

Experiences from Implementation of National and International, Collaborative, Virtual Universities

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ABSTRACT

Pressure from society and a growing need for education and specialised knowledge require new ways of facilitating access to learning and documentation of qualifications. Traditional universities do not have capacity to meet these challenges at their own premises. The use of ICT and Internet seems to be a possible way to increase access and capacity. In order to keep costs and efforts at a reasonable level without lowering study quality or staff qualifications, collaboration and sharing of material and competence may be the best option. This has been tested over the past 20 years in different plans and projects. Experiences from three projects are presented in this paper: NITOL (Norway-net with IT for Open Learning) as a national project in Norway, MENU (Model for a European Networked University) at a European level, and UNU-GVU (Global Virtual University) with students and partners around the World. The analysis of positive and negative findings leads up to certain recommendations that may be of value for future attempts to exploit the full potential of collaboration between universities. Hopefully the establishment of *collaborative virtual universities* can meet some of the global needs for higher education.

Keywords: Higher Education, Collaboration, ICT, Virtual Universities, National and International Projects

CLARIFICATION OF CONCEPTS

Universities have been operating more or less in the same way for centuries; with students staying at the university for a period of time, getting their degrees and diplomas and then leaving. This has been the typical pattern until the last couple of decades.

Terms like networked university, e-learning institution or a virtual university, are new terms that indicate universities offering distance or flexible education. Previously it was difficult to find a definition of the term *virtual university*; now it is defined in a way that suits our purpose well. *Wikipedia* explains:

A *virtual university* provides [higher education](#) programs through electronic media, typically the [Internet](#). Some are bricks-and-mortar institutions

that provide online learning as part of their extended university courses while others solely offer online courses. They are regarded as a form of [distance education](#). The goal of virtual universities is to provide access to the part of the population who would not be able to attend a physical campus, for reasons such as *distance* - where students live too far from a physical campus to attend regular classes; and the *need for flexibility* – some students need the flexibility to study at home whenever it is convenient for them to do so.. - - - [1]

Some universities are dedicated to distance learning only, for instance Open University in England [2] and the Open University in the Netherlands [3]. Both OU-UK and OU-NL allow students to enrol regardless of formal qualifications and still offer bachelor and higher degree studies.

Other universities are dual-mode institutions, offering education at distance as well as on campus; examples: the Finnish Virtual University [4], Canadian Virtual University [5], and the Open Universities in Australia [6]. All these virtual universities are networks of universities, e.g. the FVU is a partnership of 21 Finnish Universities. It is based on collaboration, division of labour, shared knowledge and the expertise of the member universities. “It is not a new university in itself and does not provide university education. For virtual studies you have to enrol in one of the member universities” [4].

In this paper the term *virtual university* is used for universities that offer online education on the *Internet*, accessible to students both on and off campus, but not necessarily their own courses. Terms like open universities, net-universities, networked universities, e-universities etc are in this respect treated as synonyms to virtual universities.

However, a *collaborative virtual university* (CVU) is defined to be a network of universities which collaborate in developing and offering courses and educational programmes online. Some of the above mentioned examples are of this kind. In a CVU the institutions join forces to develop and offer online education to students, either at distance or as blended solutions. Three such models will be presented below.

NORWAY-NET WITH IT FOR OPEN LEARNING, NITOL [7]

Representatives from the ICT departments at four Norwegian higher education (HE) institutions,

- Teacher Education, at Stord/Haugesund University College (SHUC) [8]
- Institute of ICT at University of Agder (UiA) [9]
- Engineering, at Sør-Trøndelag University College (STUC) [10]
- Institute of Informatics at Norwegian University of Science and Technology (NTNU) [11]

- joined forces in a proposal for the NITOL project. The proposal was awarded with a governmental grant for 2 + 2 years, 1994 - 97. NITOL was initially an open learning R&D project offering ICT related courses for students, teachers, ICT professionals and others. Research questions particularly focused on learning environments based on collaborative development and distribution of course material.

During the first years large efforts had to be devoted to technical solutions. As Internet and PCs gradually stabilised and became more user-friendly, pedagogy and subject content came more to the foreground of the work. The timely introduction and rapid development of World Wide Web (www) meant a major breakthrough for ICT-based Open and Distance Learning (ODL). NITOL happened to be there “just-in-time” to exploit the technology and to meet demands from the public.

