



## **E-learning for sustainable development - rationale, strategies, choices and actions. Experiences from the study programme MSc in Development Management**

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### **Abstract**

*The concept of e-learning is vague. ICT-supported education, online education, distance education, e-teaching and e-learning – what is the difference? This article describes the differences and practical pedagogical consequences depending on the choices made and is based on a concrete example and experiences. Modern ICT-supported educational methods demand awareness of various classifications of knowledge when developing curricula and appropriate learning activities.*

*In the quest for a more sustainable development, there are now opportunities to leapfrog several stages. The education sector may jump directly to state of the art in e-pedagogy for building blended or purely online learning environments. To achieve this, investments in the training of teachers might be even more crucial than investing in the technology.*

**Keywords:** ICT-supported education, education for sustainable development, transformative pedagogy, collaborative learning, communities of practice, intercultural communication, quality online education

### **Introduction**

The education sector in many countries invests heavily in Information and Communication Technology (ICT). Unfortunately, the competence to use this technology efficiently may be wanting. Education should be more learning than technology driven to succeed. The magic of dazzling technology must be matched with appropriate pedagogy.

The quest for sustainable development requires a change in attitudes, and intercultural and global cooperation. The combination of ICT and transformative pedagogy can be efficient tools for such change. Traditional education is inadequate to meet the challenges of a global environmental crisis. Education for sustainable development demands a new, transformational pedagogy. Traditional education systems are to some degree

based on "Copy, Cram and Reproduce" or the "CCR-pedagogy": Paulo Freire calls it the "Banking pedagogy" (Freire, 2010, pp.71-73). This kind of education is inadequate to meet the challenges of our time.

Access to education is limited, its quality poor and the curricula often irrelevant to the needs of the learners and of social, cultural and economic development. Emerging new industries need entrepreneurs, managers and skilled labour in order to be competitive; our outdated education systems continue to produce graduates without the requisite knowledge and skills (UNESCO, 2000, p.1).

The "cram school" is the dominant pedagogy in most former colonial countries, China and India included. Parts of Asia have enjoyed economic growth in spite of the "CCR-pedagogy" and the fact that creativity and critical thinking are not encouraged. This is known as "The Asian paradox" (Elmgren & Henriksson, 2010, p.22). One result is that the environmental situation in parts of Asia is in a critical condition. Growth is not sustainable (American Scientist, 2006).

Sustainable development can be associated with safer, more resilient and robust communities with increased social cohesion rather than just economic growth. Creativity and entrepreneurship operate within a "green" economic framework where sustainable livelihood, healthy ecosystems and reduced ecological footprints are significant values. National governments, local communities and NGOs should therefore work for a social transformation that includes the vulnerable rather than excluding them. This would be in accordance with the Millennium Development Goals (MDGs). The MDG ambition is to eradicate extreme poverty and hunger and ensure environmental sustainability. Vulnerable groups in emergencies are the poor and in particular young children, girls, women, youths, disabled, refugees and internally displaced persons. The vulnerable will multiply with increasing pressures from climate change, unusual and extreme weather and conflicts over natural resources. The future will be increasingly unpredictable, and sustainable development therefore demands a quality education system that builds generic and problem solving skills, creativity, innovation and critical approaches to established "truths". According to the Dakar framework for action, a quality education is inclusive and provides education to/for all. It is partly participant-driven, builds tolerance and helps handling conflicts constructively. It is based on respect for human rights and provides expertise and skills in critical thinking, environmental and crisis management (World Education Forum, 2000 §§ 3,6,8,24 and 42).

According to the Inter-Agency Network for Education in Emergencies (INEE, 2010, p.3 and 77), quality education at basic levels provides competence in reading, writing, numeracy, information management and a relevant curriculum tailored to age groups and contexts. MDG2 demands primary education for all boys and girls. But a quantitative approach alone is inadequate. Education must meet real needs, addressing hygiene, nutrition, disease prevention, freshwater management, entrepreneurship, sustainable finance and sound resource management to meet the demands of MDGs 3, 4, 5 and 6 on gender equality, reduction of child and maternal mortality and reduction in infectious diseases.

