COURSE MATERIAL
COMMENTS 59
REPORTS
RESEARCH REPORTS

Juha Heikkilä

VIRTUAL COURSES ON SUSTAINABLE DEVELOPMENT IN BALTIC UNIVERSITIES

Considerations and recommendations for action

TURUN AMMATTIKORKEAKOULU
TURKU UNIVERSITY OF APPLIED SCIENCES

COURSE MATERIAL
COMMENTS 59
REPORTS
RESEARCH REPORTS

Juha Heikkilä

VIRTUAL COURSES ON SUSTAINABLE DEVELOPMENT IN BALTIC UNIVERSITIES

Considerations and recommendations for action

TURUN AMMATTIKORKEAKOULU
TURKU UNIVERSITY OF APPLIED SCIENCES

COMMENTS FROM TURKU UNIVERSITY OF APPLIED SCIENCES 59

Turku University of Applied Sciences
Turku 2010

ISBN 978-952-216-153-6 (printed)
ISSN 1457-7941 (printed)
Printed by Tampereen Yliopistopaino – Juvenes Print Oy, Tampere 2010

ISBN 978-952-216-149-9 (PDF)
ISSN 1459-7756 (electronic)
Distribution: http://loki.turkuamk.fi

SUMMARY

Juha Heikkilä
Virtual Courses on Sustainable Development in Baltic Universities – Considerations and recommendations for action
Comments from Turku University of Applied Sciences 59
27 p.
Turku: Turku University of Applied Sciences, 2010

ISBN 978-952-216-153-6
ISSN 1457-7941

ISBN 978-952-216-149-9 (PDF)
ISSN 1459-7756 (electronic)

Institutes of higher education in the Baltic Sea region have the responsibility of promoting sustainable development. This fact poses new challenges to these institutions and increases pressure for networking. Information networks as well as social media services that are in a continuous process of development are good tools for increasing and deepening cooperation. The joint use of on-line teaching material is one form of cooperation. However the joint use of material is hindered by technical and informational obstacles. Many institutes of higher education are also lacking in English language e-learning material, which makes increasing joint use especially desirable.

The report at hand includes information on all the sustainable development related virtual courses that were discovered in questionnaires conducted in 2007 and 2010. Altogether 38 courses were discovered. All aspects of sustainable development are well covered apart from the cultural aspect, which has been given less attention compared with the other aspects. The main rule is that all course material can be utilized by other institutes of higher education, however due to technical obstacles the transfer may not always succeed. The questionnaires also showed that virtual courses already apply a multitude of learning management systems. Exploitability should be taken into consideration already at the planning stage and open access social media services thus favored.

In future, the respondents hoped to receive information on sustainable development related virtual courses on the Baltic University Programme network website. Other information related to sustainable development e-learning could also be compiled on the website. Doing this would enhance both the quality and quantity of e-learning.

Following material could be compiled on the website:

- a link directory of the national websites which compile information on regional virtual courses
- information on the sources of funding intended for educational development
- a list of sustainable development e-learning courses in English that can be updated by the course implementers instructions and recommendations on e-learning planning and implementation.

CONTENTS

1 INTRODUCTION

Baltic Sea region institutes of higher education are facing obligations to promote sustainable development from many directions. This poses significant challenges for the expertise of these institutes. Today many problems require networking of employees due to the complexity and obscurity which make these problems hard to solve for people, or even for organizations. (Murtonen 2004, 77). Promoting sustainable development can thus succeed best by increasing cooperation among and between the experts and institutes of higher education. Baltic University Programme network promotes and maintains networking in the Baltic Sea region. Approximately 225 universities and institutes of higher education are members of the network (Baltic University Programme network website).

Information networks provide new opportunities for widening and deepening cooperation between experts at the institutes of higher education in the Baltic Sea region and hence even more diverse education. Distributing sustainable development related e-learning material and possibly also producing such material among universities in the area would present a good way of cooperating with a reasonable amount of effort.

The report at hand is about a project by Turku University of Applied Sciences that aimed to establish the current availability and possibilities of use of the English language, sustainable development related e-learning material, as well as think up possibilities for raising the awareness and use of these materials. The questionnaire that was aimed mainly at English language material due, on one hand, to the constant lack of these types of materials and on the other hand on the fact that these materials are more easily exploitable at the institutes of higher education in the whole Baltic Sea region.