An important principle was the *free flow of material* between the four NITOL partners. Of course, copy rights and the academic property rules applied equally well to electronic products as to printed material. At the start of the project, however, a partnership agreement was signed, stating that partners were free to “borrow” material from their colleagues, use it in their own courses, develop it further and offer it to the whole team of partners. The condition was that the name/institution of the author - and further developers - should be visible to everyone who was exposed to the material. During the project period this free exchange of competence and material was one of the major assets of the project. All partners had great advantages from it.

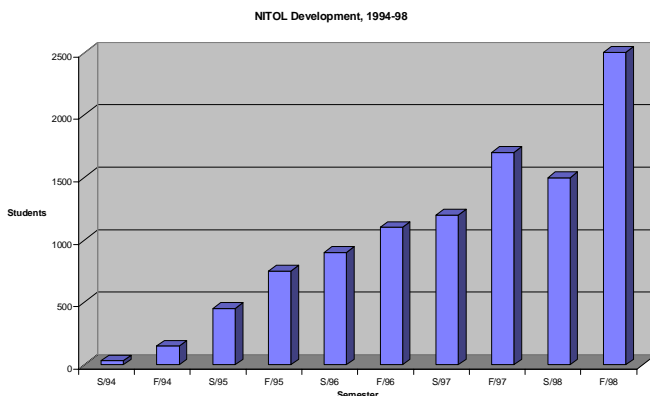


Fig. 1 [12]

The fast growth in student enrolment (Fig 1) required serious thinking about daily routines for running the project. In 1996 some systematic work was done to develop “The Administrative Concept of NITOL” [13], covering the central issues of the project organisation. To keep the administrative

work at a minimal level, and to reduce parallel work as much as possible, the daily chores from the individual institutions were transferred to a joint secretariat. This secretariat took care of e.g. student registration, collection of course fees, organising exams, editing and printing course catalogues, providing technical support for students, assistants and staff etc. Students then had the advantage of dealing with only one point in the network when registering, paying and asking for practical information. The four institutions benefited from receiving both preliminary and final student lists for each course they were responsible for, and by receiving their respective sums of money earned through course fees without having to track each individual student.

NITOL exchanged ideas and evolved in close relations with projects funded by the European Commission under different framework programmes and specific initiatives. Joint experiences through these projects have supported and inspired new developments, both on the R&D side and more practically for courses and study programmes that were offered. Despite that NITOL already operated as a *collaborative virtual university*, it turned out to be great challenges for other higher education institutions, both in Norway and internationally [14].

Transition to a national networked university

The course activities in NITOL grew too large for ad hoc administration. Leaders of the four partner institutions were approached for institutionalisation and a more official status of the activities. In early 1998 an agreement for establishment of a national networked university, NettVerksUniversitetet (NVU) [15], was worked out. In December 1998 the partnership agreement was officially signed by the four NITOL institutions - plus five other Norwegian partners. A board and a steering committee for NVU were appointed at the institutional administrative level.

The Networked University (NVU) was meant to be a network of HE institutions in Norway, not a new, independent Norwegian university. For a start they should take over the course activities from NITOL and develop it further. After a few years, however, the NVU board decided to skip most of their joint course activities, like the common course catalogue, central enrolment of students, marketing etc.

The development of NVU did not live up to expectations of the NITOL group. NVU joint activities ended up being only the establishment of special interest groups (SIG) and the arrangement of an annual conference on e-learning. Joint activities for marketing of courses etc were abolished, the total course enrolments went down and there were only minor exchanges between the partner institutions. The major mistake is suspected to be that the new NVU administration distanced themselves from the professionals, the founders and enthusiasts that created and developed the NITOL principles.

The initial NITOL group remained active through 2008, after the establishment of NVU mainly with R & D work, engagement in national and international projects, and less with daily services to students and practical administration. A final project report was worked out, printed, handed over to the four institutions and made available other for interested parties [7].

Going International

Internationally the NITOL group kept up the activity within joint networks and e-learning projects also after the NVU was

established. During the total of 15 years (1994 - 2008) the idea of openness and collaboration was promoted through several projects, most of them at a European level [16].