If the next century is going to be a truly African century, for social and economic progress of the African people, the century of durable peace and sustained development, the success ... depends on the success of our education systems. Nowhere in the world has sustained development been attained without a well-functioning system of education, without universal and sound primary education, without an effective higher education and research sector, without equality of educational opportunity (UNESCO/Thabo Mbeki, 2000, p.1).

Reforms of educational management are urgently needed— to move from highly centralised, standardised and command-driven forms of management to more decentralised and participatory decision-making, implementation and monitoring at lower levels of accountability... it is necessary to harness new information and communication technologies (World Education Forum, 2000, § 55).

According to INEE, participatory management of education means that local communities are at least partly involved in the design of the curricula in order to contextualise and adapt to local conditions. The system must be flexible in the way that one can choose different educational approaches best suited to the learning objectives. The teachers should be competent academics and be offered regular and relevant training tailored to the needs. Life-long learning requires online education, as most teachers and other groups cannot afford to leave their jobs for further training in a remote city.

Quality Education should be affordable, easily accessible, gender sensitive and include openness to different cultures. Learning resources should be adequate and varied. The size of the groups or classes should be tailored to the needs. It should be possible to provide quality education also in emergency situations: “Education's life-sustaining and life-saving role has been recognized and the inclusion of education within humanitarian response is now considered crucial” (INEE, 2010, p.4).

Education for sustainable development should emphasise concrete and relevant knowledge, learning by doing, encourage creativity, information literacy, collaborative and cultural competence, individual and team management, ecological ethics, economic and social responsibility. This kind of approach is in line with the Convention on the Rights of the Child (CRC, 1990), requiring that children should be given the opportunity to develop to the fullest and to participate fully in family, cultural and social life. The Copy-, Cram- and Reproduce (CCR)-approach should be replaced by the more complex 'Pedagogy of ECECITES': Ecology, Creativity and Entrepreneurship, Comprehension, Inclusion, Transformation, Empowerment and Social responsibility. ICT-supported education may facilitate this, and might be the only option in many rural areas, where remoteness makes daily access to schools difficult.

Modern technologies can be important tools to achieve sustainable development. The new pedagogy must consequently be adapted to new communication realities connecting the entire globe in an ever closer electronic network. This approach is also in line with MDG8 that asks for global partnerships for development.

Many schools in poor countries struggle with expensive and outdated books if they have books at all. An environmentally friendly solution could be a transition to e-books available online. The internet increases capacity annually while prices drop, and technology now may combine laptop functions with the increasingly ubiquitous mobile phone and I-pads.

## **ICT-Supported and online education**

Many schools have invested in computers and access to the Internet. The impact on learning outcomes can be questioned. Norway has a very high density of computers in schools. A recent survey, *Education, Curricula & Technology (ECT, 2007-10)* among teachers in Norwegian secondary schools reveals that ICT is abundantly present in schools, but there are few signs that its full potential is approached. Traditional learning environments are used and standard software is the most common ICT activity reported. Apparently there is a lack of competent role models for teachers, who may be hampered by traditions. Some feel overwhelmed by the new technology. To avoid that

schools, remote areas or even whole countries are being left behind, measures that close the digital divide instead of accelerating it (Bjørke, 2006, p.3), and that include rather than exclude are needed:

...the growing digital divide is actually leading to greater inequalities in development, giving rise to paradoxical situations where those who have the greatest need of them – disadvantaged groups, rural communities, illiterate populations or even entire countries – do not have access to the tools which would enable them to become full-fledged members of the knowledge society...

...The overwhelming majority of developing countries, despite difficulties, problems and fears, seek as far as possible to take part in the formation of the global educational community (UNESCO 2002, pp. 8, 64 ).

There is more to education than technology. The ICT must be placed in a productive context. A buzzword is “e-learning”. A common idea seems to be that students use the Internet as a source of information. The teacher teaches the traditional way, while the Internet supplements. Veterans in the area of online education are keen on pointing out the difference between “knowledge” and “information” and prefer to define information dissemination in the form of websites, online lectures and self-instructional e-courses as E-teaching. Emphasis is on traditional 'instructivist' teaching, where the point is “getting the message across”, and in the Freire terminology “banking” the “correct” answer in the students’ heads. We transmit information from the one “who knows” to those “who do not”. Focus is on the teacher and on content delivery. The cognitive learning processes hoped to take place in the recipients are of less interest.