Sustainable development related English language virtual courses that are available in the Baltic Sea region institutes of higher education were mapped out during the project (appendix 2 and 3). This compilation will hopefully promote cooperation among the institutes of higher education, help plan new virtual courses and encourage the joint use of e-learning materials. Among the results are also the observations, conclusions and recommendations for action presented in chapter 6.

2 SUSTAINABLE DEVELOPMENT IN HIGHER EDUCATION

It can be said that the 1972 UN conference in Stockholm began an era of increased worldwide political interest in the welfare of nature. Already then one of the topics covered at the conference was training in the environment. The term sustainable development was first coined in the so called Bruntland report of 1987, which gave way to multiple international follow-up conferences and processes. While the 1992 Rio summit focused mainly on defining global environmental problems, the Johannesburg summit ten years later actually produced concrete propositions on how to solve these problems. Among the summit´s most significant results was a plan of implementation, where the most essential key strategies for promoting sustainable development were stated. Promoting sustainable development by way of education was among one of these strategies. (Melén-Paaso 2007, 111–112.)

Two years prior to the Johannesburg summit, in 2000, the Baltic 21 programme was already being prepared in the Baltic Sea region when the ministers of education ratified the Haga declaration. (Isoaho 2002, 31). In the declaration, education was deemed a part of the Baltic 21 programme and a critical factor in promoting sustainable development in the Baltic Sea region (Isoaho 2002, 56). The final approval of the programme was preceded by a survey on sustainable development education in each Baltic Sea region state (Isoaho 2002, 31). Finally, the Baltic 21 programme was adopted to use in 2002 (Melén-Paaso 2007, 3).

Two networks have supported the goals set by the Baltic 21 programme for universities and other institutes of higher education: Baltic University Programme (BUP) and Baltic Sea Sustainable Development Network (BSSDN). The goal of these networks has been increased international and regional cooperation in education and thus affecting the state of the Baltic Sea region environment. Problems related to sustainable development have been deemed as great as to require expertise found in international networks. (Lindroos 2007, 96–99.) This project has cooperated with BUP and earlier also with BSSDN, which has since come to a conclusion in 2007. Institutes of higher learning have since transferred under the BUP network.

3 SUPPORTING COOPERATION WITH VIRTUAL COURSES

In the previous chapter it was stated that international networks are of assistance in developing higher education and thus at the same time also facilitate responding to the challenges of sustainable development. (Lindroos 2007, 98). Among other joint activities it is recommendable that joint use of materials is promoted within the networks and between them whenever possible. This would further increase cooperation between the institutes of higher education. Free mobility and exploitability of course material between the institutes of higher education could help yield even better quality and more diverse education than before. As the cooperation deepens between the institutions of higher education, it will also be possible to increase the number of jointly implemented courses.

The easiest and most affordable starting point for increased joint use is educational material for virtual courses, e-learning material. E-learning usually refers to all education that at least to some extent exploits the Internet. (Silander & Koli 2003, 7). In addition to e-learning, virtual learning and distance learning are some of the main concepts in the subject area, which however all refer to nearly the same thing, only with slightly differing perspectives. The implementation of e-learning is nearly always connected to learning management systems or e-learning environments, which enable studying regardless of time or place. (Silander & Koli 2007, 102).

The distribution and joint use of sustainable development related e-learning material is one way of increasing cooperation that promotes sustainable development. Social media services are under constant development, thus presenting new opportunities for sharing materials and overcoming possible problems with technical compatibility when properly applied. Like many organizations before, the institutes of higher learning should also determine the possibilities of communal content provision both within the institutes of higher education and together with other institutes by making good use of the network. (Heinonen 2009, 8). Doing this would provide better opportunities of ever deepening cooperation for experts.

According to a report at the Turku University of Applied Sciences, mostly technical and informational factors present the most significant barriers for the joint use of e-learning material, as presented in chapter 6. In some cases, however, people's attitudes and old habits may also present obstacles. The report at hand recounts the results of a project, which aimed to canvass the current supply of sustainable development related, English language e-learning material. This course information is analyzed in chapter 5.1 by mapping out possible gaps in supply and by establishing possibilities for utilization at other institutes of higher education in the Baltic Sea region.

4 BACKGROUND AND GOALS OF THE PROJECT

Sustainable development related, English language e-learning material was already mapped out at Turku University of Applied Sciences in 2007 when the sustainable development degree programme received a grant from the Baltic 21 E network for surveying the matter. Due to several reasons, the work was delayed and only came to a conclusion in 2010. Chapter 4.1 recounts the background and phases of the project. In chapter 4.2, the goals set for the project and expected results are examined.