Some of these projects may still be of interest for understanding of the different ideas behind the final model for an international collaborative, virtual university. In particular the following five projects were central for gaining experience and developing competence at the four NITOL institutions:

- MECPOL - Models for European Collaboration and Pedagogy in Open Learning (1995-98) [17]
- Do ODL Dissemination of Open and Distributed Learning (1996-97) [18]
- EuroCompetence (1998-2000) [19]
- MENU – Model for a European Networked University for e-learning (2001-03), with a clear intention to create a European NITOL, or a European Virtual University EVU [20]
- QUIS – Quality, Interoperability and Standards in e-learning (2005-06) [21]

The MENU project was particularly interesting for continued work on *international, collaborative virtual universities*. It was responding to an initiative taken by the European Commission in 2001 [22], aiming at mobilising existing resources for designing tomorrow's education. This project also constituted the basic idea behind a *global virtual university*. Both of these concepts will be explained and analysed in the following two sections of this paper.

A EUROPEAN, COLLABORATIVE VIRTUAL UNIVERSITY

Based on priorities from the European Commission the MENU project [20] set out to develop a model that could be implemented into a sustainable consortium. The project was running from December 2001 till December 2003, intending to establish the virtual ENU (European Networked University) - or EVU (European Virtual University) in 2004.

The aim and objectives of the MENU project were stated in the proposal that was submitted (2001) to the *e-Learning Initiative*, a programme launched by the European Commission [23]. The aim was to develop a model that provided guidelines for developing collaborative virtual universities.

More precisely the main objectives were to:

- Activate the political principles stated in the Bologna and Sorbonne declarations, in the e-learning action plan, by establishing the 'business plan' for an ENU, accepted and integrated into national educational programmes
- Demonstrate the possibility of developing joint study programmes across institutional and national borders
- Establish a model for management and services for a virtual university. Options for scalability (up/down) for ENU as an independent organisation or as a virtual network.

[24, p. 20]

The objectives were demanding and a real challenge for a project period of only 2 years.

There were four main stages in the project

- Establishing the partnership and agreeing on principles, goals and methods
 - Creating the necessary documents/plans for the model
 - Testing the model by running real courses on the net; quality assurance
 - Finalising the model, based on plans and experiences; dissemination of results
- [25, p.6].

The first task was to formulate a partnership agreement which could be signed by the partners involved. Further activities should include the establishment of joint study programmes across institutional and national borders, exemplified by a masters programme. [26, p.4].

A European master degree programme must have academic as well as political acceptance. The MENU project, therefore, was to provide the structure for a generic study plan and for the quality assurance needed. The pilot test, however, was meant as a first step for a more sustainable networked university.

Anticipated outcomes from the project were:

- A sustainable European Networked (virtual) university, with an array of study programmes, available throughout Europe, in various languages
- A common quality assurance system for general acceptance of credits and degrees obtained through ICT-based studies
- An operational study plan for a European Master Degree programme, based on contributions from several countries and institutions, a model showing
 - Subject content and method
 - Learning material and environment
- A net based support system
- Management plan for scalable studies
- Publication of experiences, results and guidelines for the establishment of a permanent ENU.

[25, p.4]

This was an extensive list, but every item of it was fulfilled during the project period and all documents can be found at the project's website: <http://www.hsh.no/menu>

During the 2 year project period representatives of the 11 partners from 7 countries worked intensively together through discussions, draft documents and testing of ideas to come up with a complete description of a model that was likely to be implemented. In the final report lists the structure and visions:

Principal ENU goals

The primary goals of an ENU may be expressed as follows:

- To enrich the portfolio of the programmes offered by each of the ENU institutions today. New programmes should be collaboratively designed, directed and delivered within ENU. All programmes should use human resources and learning content from ENU institutions
- To fulfil demands that exist in the market for programmes covering new topics due to technological and cultural

evolution, or not available yet due to lack of human and other resources at a single university

- To guarantee high quality of the ENU programmes through pooling of ENU resources, instructors, course material etc. and a strict control applied to each programme following a Quality Assurance System (QAS) [27, p. 4]

In order to obtain these goals several measures must be taken.