Teachers and students are increasingly exposed to current global events. Access to an ocean of updated Internet information implies that the traditional, instructivist teaching mode should change. Studying involves more than cramming a student’s head with facts and information fragments. Students need to understand, see connections and challenge the information presented. They should to be able to apply the information and gained knowledge in a concrete context. Emphasis must be on learning how to learn and how to understand. Higher levels of education are different from cram schools, in which the “goal is to enable the students to “parrot,” that is, to unthinkingly repeat information that is deemed necessary for particular examinations” (Wikipedia 2010: Cram school). In the information age, students should be encouraged to be critical, and maybe even question the teacher. “Information literacy” is the ability to search for relevant and reliable information to solve a problem, and critically assess the quality. Rather than being passive recipients of decontextualized information, the students must to a large extent become proactive information literates, and the society might even find ways to a better democracy in the process (Momo, 2008).

ICT in education demands communication between individuals, groups and networks. Merely using the Internet for obtaining information is useful, but it is the two-way or many-to-many communication that may change power structures. Two-way communication takes place when a teacher sends lecture notes on e-mail or makes them available online. In response, students can send their questions by e-mail or upload on the internet as well. For students who are unable to attend a campus, the lecturer may videotape her lectures. With 'blended' approaches, where on-campus teaching is combined with e-learning, the difference between on-campus students and “near-by” students appearing on campus now and then disappear. All interact and learn in learning communities, whether “distant” student or not. Combining virtual learning environments (VLEs) with interactive collaborative learning will entail a more socio-constructivist approach, reducing the traditional emphasis on instruction.

Only dialogue, which requires critical thinking, is also capable of generating critical thinking. Without dialogue there is no communication, and without communication there can be no true education (Freire, 2010, p.92).

The transformation from teaching to learning will have implications on the way education is constructed and delivered. When the technological steps have been more or less managed, the next, more formidable step is that of a new, transforming and activating pedagogy for the information age which may help in steering development in a more democratic and sustainable direction.

## **Leap-frogging**

A traditional view claims that poor countries have to develop through the same stages as the industrialised countries. Rostow (1960) claimed that development happens at take-off stages. The goal of development is to reach the mass-consumption society, with the American middle class as a role model. However, we now know that the mass-consumption society is not sustainable (Scientific American, 2006). This means it will collapse sooner rather than later, and has per definition developed in a wrong direction. Development in a true sense is rather reaching a state of resilient, sustainable livelihoods with healthy and robust ecosystems. Secondly, development does not have to go through stages. People can take short-cuts, or leapfrog over stages of development. A stunning example is the rapid dissemination in the use of mobile phones all over Africa:

The experience is that technological shortcuts which 'leap-frog' to a high-tech solution can be absorbed effectively. ...Our priority should be to identify and support open-minded, creative individuals who will make any useful leap-frog possible. For this reason, it is extremely important that people continue to be exposed to technologies and in developing countries, ICTs should be mainstreamed across the different sectors (health, education, agriculture, governance, water, etc) making it possible for shortcuts to be identified and exploited, taking into account local human capacity and local priorities. In this way, development can truly be fostered. Let's not assume that people always need to be exposed to low-tech and medium-tech solutions first before they can cope with high-tech solutions (Figueres, 2010).

It should be possible to implement the state of the art online education technology in large parts of Africa and Asia, almost as rapidly as it happened with the mobile phones. One of the issues is of course the power supply. The prices for photovoltaic cells have dropped dramatically lately, and there is a possibility of electrifying large parts of rural areas by solar power. Running laptops by solar electricity has been successfully tried out e.g. at the ARC-Kenya resort with its newly opened FabLab (ARC-Kenya, 2010).

Broadband capacity is still an issue. A pedagogical challenge is to find solutions that make online education work despite outages – and affordable to ordinary people. Online education does not have to be synchronous, with live video streaming and same-time interaction between students and teachers. Asynchronous e-learning can be just as effective, or work even better than the more technologically demanding synchronous modes.