4.1 PROJECT PHASES

On the January 23rd, 2007, the steering group of the Baltic 21 E network held a meeting where it was decided that all virtual courses related to sustainable development should be compiled and informed on. At the same meeting, the steering board approved the project proposal by Turku University of Applied Sciences. In the proposal it was agreed to make a compilation of the e-learning courses related to sustainable development.

During 2007, the sustainable development degree programme at Turku University of Applied Sciences conducted a survey on English language e-learning material on sustainable development. The questionnaire was sent to the institutes of higher education belonging to the BSSDN network (Baltic Sea Sustainable Development Network). Unfortunately, the response rate was rather low, leaving only eight courses that filled the criteria. Analysis of data was left unfinished due to the retirement of the project manager and Turku University of Applied Sciences applied for complementary funding for the year 2008 in order for the project to be completed. However, in unison with the financier it was decided that the funding be transferred to 2009. The work was finally completed in February 2010. The delay has been caused by the staff replacements of the sustainable development degree programme at Turku University of Applied Sciences.

Since data collected in 2007 hasn't yet been analyzed it has been included in this final report. However the 2007 and 2010 questionnaires differ from each other to such an extent that comparison is not possible, let alone sensible. Comparison is also made more difficult by the fact that the two questionnaires were aimed at different target groups and the BSSDN network no longer exists. The network members were transferred under BUP (Baltic University Programme) during 2007 and 2008. On this account, the 2010 questionnaire was aimed at the BUP distribution list. The 2007 data is thus only used to supplement the 2010 data when applicable.

4.2 AIMING AT THE JOINT USE OF E-LEARNING MATERIAL

There is constant lack of both relevant and current English language educational material at several institutes of higher education. The goal of the project was to bring most of the English language, sustainable development related material into public knowledge and common use. Mapping out already available and exploitable English language e-learning material in different subject areas of sustainable development has therefore been the main project output.

In appendixes 2 and 3 one can find presented in context to each course information on the organizing institution, the sustainable development point of view of the course and the number of credits earned per course (important for crediting at the Baltic Sea region institutes of higher education). Compiling course information may also help increase cooperation in teaching at the Baltic Sea region institutions of higher education. Possible targets of development in the course supply are presented in chapter 5.1. These gaps in supply refer to lack of current e-learning material in relation to certain topics. In the same chapter, other topics that emerged from the questionnaire are analyzed.

5 QUESTIONNAIRE RESULTS

The 2010 questionnaire (appendix 1) was conducted as a Webropol form. Webropol is an online solution to conducting surveys. The questionnaire was titled "Questionnaire of e-learning courses on sustainable development". The form applied the so-called contingency questions that help avoid asking the questions from people who do not apply to them. In this particular questionnaire, contingency questions were used to limit the number of pages that had questions on particular courses.

Based on his/her choices, the respondent could answer questions on at least one and at most five courses. All respondents were shown at least the following questionnaire sections:

- respondent's contact details
- information on the first course (course name, number of credits etc.)
- preferred website from which information could be found on English language courses related to sustainable development
- possible comments on the questionnaire.

The questionnaire was distributed in cooperation with Uppsala Centre for Sustainable Development (CSC Uppsala), where the Baltic University Programme (BUP) network secretary also resides. CSC Uppsala sent the questionnaire together with an e-mail cover letter on January 29, 2010 to a BUP mailing list, which reaches around 750 recipients. On the same day, CSC Uppsala published the cover letter and the questionnaire on the BUP web site. Turku University of Applied Sciences sent a reminder of the questionnaire on the BUP mailing list on February 8, 2010, as well as another on the closing date, February 10, 2010.

Only limited information is available on the method of implementation of the previous, 2007 questionnaire. The results have, however, been documented and will be analyzed in chapter 5.1.

All in all 34 people responded to the 2010 questionnaire, which equals approximately every 20th questionnaire receiver. When the 2007 questionnaire results are included, it is noteworthy that replies were received from nearly every Baltic Sea area state (table 1.). Almost all replies in 2007 came from Finland; however in the next, 2010 questionnaire, replies received were rather evenly distributed throughout the whole Baltic Sea area.