Organisation

The organisation of the network to master the challenges of the strategy was proposed in the following manner.

Organisational Entities

- a) ENU should have a **Board** with members at institutional level to ensure the anchoring of ENU in each partner institution, to have access to resources in the institution and to bring political power to ENU.
- b) A **Board Working Group** should be appointed as a sub-group among the Board members, consisting of people who are specialists in one or more tasks related to the operation of a virtual university.
- c) The **ENU Secretariat** could be hosted by one of the legal institutions, or the services could be bought externally, for the daily operation of ENU. The size of the secretariat would depend on the finances of ENU, but should be kept at a minimum.
- d) An **Administrative Group** should work on overcoming differences between administrative systems and practices at the institutions. There could also be an **Academic Group**, taking care of quality assurance, and development of new curricula, a **Research Team** to work on questions related to the use of ICT in education. [27, p. 5]

Agreement and services

An agreement between the institutions collaborating in ENU must be established and signed, stating the role of the ENU both as a virtual and as a physical organisation. An example of such an agreement is found attached to the organisational plan for ENU. [28, p. 23-25]

Offering distance e-learning courses requires both a pedagogical and a technical platform. ENU should not enforce particular pedagogical approaches or a common learning management system (LMS). ENU consists of several institutions with different traditions in teaching and e-learning. There should be plans and provisions for services to the public, the users, internal services, technical services, and measures for security.

Committees or task groups could be set up for particular purposes like pedagogical methods, marketing of ENU programmes, business strategies, and in particular a forum for information and discussions about e-learning standards (e-learning environments, LMS, learning units etc.)

Quality of studies

Students and society demand educational systems of high quality - the students because they spend time and money for the education, and the society because educational quality is the best insurance for future welfare and development. Reasons for implementing a comprehensive quality assurance system (QAS) stems from the competition with a growing number of institutions offering courses through the Internet, and that

institutions all over Europe are urged to offer joint study programmes. A QAS that could be applied and accepted across all partner institutions would be of particular importance. This would have to define parameters and assessment methods for several factors, like administrative systems, study programmes, courses, staff qualifications, student assessment and qualifications. [29]

Plans and development of study programmes and courses

In order for collaboration between institutions to take place, it was necessary to develop a joint approach to the description of programmes and courses in order to have a common working vocabulary, before designing the template. An explanation of the key terms used, were as follows:

- A *study programme* consists of a number of *courses*, and awards a formal qualification or a degree
- A *course* can be part of more than one *programme*, and is awarding credits
- A *course* is made up of a number of *modules* or *study blocks*
- A *module* or a *study block* can be part of more than one course.
- A *module* or a *study block* consists of a number of *learning objects*
- A *learning object* can be used within more than one *module* or *study block* [24, p. 64]

The *mENU* project adapted the structure from the first two levels as a starting point for designing the demonstrator, testing some courses of two different study programmes.

Credit Transfer

An already existing and specified European Credit Transfer System (ECTS) was appropriate for the creation of transparency of the study programmes, for “building bridges” between institutions and widening the choices available to students. The system made it easier for institutions to recognise learning achievements of students through the use of commonly understood measurements - credits and grades - and it also provided means to interpret national systems of higher education. But it needed adaptation in order to accommodate procedures related to the net based learning (NL) nature of study programmes.

A modular approach to construction of courses, applying the ECTS-NL, would enhance flexibility, cooperation and sustainability of dynamic study programmes. Clear advantages here can be stated as follows [24, p. 70-73]:

- *Standardisation*: Those designing a course or a module know in advance the exact amount of workload the total course shall have, and are guided in implementing it with a set of learning objects
- *Flexibility*: It is rather easy to develop interchangeable courses and modules that can be assembled, disassembled and re-used easily
- *Distributed development of courses and modules*: More than one institution can collaborate for the design, development and delivery of a study programme, a course or even a module
- *Adaptability*: a course or a module can be localised to diverse student populations or special target groups

Economy

ENU was meant to be a consortium administrated at the location of one of the ENU partners. Even if the experiences of models with rotating administration have not usually been very encouraging, this seemed to be a realistic first step [24, p. 86-88].