Working with new technologies invariably involves the delegation of responsibility to learners and successful learning outcomes will depend on the learner's ability to work independently and autonomously from the teacher and, increasingly, to take control of the learning processes themselves (Noss & Pachler, 1999, p. 205).

Asynchronous modes facilitate this, and transfer power from the teacher to the students. To some extent learning can be defined as a social process: "Effective learning relates to four themes: Active learning, collaborative learning, learner responsibility and meta-learning or learning about learning" (Watkins et al.1996). The asynchronous on-line conferencing and collaboration seems perfect for metacognitive activities. Time to reflect, combined with relative

anonymity, may encourage openness, honesty and deeper thoughts that otherwise would not have come up in a “real-time” discussion. “People will be more honest, or more intimate, or more personal, or more reflective, all of those things combined lead to people saying things online that they wouldn’t ever reveal face-to-face” (Prendergast, 2003).

Weak infrastructures are not necessarily absolute obstacles. And the reality in the field is rapidly catching up with the pessimists who have been arguing against offering higher online education to Asia, Africa, Latin America and the Middle East. Statistics now show that the situation is changing dramatically.

WORLD INTERNET USAGE AND POPULATION STATISTICS						
World Regions	Population (2010 Est.)	Internet Users Dec. 31, 2000	Internet Users Latest Data	Penetration (% Population)	Growth 2000-2010	Users % of Table
<a href="#">Africa</a>	1,013,779,050	4,514,400	110,931,700	10.9 %	2,357.3 %	5.6 %
<a href="#">Asia</a>	3,834,792,852	114,304,000	825,094,396	21.5 %	621.8 %	42.0 %
<a href="#">Europe</a>	813,319,511	105,096,093	475,069,448	58.4 %	352.0 %	24.2 %
<a href="#">Middle East</a>	212,336,924	3,284,800	63,240,946	29.8 %	1,825.3 %	3.2 %
<a href="#">North America</a>	344,124,450	108,096,800	266,224,500	77.4 %	146.3 %	13.5 %
<a href="#">Latin America/Caribbean</a>	592,556,972	18,068,919	204,689,836	34.5 %	1,032.8 %	10.4 %
<a href="#">Oceania / Australia</a>	34,700,201	7,620,480	21,263,990	61.3 %	179.0 %	1.1 %
<b>WORLD TOTAL</b>	6,845,609,960	360,985,492	1,966,514,816	28.7 %	444.8 %	100.0 %

([Internet World Stats](#) )

The usage growth is the highest in the so-called developing countries. It is thus reasonable to believe that access to Internet will be widespread also in the developing world in the near future. Therefore, current staff at higher educational institutions in these regions should be offered training in applications of the new learning arenas. This could be one way of meeting the requirements for education without spending most of available capital on campus constructions, buildings and centralised facilities (Ask and Bjorke, 2009, p.179).

## Development of online education

Whether education is the priority issue when people starve and children die from easily preventable diseases can be discussed—not to mention the presumably luxurious online education. However, without education, it will be increasingly difficult to break a downward spiral. A wise strategy is raising the general competence level, not reducing it, when facing new and complex challenges. Online education can enhance education and make it available to many more. State of the art e-learning pedagogy will take time to implement, as online pedagogy is not intuitive but a skill that teachers need to learn. Teachers may try delivering education with computer games, taped lectures, an online library of articles, auto correcting quizzes, animated graphics, YouTube videos etc. The next step will be to make the education more learning centred. Students may be encouraged to interact with each other, e.g. by making role plays or utilising the power of ICT through digital storytelling.

A step up could be to deliver complete educational systems for development and delivery of degree-giving education with more or less 'blended', partly face-to-face, partly online, or completely online solutions. Study programmes and courses may be more or less peer interactive, tutor-guided and paced.

Computer Supported Collaborative Learning (CSCL), has been quite successful at the UK Open University, the Indira Gandhi University and others.