According to the questionnaire software statistics, in 2010 163 receivers in addition to the 34 who actually answered the questionnaire opened the questionnaire link but did not reply. Several possible reasons for non-response can be found – haste, the desire to merely have a glance at the questionnaire or the feeling of unsuitability for the respondent. On the basis of one reply it was found that not everybody on the BUP mailing list actually works at an institute of higher education, which ruled out some of the recipients. One may also view the small number of responses as an indication of the fact that courses which actually fulfill the questionnaire criteria are simply not available, at least not more than the ones already found. The questionnaire, however, was concerned with mapping out only courses related to sustainable development in the English language.

TABLE 1. *The nationality of respondents.*

State	Respondents (n = 42)
Finland	13
Belarus	6
Latvia	5
Sweden	4
Poland	4
Russia	4
Lithuania	3
Denmark	1
Ukraine	1
Estonia	1

During the questionnaire study, the project manager received e-mails e.g. explaining non-response and expressing interest in the study results. The last question on the questionnaire inquires comments on the questionnaire itself. Comments from the questionnaire as well as information received on these e-mails are analyzed in chapter 5.2.

5.1 RESPONSES REGARDING COURSE MATERIAL

In the 2010 questionnaire altogether 30 such virtual courses were cited by the respondents that had material in English and from the respondents' point of view were related to sustainable development. Some respondents cited the same course, some cited more than one course and some none at all, which explains

the fact that there were less courses cited than actual respondents. All courses cited in the 2010 questionnaire are compiled in appendix 2. Courses cited in the 2007 questionnaire are presented in appendix 3.

Appendixes 2 and three are aimed at teachers and others concerned with the subject as a tool for finding appropriate e-learning material. Some of the 2010 questions were actually devised for the purpose of locating appropriate material with less effort. For this reason it is not reasonable to analyze all questions presented in the questionnaire in the chapter at hand. When investigating 2007 questionnaire results it should be noted that the questionnaire was conducted a few years ago, which means that some of the courses mentioned may no longer be part of the curriculum. These courses have, however, also been included in the analysis, which makes the number of courses analyzed add up to 38 (30 + 8).

Dimensions of sustainable development and virtual courses

In the form it was inquired which dimension of sustainable development the course cited by the respondent was related to. The question was presented as a multiple-choice question, so the respondent was able to choose one or several options. Responses are presented on table 2.

TABLE 2. *Course perspective divided by the dimension of sustainable development.*

Dimension	Number of references (n = 81)
Egological	24
Economical	23
Poltical	22
Cultural	12

Half the courses, 19, were associated with only one dimension of sustainable development, mostly the ecological dimension. The observation that the cultural dimension was always cited together with another dimension and never alone is worth noting. Out of all the courses, all four dimensions were cited in five, three dimensions in six courses and likewise two dimensions in six courses. Based on these observations it can be stated that different dimensions of sustainable development are rather well represented in the courses reported. The cultural dimension alone receives less attention.

The exploitability of e-learning material at other institutes of higher education

The measure of free exploitability of the e-learning material associated with the courses was one of the subjects addressed in the questionnaire. There were six alternatives given in the questionnaire, however on table 3 two similar alternatives have been combined. A short open-ended question for the Internet address and explanation was connected to two of the alternatives. Since e-learning material availability was not studied in the 2007 questionnaire the responses only apply to courses cited in 2010.

TABLE 3. *Course material availability at other institutes of higher education.*

Alternative	**Number of choices (n = 33)**
Freely available on demand/on the Internet	13
Only for own organization	11
None of the presented alternatives	7
Available on certain terms of use	2
Available with charge	0

By combining two similar alternatives, the greatest number of responses received the alternative by which course material is either freely available on demand or on a designated web site. Out of five alternatives in second came the one that states that course material is only available for those at the course planner's own organization. This is likely to be due to technical reasons such as the course material being available in some learning management system alone, hence not being easily transferable outside the organization. However, the exact reason was not inquired, which means there could be alternative explanations for the existence of this problem.

The alternative which states that none of the presented question alternatives represented the respondent's opinion also received quite a few responses. This question was, however, in many cases slightly misunderstood, since nearly all the open answers that were given together with this question could have been placed under one of the other alternatives. If these responses are transferred under other sections of the questionnaire, the alternative which notes on the free exploitability of course material gains even more choices.

The alternative which states that e-learning material is available to other institutes of higher education on certain conditions was cited only twice. The quality of these conditions was not inquired in the questionnaire and thus has to be specified by contacting the course contact person. It should also be noted that none of the respondents mentioned that course material would be available for purchase. Web site compiling virtual courses at the Baltic Sea region institutes of higher education

In the 2010 questionnaire, a question was also posed on the desired website the respondents would like to use in finding information on all the virtual courses in the Baltic Sea region that are related to sustainable development and conducted in English. The question was open-ended, however the responses were classified as presented on table 4.

