint education settings.

With e-learning large numbers of students can be reached simultaniously. This could be a solution to the high demand for professionals in land administration in developing countries and countries in transition.

6.3. E-learning supports life-long-learning and continuous professional development

The current increase and improvement of technologies and methods and the new needs of employability in the field of surveying profession necessitates a continuous knowledge gain of surveying experts. University graduation is no longer a ticket for professional career. Learning for life has to be shifted to life-long learning (Enemark, 2009) to meet the challenges of this accelerated change of requirements for profession. The need for more flexible learning paths will keep growing in the future to react to needs of the labour markets, to the demographic developments and to the more mobile workforce.

The UNU School of Land Administration Studies plays a key role in life-long-learning as part of capacity development of professional at different organisational levels. This is not the case for traditional universities who are engaging in life-long-learning and Continuous Professional Development (CPD) only recently. With e-learning the School could consolidate and further strengthen its niche in global and international education.

6.4. E-learning in support of professional networks

The School of land Administration Studies is founded on an extensive network of highly recommended experts in the professional field. Students participating in the courses offered by the school could be stimulated to take part in these networks or create their own communities of practice based on shared interests or regional networks. It is one of the challenges for the UNU School to explore and stimulate these professional communities of practice were academics and professionals can share their knowledge in solving concrete problems in the land administration at regional, national and international level.

6.5. E-learning in support of academic partnerships

The UNU School of Land Administration Studies is actively developing academic partnerships with universities in both developed and different developing countries. A joint education partnership already exists for several years with China. New academic partnerships are initiated with Tanzania, Vietnam, Namibia, Indonesia and Nepal. Joint education and joint research are some of the key aspects of these partnerships. E-learning in these partnerships has a great potential and needs to be explored further. Online video lecturers, synchronous classroom and virtual classroom teaching, joint content development using Wikis and Skype, distance supervision of MSc students, virtual group work, exchange of country case studies made by smart phones, the use of podcasts in distance education and MSc research, the use of blogs as logbooks during MSc fieldwork. Communication is of course crucial in all partnerships. Information and communication technologies can support communication and increase collaboration.

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6.6. E-learning opens global opportunities

Land administration professionals through the use internet have access to an ever growing potential of e-learning courses and learning materials from high standard universities and training institutions. With the international trend towards more open source course delivery this might be considered one of the biggest advantages of e-learning as compared to face-to-face courses, in particular for students in economically less developed countries. It is a challenge for the School for Land Administration Studies to consider how to respond to this trend towards open source.

6.7. E-learning and research

Information and knowledge are highly mobile, readily slipping across borders. Academic institutions are part of a single world-wide scientific network in which information and knowledge can be shared by all (Marginson & Van der Wende, 2007). Repositories of digital information, virtual libraries, make it possible to access scientific literature when and where you need it. The MSc and PhD research programmes of the School for Land Administration Studies are unimaginable without the digital library. The digital library of the School is well developed and invests in professional support of the libraries of academic partners in less developed countries. In the joint education programs the partner institutions and their students have access to the digital library of the School. This aspect of the partnership is very appreciated.

7. REQUIREMENTS

The requirements for e-learning differ quite a lot from traditional training courses. Teachers have to acquire new competences: information and communication technologies (ICT) as well as e-pedagogy are needed ingredients for operating e-learning. Instructors and teaching staff must be up to date and aware of the technologies used in e-learning. They will often find that students are ahead of them in technological awareness and can learn from both formalized training and interaction with students.

Development of new courseware for online training programmes is more time consuming than giving a series of lectures and practical sessions, and involves advanced expertise, both technical and pedagogical.

The technical requirements for e-learning, is an aspect that might lead to frustrations if not taken care of properly. Issues like bandwidth, software, internet access, technical support in case of troubles, need to be in place. Technical staff should be available to support the smooth development and implementation of online courses .

Communication with secretariat, technical staff and lecturing staff has to be well organised. It is important to create and maintain a good relation and stay motivated for the course. Students in online courses depend completely on the online communication.

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Instructors and teaching staff must be up to date and aware of the technologies used in e-learning. They will often find that students are ahead of them in technological awareness and can learn from both formalized training and interaction with students.

And finally, high priority must be given to the introduction of a quality assurance system to guarantee the high level of academic surveying education.

8. CONCLUDING REMARKS

To explore the status of development, applications and experiences in e-Learning in the surveying profession an international workshop on 'E-Learning in Surveying, Geo-Information Sciences and Land Administration' has been organised by the International Federation of Surveyors (FIG), Commission 2 and Commission 7, and the International Institute for Geo-information Science and Earth Observation (ITC) in June 2008 (Groenendijk and Lemmen, 2008). As a follow-up to this event, an FIG Publication on e-learning has been prepared by Commission 2 to be presented at the FIG Congress 2010 in Sydney (FIG, 2010) reflecting on the commissions activities in the field of e-learning.

Several aspects of e-learning are highly relevant for academic education in land administration and in particular to support the mission of the UNU School for Land Administration Studies. E-learning supports student-centred learning approaches and knowledge exchange between students from all over the world contributing to the global land administration knowledge base. E-learning supports lifelong learning and continuous development of land administration professionals.

High numbers qualified land administration professionals are needed to implement and maintain sustainable land information systems. Through e-learning large numbers of students can be reached and trained. Students in remote locations and working adult students have the opportunity to attend online courses without cost for travel and don't need to leave the workplace.

E-learning is increasingly becoming an element in professional networks and academic partnerships in Land Administration. Online courses can be exchanged or jointly developed, students benefit from online distance supervision by academic staff from partner institutions, and access to digital libraries makes scientific research output available all over the world. Communication is crucial in all partnerships: information and communication technologies, and in particular Web 2.0. technologies support distcance communication and increase collaboration.

The opportunties of e-learning for Land Administration Studies are varied and rich. Many good practices in e-learning have been introduced, new developments are taking place and a lot of the potential of e-learning is still to be explored.

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BIOGRAPHICAL NOTES

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TS 6G – e-Learning I   16/16
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