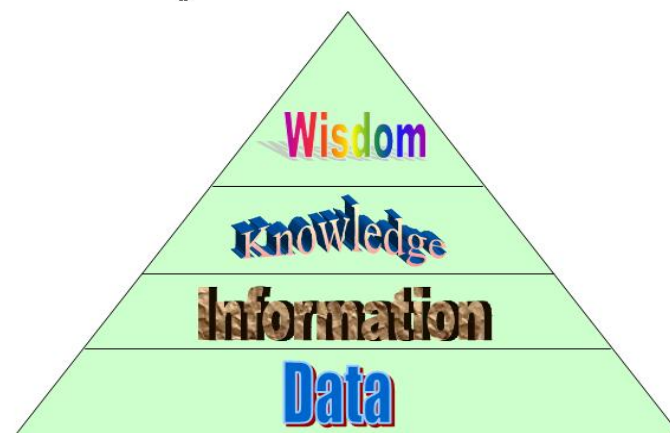
## Partners in networks

Making good online learning resources and developing good study guides with appropriate learning activities can be expensive, demanding and time consuming. In addition, to achieve some important aspects of education, international cooperation is important. It might therefore be of high value to collaborate in a partnership network of educational institutions. An international network can give substantial synergy to any study programme when managed well. There is power in the ability to share knowledge. Hoarding information is old-fashioned. It is smarter to link with others, who in turn might be linked and interacting at a broader scale.

## E-pedagogy

ICT emphasises communication while e-learning adds peer interaction, tutor guidance, and a holistic view on education. In addition to computer skills, the teacher needs the more advanced competence of being able to combine subject mastery with appropriate learning activities, progression, assessment, quality assurance, grading system and student support system – all required to ensure the achievement of learning objectives or learning outcomes. According to Delors (1996) education and learning implies “learning to know”: learning to learn, general knowledge and understanding. A second point is “learning to do”, involving skills, competence and practical abilities. In addition he brings in “learning to live together”, with tolerance, mutual understanding and interdependence as key components. A fourth point he terms “learning to be”, involving personal autonomy, responsibility, memory, aesthetics, ethics, communication and physical capacity. With these points as guideline, it is obvious that a mere transfer of information is insufficient, and that an appropriate, rich virtual learning environment is complex and pedagogically demanding.

A similar classification of information and knowledge can be seen in the so-called DIKW-pyramid. DIKW is an acronym for Data - Information - Knowledge - Wisdom. Data can be structured to information. Information can in turn be used to construct individual or group knowledge. As a principle, data and information can be disseminated, while knowledge, understanding and wisdom must be constructed individually (Wikipedia, DIKW).



*The DIKW pyramid*

Bloom's taxonomy is also useful when classifying levels of knowledge (Forehand, 2010), and seems to be increasingly used when developing learning activities.

The idea of aspects of learning and classifying knowledge is further detailed in the system of the European Credit Transfer and Accumulation System (ECTS), where the formulation of intended learning outcomes, standardisation and transferability is in focus. The system asks for classification of skills when formulating learning outcomes. This exercise is a deliberate effort in facilitating the transformation from teaching to learning centred pedagogy.

## **Education in the globalised “Age of information”**

In the “postmodern” information age, the central paradigm shift in education is probably the transformation from “teaching” and the control of knowledge to “learning” and the ability to synthesise networks of knowledge.

In addition to mastery of general and subject knowledge, the globalised world asks for creative, critical thinkers with collaborative skills, information literacy, and ability to communicate efficiently cross-culturally using various media and to build personal, international networks. In addition they should have an intrinsic motivation for dynamic, life-long learning ensuring currency in information and knowledge, besides having integrity, performativity and self-direction. In other words, when designing up-to-date education, e-learning included, the above points should be considered when developing the curriculum.

The World Bank in 2002 published a report entitled *Constructing knowledge societies: new challenges for tertiary education*. The report states that a modern, globalised education is demanding and a prerequisite for development. A global networked education system should therefore encourage increased student mobility by systems for recognition of relevant prior experience. The report emphasises the importance of ICT and its enhancing impact on learning and finds transition from remembering facts to methodological knowledge and analytical skills of utmost importance. Generic skills and learning how to learn are highlighted. An interactive pedagogy facilitating transformation from student audience to student actors, and collaborative learning more than individual is encouraged. The report recommends multi- and transdisciplinarity, a focus on methodological and analytical skills and internationalised, borderless education. To facilitate this, it is deemed necessary to develop international standards, degree equivalencies, tuition exchange schemes, internationally recognised degrees and qualifications combined with credit transfer systems. The report emphasises learning outcomes and student competence rather than input and process (World Bank, 2002).