TABLE 4. *The most appropriate web site for compiling virtual courses.*

Site	**Number of references (n = 18)**
Baltic University Programme –network website	7
Institutes own website	6
Any other ap-propriate web-site	3
Some other manner	2

The Baltic University Programme network website was the most favored. Its usability was commended and one respondent told he hoped the website would generally contain more information on e-learning. Institutes' own websites were also regarded appropriate for compiling the virtual courses. One respondent reported he would like to receive information on virtual courses by email.

From the point of view of those interested in virtual courses that are related to sustainable development, the simplest option would be to compile the required information on the Baltic University Programme network website. By including a watchdog service in the network website, those interested could also get information by email. Once updated, the information would be automatically sent by email to those logged in the service.

The scale of virtual courses

In both the 2007 and 2010 questionnaires it was inquired, how many credits would the students gain from each course. Due to the fact that in the 2007 questionnaire, this question was posed open-ended, the responses were merged with the classification used in the 2010 questionnaire. The results are presented on table 5. The results show that the courses most cited were over ten credit packages. However, it can be stated that no evident gaps in the supply are to be found that would require special attention in the future.

TABLE 5. *Credits gained for virtual courses.*

Credits	Number of options (n = 27)
1 - 2	5
3 - 5	6
6 - 10	5
yli 10	11

Learning management system for the virtual courses

In both the 2007 and 2010 questionnaires the respondents were asked to cite the learning management system that the course applied. Out of 21 alternatives, "some other" received most (9), and "Moodle" second most citations. Other learning management systems received only occasional references. Based on these results, it can be concluded that either the questionnaire didn't include all possible learning management systems available, or that most courses are implemented in some manner other than actual learning management systems. It is possible that material has been compiled on the institutes' own websites for example. Social media services are also constantly evolving and offer a platform for implementing virtual courses, a fact which may explain the divided responses.

5.2 OTHER OBSERVATIONS ON THE QUESTIONNAIRE

A project contact person who could be contacted if necessary was mentioned in the questionnaire cover letter. The contact person received 18 emails, out of which 12 stated that no appropriate courses were available at the respondent's institution. In the same context many respondents however expressed their interest on the questionnaire results and revealed that virtual courses in English and related to sustainable development were being planned. In one message, the responded hoped that the results would support virtual course planning. In another message it was emphasized that e-learning, especially motivating those students with low self-discipline, takes up a lot of the teachers' time.

One of the emails informed about a website which compiles information on Estonian virtual courses at vocational schools as well as the institutes of higher education. (http://www.e-ope.ee/en). In the same message, the respondent reported that the courses have not been organized into groups and due to the lack of time it is not possible to search for courses that match the questionnaire criteria. Thus the receiver was unable to answer the questionnaire. The Finnish Online University of Applied Sciences –portal, which compiles information on all virtual courses at the Finnish universities of applied sciences, is also known to the implementer of this report (http://www.amk.fi/en/index.html). Other similar sites are surely available in the Baltic Sea region and it would be recommendable to collect a link directory on these sites on the Baltic University Programme network website.

Some of the questionnaire responses were such that didn't exactly answer the question at hand. The responses however elicited some matters on the subject. Some respondents weren't able to cite any appropriate virtual courses but anyway filled in a part of the questionnaire in order to gain access to the questionnaire results. Other responses cited a virtual course and relevant information but later on in the form revealed that the particular course was only at the planning stage. One respondent reported on an extensive sustainable development related virtual course which was intended for implementation also in English. Problems with financing had, however, hindered implementing these plans.

On the last page of the questionnaire respondents were given a chance to comment on the questionnaire form itself. Several respondents expressed their interest in the results of the questionnaire also in this context and requested whether the virtual courses revealed by the questionnaire could be listed in the final report. Partly as a result of these comments the course information was compiled to annexes 2 and 3. Another reason for interest in the results was the prospect of finding partners in cooperation. The comments also highlighted the importance of such reports as the one at hand to people who are only planning their own virtual education.

6 CONCLUSIONS AND RECOMMENDATIONS FOR ACTION

This final report compiles results on questionnaires conducted at Turku University of Applied Sciences in 2007 and 2010. The questionnaires were aimed at canvassing the contents and characteristics of the English language, sustainable development related virtual courses as well as finding possible gaps or subject areas that currently available courses don't cover. In this chapter, conclusions are made on the questionnaire results and possible improvements presented for better informing and the joint use of e-learning material. However, prior to these findings, a few commented on the project itself.