Funding

The financing for the ENU work would basically consist of the following sources:

- Annual remunerations, i.e. annual fees paid for the participation in the ENU network; may be paid as service fees between the HEIs etc.
- Membership fees on an annual basis
- Public subsidies from governments, EU projects, national / regional projects etc.
- Revenues from brokerage and fees, generated income, partially channelled back to the partners for their courses and services
- Other income, e.g. specific infrastructure project funds

One of the motives for joining the ENU would be to offer courses for a larger market, and perhaps make more revenues.

Costs / expenditure

This will consist of e.g. board costs, board working group costs, the ENU secretariat which includes

- personnel costs; leader, study administrator, technical support etc.
- office costs
- operational costs

Further on there would be development costs, where each institution is responsible for its own courses. Each institution must therefore cover these costs. Costs for joint development should be agreed upon in advance.

Concluding remarks

In the mENU project there was developed a lot of tools that would be helpful in constructing an ENU. To some extent the tools were used to create a demonstrator i.e. master programmes and courses. The programmes were still at the end of the project period running with students from around the World and with courses delivered by several institutions. The testing was then at an early stage, but has during the following years been further developed. One of the programmes, the *ICT in Learning*, is still running as a permanent, mainly net based, study at Stord/Haugesund University College in Norway, now announcing its tenth intake of students in 2012.

In the process of *designing tomorrow's education* and to *foster the European dimension*, the MENU partners strongly believed that *virtual European universities, based on partnership and cooperation with other universities*, represented a possible way to move forward. The above description outlines some of the main principles for a network model to create an ENU. More details and background for the suggestions can be found in the full report. The hope was that the work of the mENU team would be of benefit to the community and to institutions that embark on the development of a collaborative, virtual university.

A GLOBAL VIRTUAL UNIVERSITY

A Global Virtual University, UNU-GVU [30] was established as an online network of universities for sustainable development, and had a particular objective to meet the educational needs of the third world. GVU was officially launched in September 2002 at the World Summit on Sustainable Development in Johannesburg, SA, where the Norwegian Government, the United Nations University, UNU, [31] and the United Nations Environment Programme, UNEP, [32] pledged their support and partnership.

The United Nations University - Global Virtual University, UNU-GVU, [33] offered courses from different universities, e.g. a course on global environment issues based on the UNEP report "Global Environment Outlook", GEO [34], as part of a master degree programme, Global Environment and Development Studies, GEDS [35]. This was part of the MENU demonstrator, involving students and tutors from around the World, actually following the NITOL principles of joint development and collaboration for net based learning.

One of the most popular courses offered through the GVU network, was e-Teaching, actually a sequence of two courses, E-teaching I [36] and E-teaching II [37], both based on structure and content ideas from the NITOL course on Pedagogy in Open Learning, PiOL [38]. The main idea behind these courses was to qualify professors and teachers to develop and tutor e-learning - or net based - courses within their own subject areas. This was particularly important for the partners of GVU that should provide higher education for students in developing countries, in remote areas and at universities lacking capacity and competence in certain disciplines.

The concept and principles of open collaboration, mutual trust and joint efforts are fragile, but still a key issues for success at local, national and international levels. They turn out to be hard to carry over from the initial NITOL partnership to other HE institutions. Even at the founding institutions, most of the basic principles in NITOL have suffered shifting support.

SUMMARY AND RECOMMENDATIONS

Brief summary of experiences

Experiences from the above described projects seem to indicate that the Millennium was too early for most academic environments to accept all the new concepts that made up the foundation for a collaborative virtual university:

1. Net based higher education, students not necessarily on campus
2. Sharing of knowledge, material and students
3. Acceptance of competence, courses and credits from partner institutions

The maturity within the institutions, regarding the use of ICT in education, implementation of ECTS and the willingness to create courses to be used over the Internet, varied considerably. There was still a way to go. Now, nearly 10 years later, experiences show that this maturing and readiness improves. But still there are hurdles to overcome.