## **Collaborative learning theories and methods**

In constructivist pedagogy (Bruner 1960 & 1973), instruction is based on the study of cognition. Learning is an active process in which learners construct new ideas or concepts based on their current and past knowledge and experience. The learner selects and transforms information, constructs hypotheses, tests these empirically and makes decisions, relying on a cognitive structure to do so (Kearsley, 2011) Constructivist theories and methods have been further developed and adapted to different learning environments, in particular in social constructivism, which in turn is associated with psychologists like Vygotsky, Saljø, Bruner, Engestrøm, Lave, Wenger and Biggs. Socio-constructivism means that students join a knowledge-generating community, a “community of practice”, and in collaboration with peers solve problems and assignments in a context of reality. In a socio-constructivist environment the generic skills of collaboration, intercultural communication,



negotiation of meaning; problem-solving and creation of new knowledge are important goals. Learning is a social activity where the students use information they gather actively by applying it in discussions with others. The students support their statements by referring to reliable and verifiable sources. The demands to academic rigor are the same as for the more traditional instructivist, lecture-based courses. Studies should in principle be undertaken for a purpose, and the participants should critically assess information according to relevance and usefulness in solving the task at hand.

## **Virtual learning environments in international networks: a case**

The Development Management (DM) Master of Science is mainly an online study programme of Agder University, Norway, operating within an international network, with partner universities in four African countries, Bolivia and Sri Lanka. Students are recruited at these universities; each university has a coordinator in charge of communication in the network and assisting 'home' students when necessary. Except for two face-to-face periods in Norway and Sri Lanka totalling seven weeks, the students study from their respective universities, from home or from anywhere. The coordinators assist in revising and updating the curriculum. Working in an international network adds extra dimensions to globalised studies. Such a network facilitates building tolerance between people of diverse cultures and value systems. An international, networked educational system facilitated by tutors creates new and powerful learning opportunities.

## **Asynchronous threaded discussions**

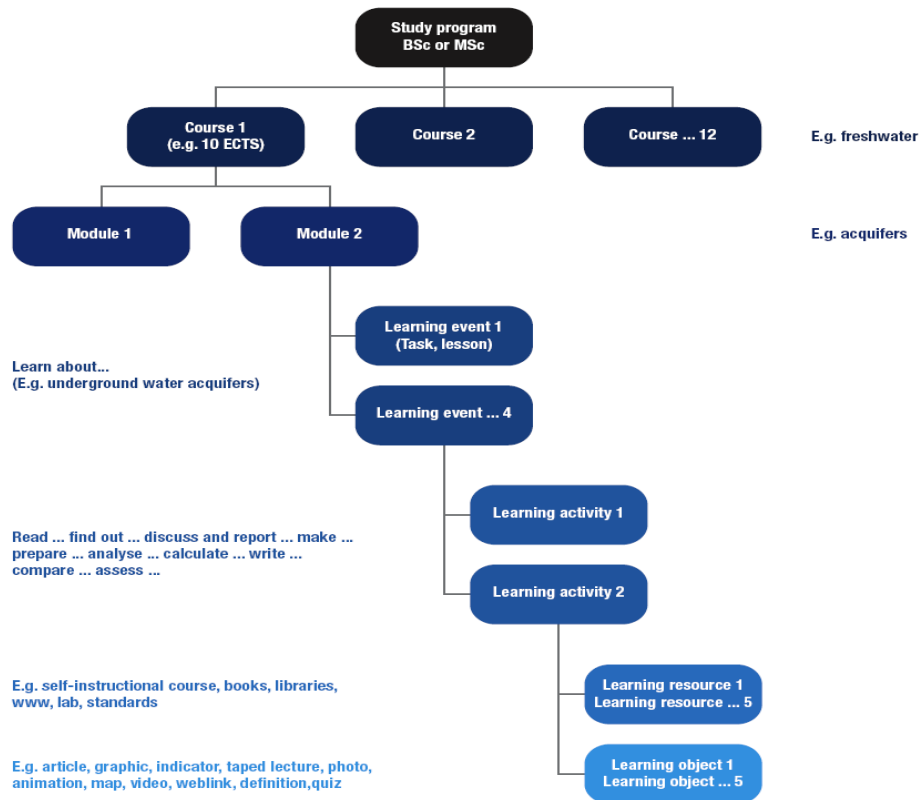
A main pedagogical tool for the DM study programme is asynchronous, threaded discussions arranged in a discussion forum in a Virtual Learning Environment (VLE). The asynchronous mode is less demanding on broadband capacity than the synchronous alternatives and enables an intercontinental study programme to overcome complex time frames. Asynchronous interaction encourages reflection and gives room for information gathering and critical assessment before expressing opinions. The otherwise more timid participants are more easily included and it allows those with externally fixed schedules to participate. It seems that asynchronous, tutor-guided, peer interaction is conducive to cross-cultural and cross gender communication. Otherwise quiet women raised in patriarchal societies realise after some weeks that nobody can prevent them from contributing as equals.