All in all 42 responses (8+34) were received to the 2007 and 2010 questionnaires. Numbers of responses varied to such a degree that based on these questionnaires it is not possible to draw conclusions, for instance, on the increase or decrease in the subject areas concerning sustainable development virtual courses. Possible gaps in supply were analyzed in regard to the dimensions of sustainable development as well as the extent of the courses. For an extensive report, the number of responses received should have been higher. Possible reasons for the lack of responses have been discussed in chapter 5. The most significant yield of the report is the suggestions on how information on the English language, sustainable development related virtual courses could better serve those interested. Increasing available information could for example encourage and aid those interested in implementing new virtual courses.

The most important findings, conclusions and suggestions of this report are listed below. Several suggestions related to the same topic have been presented in section five.

1. The dimensions of sustainable development are well represented in the courses cited. Many of the courses include more than one of these dimensions. The cultural dimension has, however, received less attention than the other dimensions.
2. The course extent varies from one credit all the way to ten credit packages. Considering the extent of the courses the supply is, however, well balanced and no distinctive gaps could be found.

3. Course material is mostly freely available for use by other institutes of higher education. Due to technical and other reasons, however, a significant amount of material remains available for only the implementing organization. By making use of open access (social media) services these technical barriers could be conquered, a fact which should already be considered while planning the course. At the same time, copyright must naturally be taken into consideration.

4. There are countless numbers of learning management systems and other technical solutions available, which complicates the exploitability of e-learning material across the borders of institutes. By utilizing open access social media services, e-learning material availability would be improved at other institutes of higher education and the mobility of teachers across these institutes would become easier.

5. a) A data packet on planning and implementing virtual courses should be compiled on the Baltic University Programme network website. It would be worthwhile to utilize an instrument of social media in transmitting information on the site updates to those logged in the service for example by email. This service would, among other things, promote the increase and quality improvement of e-learning.

   b) Planning and implementing virtual courses is considered challenging and there is a need for support. A data packet would answer this particular need.

   c) There are websites that already compile information on virtual courses in the Baltic Sea region states. At best, information is available on hundreds of virtual courses. These sites could be compiled in a link directory on the Baltic University Programme network website.

   d) Problems with financing may present an obstacle to the implementation of virtual courses. Information on possible funds intended for educational development could also be compiled and be presented together with the virtual course data packet.

   e) Summaries of virtual courses appendixes 2 and 3 benefit those planning courses as well as those who are searching for possible cooperating partners. In future it is recommendable that those implementing virtual courses could update their own course-specific information on the Baltic University Programme network website.

   f) Virtual courses seem to be somewhat concentrated in certain countries and their institutes of higher education. In many countries, these virtual courses are only being just planned. The data packet could help level these regional discrepancies.

In future, the goal is to be set at the quality development of English language e-learning material as well as increasing the number of courses available. In order for the English language e-learning material related to sustainable development to become readily and easily available for other institutes of higher education, it is also important to invest in the removal any remaining obstacles. Since there is constant lack of relevant and current educational material in English, achieving the afore mentioned goals would promote sustainable development in the Baltic Sea region and serve students interested in sustainable development themes.

SOURCES

Baltic University Programme 2009. About BUP. Viitattu 17.2.2010 http://www.balticuniv.uu.se/index.php/About-BUP.

Heinonen, S. 2009. Sosiaalinen media – avauksia nettiyhteisöjen maailmaan ja vuorovaikutuksen uusiin muotoihin. TUTU-eJulkaisuja 1/2009.

Isoaho, S. 2002. Education for sustainable development in universities and polytechnics. Helsinki: Opetusministeriö. Department for education and science policy publication series 89.

Lindroos, P. 2007. From National to Global Cooperation – the Baltic Sea Region as an Example. In T. Kaivola & L. Rohweder (eds.) Towards Sustainable Development in Higher Education – Reflections. Publications of the Ministry of Education 2007:6. Helsinki University Press, 96–100.

Melén-Paaso, M. 2007. The Paradigm of Sustainable Development and Education – Reflections on the Past and on the Future. In T. Kaivola & L. Rohweder (eds.) Towards Sustainable Development in Higher Education – Reflections. Publications of the Ministry of Education 2007:6. Helsinki University Press, 111–114.