Past experiences indicate that Collaborative Virtual Universities face serious challenges: e.g. in the following areas:

- Establishing and implementing a detailed and mutually acceptable partnership agreement
- Setting up an organisational framework for
 - recognition of competence, courses, credits etc.
 - similar or compatible technology and learning environment,
 - a common quality assurance system, a QAS
 - economy, including fees, common expenditures
- Resolving national and institutional differences related to degrees, credits, grades etc.
- Sharing and allocation of responsibilities

The demonstrator, or user trials, with joint master study programmes in MENU, revealed that local and national regulations prevented some of the partner institutions to participate. Even though the institutional leaders had signed partnership agreements that included this kind of joint practice, some institutions were bound by own or national regulations that did not e.g. allow participation in courses by students who were not present on campus, or they could not accept exams or credits obtained from other institutions. In a few cases the project was able to over-rule this kind of objections by referring to the signed partnership agreement.

Based on the experiences from NITOL, MENU and Gvu there seem to be some central items that should be adhered to. These are presented as point of advice below. We still believe that the idea of collaboration between institutions for better quality, more efficient and sustainable net based study programmes with simpler access, particularly for people who are not in a position to stay on campus to obtain higher education.

Recommendations

For academics and leaders who may embark on new projects and attempts to implement a collaborative virtual university, CVU, a list of hints to avoid the most obvious stumble blocks, will hopefully be of some help. These are a few observed recommendations along the road.

Setting up the framework:

- Choose partners whom you already know as professionals, preferably making up a team with complementary competences
- Start with few partners and do not involve all faculties and departments from the very beginning. Let the network expand gradually within your own institution
- Make sure that every partner understands what you are planning to do together
- Define area(s) of content, professions, target groups etc that you are going to serve within your CVU
- Have important principles and regulations settled in a partnership agreement, signed at both administrative and project level

Running the CVU:

- Keep focus on the learning environment, e.g.

- Allow for varying and different pedagogical approaches
- Facilitate for efficient & deep learning
- Learning is an active, individual process – also in groups and on the net
- Blended learning may be a relevant alternative in some cases, with physical seminars if possible
- Training of personnel is important, both professors, tutors and service personnel
- There may be extra costs involved, particularly at early stages. Try to allocate extra funding. Internally or externally, to help transition to new methods
- New technology appears all the time. So be careful not to commit yourself or your partners to only one set of technology or software, but have open discussions about changes.

Taking these - and other - pieces of advice into account, it should hopefully be possible to implement more CVUs for the benefit of future learners.

REFERENCES

- [1] *Wikipedia, the free encyclopaedia*. Retrieved 14.12.2011, from <http://en.wikipedia.org/wiki/>
- [2] OU-UK. *Open University - UK*. Retrieved 14.12.2011, from <http://www3.open.ac.uk/about/>
- [3] OU-NL. *Open Universiteit Nederland*. Retrieved 14.12.2011, from <http://www.ou.nl>
- [4] FVU. *The Finnish Virtual University*. Retrieved 14.12.2011, from <http://www.virtuaaliyliopisto.fi/en/index.html>
- [5] CVU. *Canadian Virtual University*. Retrieved 14.12.2011, from <http://www.cvu-uvic.ca/english.html>
- [6] OU-Au. *Open Universities Australia*. Retrieved 14.12.2011, from <http://www.open.edu.au/>
- [7] NITOL (2009): Haugen, H.; Ask, B.; Hjeltnes, T.; Staue, A.: 15 years as pioneers within net based learning, TISIP 2009
- [8] Stord/Haugesund University College, Norway; SHUC,. Retrieved 14.12.2011 at <http://www.hsh.no/english.htm>
- [9] UiA: University of Agder retrieved 14.12.2011 at <http://www.uia.no/en>
- [10] Engineering, at Sør-Trøndelag University College (STUC), retrieved 14.12.2011 at <http://hist.no/english/>
- [11] Institute of Informatics at Norwegian University of Science and Technology (NTNU), retrieved 14.12.2011 at <http://www.ntnu.edu/>
- [12] Maribu, G. (1999). Utvikling av NITOL 1994-98, Årsmelding for TISIP 1999, Norway