## **Framework system for course structures**

The involved teaching staff at the University of Agder, its partner universities and some of the participants in the EU project called 'model for a European Networked University for e-learning (mENU, 2004) have developed a framework system for course structures, a course description template, a quality enhancement and audit system ensuring that the quality criteria according to the European Credit Transfer and accumulation System (ECTS) are met, while also adapting the course to an online or blended environment.

The course description presents a detailed overview of the course according to the philosophy of 'constructive alignment' (Biggs 2003, Seigel 2004), with items like title, workload, aims, objectives, content, methodology, estimated number of student workload hours and intended learning outcomes. Study guides, with a calendar containing deadlines, provide the course contents, with detailed goals, tasks, learning activities, working procedures, pacing in the form of timeframes and cut-off dates. Students have online access to the

university library and to online learning resources with videotaped lectures, interactive e-books, articles and website collections giving participants some degree of autonomy and selfdetermination. Tutors guide and facilitate the learning process. An essential learning resource is the participants themselves.



Source: Ask and Bjorke (2009)

## Results

The MSc DM study programme, with tutor-guided, paced and collaborative approaches can report of high degrees of student cohesion. The combination of continuous peer collaboration, frequent tutor feedback and mutual dependence in the virtual communities of learning and practice seems to establish a supporting group pressure. The learning outcomes as a rule are above average and the drop-out rates are low. Of 94 enrolled students since 2005, six have dropped out. This is in contrast to most distance education programmes, where the drop-out rates often are above 50%. "...dropout rates are high, graduation rates relatively low, and... the quality of graduates' degrees is below that of conventional institutions" (Perraton, 2000, p.100).

The Director of Centre for Development Studies, University of Agder, professor Arne Olav Øyhus, has been in charge of the Development Management study programme since 2005, says that:

... The first cohort starting 2005, completed their MSc in spring 2007 with average or above average grades, reporting surprisingly high student cohesion and good learning outcomes. The dropout rate was below 10%.

In questionnaires that all participants have to answer at the end of the second or fourth semester, more than 80% of the students state that the collaborative approach had been decisive for their motivation to go through with the study

programme. They confirm that social learning activities increase their study resilience and motivation. The students also mentioned common problems, and complained that some group members tried to be ‘free-riders’, taking too little responsibility. Others felt that some participants were too dominant and impatient, making collaboration on equal terms difficult. As a rule, it may take almost two semesters of collaborative studying before these problems are handled efficiently. Almost all report that after two years they have built personal networks, have gained experience in cross-cultural communication and been trained in expressing their own thoughts and managing groups and have been obliged to work more with the subjects than they would have done alone.