Murtonen, M. 2004. Motivaatio ja työtä koskevat käsitykset asiantuntijaksi kehittymisessä. Teoksessa P. Tynjälä, J. Välimaa, M. Murtonen (toim.) Korkeakoulutus, oppiminen ja työelämä – pedagogisia ja yhteiskuntatieteellisiä näkökulmia. PS-kustannus, Opetus 2000. WS Bookwell, 77–90.

Silander, P. & Koli, H. 2003. Verkko-opetuksen työkalupakki – oppimisaihiosta oppimisprosessiin. Helsinki: Finn Lectura.

APPENDIXES

APPENDIX 1. Questions posed in the 2010 questionnaire.

QUESTIONNAIRE OF E-LEARNING COURSES ON SUSTAINABLE DEVELOPMENT

1) Contact Information

- Respondents name
- Institution
- Faculty/ Department, Country

2) COURSE 1

- Name of the course
- Contact person
- Email address of the contact person

3) ECTS

- 1–2
- 3–5
- 6–10
- over ten

4) Target group

- undergraduate
- master's
- doctor's

5) Aspect of the course (choose one or more)

- ecological
- social
- economical
- cultural

6) Level of virtuality

- completely
- mostly
- partly

7) Learning management system

- ANGEL LMS
- ATutor
- Blackboard
- Claroline
- Desire2Learn
- Dokeos
- eFront
- ILIAS
- JoomlaLMS
- metacoon
- Moodle
- Pass-Port
- OLAT
- Optima
- Sakai-Project
- SharePointLMS
- StudyWiz
- University junction
- Scholaris Learning Gateway
- WebCT
- Some other

8) Is the e-learning material of the course (instructions, tasks, bibliography and other documents) only to be used at your organization or is it possible to utilize the material also at other Baltic University Programme organizations?

- The material is only for our organization
- The material is freely available by contacting us
- The material is available on certain terms of use
- The material is liable of charge
- The material is freely availabe on the internet. The address is:
- None of the listed options above, please explain:

9) – 40) COURSES 2-5

41) In which internet pages would you like to find the information on the e-learning courses related to sustainable development and conducted in English? Please explain why.

42) Any comments on this questionnaire?

APPENDIX 2. English language, sustainable develpoment related virtual courses at institutes of higher education that are part of the Baltic University Programme network (as presented by the 2010 questionnaire).

ECTS	Target	Aspect	Virtuality	LMS	Availability
Environment and sustainable development: University of Latvia, Environmental Science (Latvia)					
3-5	under-graduate	ecol. soc.	mostly	Moodle	freely available by contacting us
Integrated management / Climate change/ LA21: Union of Baltic Cities, Environmental Secretariat (Finland)					
-	-	ecol. soc. cul. econ.	mostly	some other	freely available on the internet: www.localmanagement.eu
Baltic sea region. Cultures, societies, politics: Maria Curie Sklodowska University, International Relations (Poland)					
3-5	under-graduate	soc. cul. econ	partly	Blackboar	the material is only for our organization
Sustainable water management: Uppsala University, Dept of Earth Sciences (Sweden)					
over ten	master's	ecol. soc. econ.	completely	some other	freely available by contacting us
Environmental education for sustainable development: International Sakharov Environmental University, UNESCO chair (Belarus)					
6-10	master's	ecol.	partly	some other	freely available by contacting us
European trans-border cooperation: Belarusian State University, International Relations/International Economic Relations (Belarus)					
1-2	under-graduate	econ.	mostly	Univ. junction	freely available by contacting us
Environment and health: Kaunas university of medicine, Department of environmental medicine (Lithuania)					
6-10	under-graduate	ecol.	partly	-	-
Lakes as pedagogical tools: Erken Laboratory, Dept of Ecology and Evolution, Uppsala univ. (Sweden)					
3-5	master's	ecol.	partly	some other	the material is only for our organization
SWM: Russian Hydrometeorological University, Fishery oceanology (Russia)					
3-5	under-graduate	ecol.	partly	-	the material is only for our organization
Sustainable agriculture & rural development, SARG: Economics & Management, Agr. & For. (Finland)					
over 10	under-graduate	soc. econ.	mostly	ATutor	the material is only for our organization