- [13] NITOL (1996). The Administrative Concept of NITOL, 1996, Internal Document
- [14] Ask, B. (2004) Collaborative Virtual Universities - a Challenge for Higher Education Institutions. (Not published)
- [15] Norwegian Network University, NVU, retrieved 14.12.2011 at <http://www.nvu.no/nvu.php>
- [16] Haugen, H., & Ask, B (2005). From R&D Project to Virtual Universities. In Howard, C., Boettcher, J.V., Justice, L., Schenk, K., Rogers, P.L., & Berg, G.A. (Eds.), *Encyclopedia of Distance Learning*: Idea Group Reference, Hershey, PA
- [17] MECPOL - Models for European Collaboration and Pedagogy in Open Learning: <http://www.aitel.hist.no/prosjekter/ekstern/mecpol/>
- [18] Do-ODL - Dissemination of Open and Distance Learning: <http://www.aitel.hist.no/prosjekter/ekstern/doodl>
- [19] EC - EuroCompetence: <http://www2.tisip.no/engelsk/ec/>
- [20] MENU - Model for a European Networked University for e-learning, <http://www.hsh.no/menu>
- [21] QUIS - Quality, Interoperability and Standards in e-learning: <http://tisip.no/faces/public/forskning/index.jsp?ex=1&ink=prosjektatalog#QUIS>
- [22] EU Commission (2001), eLearning - Designing tomorrow's education: http://europa.eu/legislation_summaries/education_training_youth/lifelong_learning/c11046_en.htm
- [23] The eLearning Action Plan: *Designing tomorrow's education*, COM(2001) 172 final, Brussels, 283.2001. Retrieved 14.12.2011, from <http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=COM:2001:0172:FIN:EN:PDF>
- [24] MENU-Team (Eds.). (2004), Report WP 4a: *Model for ENU* retrieved 15.12.2011 from http://ans.hsh.no/lu/inf/menu/final/wp/model_menu_final.pdf
- [25] Ask, B., Haugen, H., Hjeltnes, T., & Staupe, A. (2001). *MENU: Model for a European Networked University, Project proposal*. HiA, HSH, HiST, NTNU. Retrieved 15.12.2011, from <http://ans.hsh.no/lu/inf/menu/protected/Annex%203.doc>
- [26] Haugen, H., & Ask, B. (2003, 8-9 May 2003). *The MENU Project : Model for a European Networked University for E-Learning*. Paper presented at the International Conference on Network Universities and E-Learning. Valencia
- [27] MENU-Team (Eds) (2004), Report WP4a: *Model for ENU - executive summary*, retrieved 15.12.2011 at http://ans.hsh.no/lu/inf/menu/final/wp/MENU_folder.pdf
- [28] MENU-Team (Eds) (2002), Report WP 1c: *Preliminary organisational plan of ENU*, retrieved 15.12.2011 at http://ans.hsh.no/lu/inf/menu/final/wp/org_plan_ver2_1.doc
- [29] MENU-Team (Eds.). (2004), Report WP2b: *Quality Assurance*, retrieved 15.12.2011 at http://ans.hsh.no/lu/inf/menu/final/wp/QAS0202c1_bodils_siste.doc
- [30] UNU-GVU: United Nations University – Global Virtual University: <http://dev.grida.no/gvu/pdf/brochure.pdf> (viewed Oct. 2011)
- [31] UNU: United Nations University, retrieved 17.12.2011 <http://www.unu.edu/>
- [32] United Nations Environment Programme, UNEP, retrieved 17.12.2011: <http://www.unep.org/>
- [33] Gvu: Global Virtual University, retrieved 17.12.2011: http://www.virtualcampuses.eu/index.php/Global_Virtual_University
- [34] GEO: Global Environment Outlook (2003). <http://www.grida.no/publications/other/geo3/?src=/geo/geo3/>
- [35] Global Environment and Development Studies, GEDS <http://www.globdev.org/files/U%20of%20Agder%201%20IS415%20Study%20Guide.doc>
- [36] E-teaching 1, http://www.uia.no/no/portaler/studietilbud/etterog_videreutdanning/e-teaching_1
- [37] E-teaching 2: <http://www.uia.no/en/content/download/84272/1400923/file/E-teaching+2+course+description.pdf>
- [38] Pedagogy in Open Learning, PiOL <http://www.aitel.hist.no/prosjekter/ekstern/mecpol/catalogue/pedopenlearning.htm>