**Some Questions and Replies taken from the student questionnaire:**

(NB! Since the questionnaire has varied somewhat between the cohorts, the number of respondees can vary)

<b>The collaborative and at least partly constructivist approach has been:</b>	
..decisive for my motivation to go through with the study programme	47
.. not had any influence either way	9
..mainly been a waste of time, preventing me from really studying the material	0
Not answered	2
Total	56

Table 1: Student rating of study approaches

<b>The mandatory group work has been rewarding because:</b>	
You have gained experience in cross-cultural communication	21
You have gained experience in expressing your own thoughts	19
Total	40

Table 2: Some positive factors mentioned

<b>Do you think that you have increased your ability to communicate efficiently cross-culturally during the study programme?</b>	
Yes, very much so	25
Yes, to some extent	32
Uncertain	10
No	0
Total	67

Table 3: Cross-cultural communication

**What to consider when venturing into online or blended education?**

There are solutions to the technological issues. Solar electricity is increasingly available and affordable. New grids of fiberoptic cables with high capacity are being constructed. If the technology is not available today, it might be tomorrow. Cheap computers can be assembled locally.

The next step is to build competence among teachers. Many will probably already know the basics of e-teaching and ICT-supported education. This competence must be increased in quantity and quality. Teachers with e-teaching experience and some pedagogical training will soon be interested in stepping up the quality of education and ask for training in e-learning

pedagogy and online tutoring. This kind of training should be developed at the teacher training colleges and universities. The competence to give such training is not likely to be easily available. It might therefore be an idea to build this competence in international networks. Operating international networks will require some standardisation, e.g. a common quality assurance, grading and credit transfer systems. Collaboration over the borders on development of digital learning resources will require a common metadata system and agreements on ownership rights and how to share resources. UNESCO has developed an ICT competency standard for teachers that might be helpful (UNESCO, 2008).

## **Semester based or course modules?**

When working in a network, it might be advisable to make course modules rather than operating in entire semesters. Course modules are as a rule more flexible than courses running over an entire semester. If all partners follow the same standards for the development of a course and course modules, they can be made interchangeable, and the entire network may be invited to contribute with course modules. This demands standardisation of e.g. the course descriptions, where the common description must fulfil all requirements of all the network members.

## **Course content and structure**

A study programme at bachelor or master's level may contain several courses. The European credit accumulation and transfer system (ECTS) has been developed bearing in mind the need for standardisation of course modules for international network purposes, such as student and staff exchange and transfer and accumulation of credits in the network. As a rule of thumb, a course should as a minimum be 5 ECTS, corresponding to between 120-150 hours of student work. When considering flexibility and interchangeability, 5 or 10 ECTS courses are advisable (European Commission, 2004).

Each course may have 3-5 course modules, catering for one or two of the defined learning outcomes. Each module may contain one or more learning tasks. A learning task or learning event must always define the topic or issue to learn in accordance with the defined learning outcome (in question). In turn, every learning task should have one or more learning activities. When the learning activities have been completed, the learning tasks should have been fulfilled. The learning activities should be paced, with deadlines and cut-off dates.

Every course should have a small library of various learning resources and learning objects to enhance and facilitate the learning activities.

All these components should be streamlined according to the principles of 'constructive alignment' (Biggs, 2003).

## **Conclusion**

Globalisation impacts on many aspects of our lives: on our economy, our workplaces, how we produce, consume, interact, communicate and how we develop and deliver education. ICT has facilitated global communication and instantaneous contact between persons, organisations and businesses situated on different continents at a reasonable price.

The number of people with access to the Internet in the world is rapidly increasing, with Africa having relatively the most expansive growth of over 2300 per cent the last decade. The people connected to the Internet have the opportunity of synergic collaboration, access to services and updated

information in all areas, and can work more or less independently of governments and national laws. Rapid population growth and lack of qualified teachers in developing countries make the need for education, maybe with a focus on training new teachers, ever more urgent.

ICT is a vital tool for development. However, technology is not enough. Education must always be more learning than technology driven. When venturing into e-learning, there are many issues to consider. A crucial issue is the pedagogy. Transformative, collaborative pedagogy is probably decisive for building good online learning environments. This approach also encourages information literacy, creativeness and critical thinking. These may be crucial factors for our ability to meet the challenges of a seemingly imminent global, economic and environmental crisis and to steer development in a sustainable direction.

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