Archipelago sea – Baltic sea: Turku University of Applied Sciences, R&D (Finland)					
3-5	under-graduate	ecol. soc. cul. econ.	completely	some other	freely available on the internet: http://www.vihreapolku.info/kestava_kehitys/in_english/study_materials/archipelago_sea_-_baltic_sea
Environmental management in the tropics: Technical University of Denmark, DTU Environment (Denmark)					
6-10	master's	ecol. soc. econ.	partly	Moodle	please contact the contact person
Sustainable water management in the Baltic region: Uppsala Univ., Earth Sciences (Sweden)					
over 10	under-graduate	ecol. soc. econ. cul.	completely	some other	freely available bycontacting us
The sustainable Baltic region: Kaliningrad State Technical University, ichthyology and Ecology Department (Russia)					
	under-graduate	ecol. soc. econ. cul.	partly	some othe	the material is only for our organizatio
English in sustainable society: Ivan Franko National University of Lviv, International relations (Ukraine)					
1-2	undergraduat	soc. cul.	partly	Univ. junction	freely available by contacting us
Sustainable water management: The Belarusian State University of Transport, Ecology and Water Resources (Belarus)					
1-2	-	ecol.	completely	-	the material is only for our organization
Concepts of sustainability: Åbo Akademi University, Centre for Lifelong Learning (Finland)					
3-5	master's	ecol. soc. econ. cul.	-	Moodle	the material is available on certain terms of use
Analysis of soil and ambient air (in Latvian): University of Latvia, Faculty of Chemistry (Latvia)					
3-5	master's	ecol.	partly	some other	the material is only for our organization
Landscape ecology: International Sakharov Environmental University, Environmental management (Belarus)					
1-2	master's	-	mostly	ATutor	freely available by contacting us
Venture investment activity: BSU, International economic relations (Belarus)					
-	under-graduate	econ.	partly	-	the material is only for our organization
Sustainable Agriculture and Rural Development: University of Helsinki, Agriculture and Forestry, Department of Economics and Management (Finland)					
3-5	under-graduate	soc. econ.	partly	-	the material is only for our organization

Introduction to special education: University of Jyväskylä, Open University (Finland)					
6-10	under-graduate	soc. cul.	completely	-	-
A Sustainable Baltic Region: St-Petersburg State Polytechnical University, Civil Engineering & Applied Ecology (Russia)					
6-10	under-graduate	ecol. soc. econ.	partly	Moodle	freely available by contacting us
Sustainable Water Management: Uppsala University, The Baltic University Programme (Sweden)					
over 10	master's	ecol.	completely	some other	the material is available on certain terms of use
Mnor Programme: UniPID virtual studies: Åbo Akademi University, Centre for Lifelong Learning (Finland)					
over 10	master's	ecol. soc. econ. cul.	completel	Moodle	available on the internet: http://www.unipidvirtualstudies.fi/content/minor-programme
International economy: BSU, International economic relations (Belarus)					
-	under-graduate	econ.	mostly	-	the material is only for our organization
Sociology: University of Jyväskylä, Open University (Finland)					
over 10	under-graduate	soc. cul.	mostly	-	-
Psychology: University of Jyväskylä, Open University (Finland)					
over 10	under-graduate	soc.	completely	-	-
Gerontology: University of Jyväskylä, Open University (Finland)					
over 10	under-graduate	soc.	completely	-	-
Intercultural Studies: University of Jyväskylä, Open University (Finland)					
over 10	under-graduate	soc. econ. cul.	completely	-	-

APPENDIX 3. Courses at institutes of higher education which were part of the Baltic Sea Sustainable Development network (as presented by the 2007 questionnaire).

ECTS	Target	Aspect	Virtuality	LMS	Availability
Environmental sciences and education: Tallinn University, Natural Sciences (Estonia)					
3	under-graduate	-	50 %	-	-
National Parks of Finland: Turku University of Applied Sciences, Degree Programme in Sustainable Development (Finland)					
3	under-graduate	ecol.	90 %	-	-
Globalisation and corporate responsibility: Turku School of Economics, Marketing, economic and geography (Finland)					
5	under-graduate	econ.	100 %	Moodle	-
Pro healthy life: Turku University of Applied Sciences, Degree programme in sustainable development (Finland)					
3	under-graduate, master's	ecol. soc. econ.	100 %	-	-
Environmental marketing: Turku University of Applied Sciences, Economics (Finland)					
3	under-graduate	econ.	100 %	-	-
Environmental challenges: Turku University of Applied Sciences, Logistics (Finland)					
3	under-graduate	ecol.	100 %	Optima	-
Environmental risk assessment and management: Lahti University of Applied Sciences (Finland)					
-	under-graduate	-	100 %	-	-
Life cycle perspective and materials efficiency: Lahti University of Applied Sciences (Finland)					
-	-	-	-	-	-