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Design and Implementation of Online CMS Course

Development Project in Cooperation with FUAS

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Online learning and teaching has increased students' opportunity to study flexibly regardless of location. Online courses also allow teachers more flexible working, as they are not tied to a place. Modern technologies provide a wide range of options to use different interconnected system solution implementations. Online courses can be used to study in different kind of subjects. The subject of this Master's thesis was the new CMS online course design and implementation in the FUAS cooperation. FUAS is the joint coalition of three Universities of Applied Sciences including Lahti University of Applied Sciences (LAMK), Häme University of Applied Sciences (HAMK) and Laurea University of Applied Sciences (Laurea).

The starting point of the study was the FUAS collaboration need to develop a new online course offering all LAMK's, HAMK's and Laurea's students summer studies. The joint CMS online course was designed and implemented in cooperation with all three FUAS Universities of Applied Sciences. The teaching and learning environment for the CMS online course was Moodle, which is used in HAMK and LAMK. Other design and implementation tools of web-based learning equipment were Google Drive, which was used during the design for creating and editing shared files, and WebEx and Adobe Connect Pro, both of which are web conference applications offering several remote access abilities, such as e-meetings, e-learning and webinars. They are scalable to larger groups' use.

Three different CMS system options the students can learn in the course were selected: WordPress, Drupal and Concrete5. In addition, each participant got the basic knowledge of another CMS, CMSMadeSimpleen, in the individual assignment. The CMS-course pilot implementation was done in the summer of 2014. The course began in May and ended in August. The course was successfully completed by 15 students. The course included in addition to the individual tasks also a group project where the students carried out a new or renewed website fora client.

The course feedback on the students' experiences was collected at the end of the course. Also the teachers' design and implementation feedback was collected. Discussions and the stored documents done during the planning and implementation in addition to interviews provided source material for the study. Development proposals for a new implementation made on the basis of the results obtained are also provided. Cooperation saves the teachers' time and resources but not very significantly.

Keywords	CMS, Moodle, online course, LMS, e-learning, online learning

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Verkko-oppiminen ja -opettaminen on lisännyt opiskelijoiden mahdollisuutta opiskella joustavasti paikasta riippumatta. Verkkokurssien myötä myös opettajat voivat työskennellä yhä joustavammin, eivätkä he ole paikkaan sidoksissa. Nykyteknologiat antavat monipuolisia vaihtoehtoja erilaisten verkkototeutusratkaisujen käyttämiseen. Verkkokurssien avulla voidaan opiskella lähes minkälaisia asioita tahansa. Tämän opinnäytetyön kohteena oli uuden CMS-verkkokurssin suunnittelu ja toteutus FUAS-yhteistyössä. FUAS on kolmen ammattikorkeakoulun yhteinen liittouma ja siihen kuuluvat Lahden ammattikorkeakoulu (LAMK), Hämeen ammattikorkeakoulu (HAMK) ja Laurea-ammattikorkeakoulu (Laurea).

Tutkimuksen lähtökohtana oli tarve FUAS-yhteistyössä kehittää uusi verkkokurssi tarjottavaksi kesäopintoina suoritettavaksi LAMK:n, HAMK:n ja Laurean opiskelijoille. Yhteinen CMS-verkkokurssi suunniteltiin ja toteutettiin kaikkien kolmen FUAS ammattikorkeakoulun yhteistyönä. Opetus- ja oppimisympäristönä CMS-verkkokurssilla oli Moodle, joka on käytössä HAMK:ssa ja LAMK:ssa. Muita verkko-opetuksen suunnitteluun ja toteutukseen käytettäviä välineitä olivat Google Drive, jota käytettiin suunnittelun aikana yhteisten tiedostojen tallentamiseen ja muokkaamiseen, sekä WebEx ja Adobe Connect Pro, jotka molemmat ovat verkkopohjaisia konferenssisovelluksia, jotka tarjoavat monia etäyhteyspalveluja, kuten e-kokoukset, e-oppiminen ja webinaarit. Ne skaalautuvat myös isompien ryhmien käyttöön.

Opintojaksolla opeteltaviksi CMS-järjestelmiksi valittiin kolme erilaista vaihtoehtoa: WordPress, Drupal ja Concrete5. Tämän lisäksi jokainen osallistuja tutustui yksilötehtävässä vielä yhteen CMS-järjestelmään, CMSMadeSimpleen. CMS-opintojakson pilottitoteutus tehtiin kesällä 2014. Opintojakso alkoi toukokuussa ja päättyi elokuussa. Opintojakson hyväksytysti suoritti 15 opiskelijaa. Opintojaksoon sisältyi sekä yksilötehtäviä että ryhmätehtävä, jossa opiskelijat toteuttivat uudet tai uusitut verkkosivut asiakkaalle.

Opiskelijoilta kerättiin opintojakson lopussa palautetta heidän kokemuksistaan tästä opintojaksosta. Myös suunnitteluun ja toteutukseen osallistuneilta opettajilta kerättiin palautetta. Suunnittelun ja toteutuksen aikana käydyt keskustelut ja tallennetut asiakirjat sekä tehty haastattelu toimivat tutkimuksen lähdemateriaalina. Saatujen tulosten pohjalta on tehty kehitysehdotuksia uuteen toteutukseen. Yhteistyö säästi opettajien aikaa ja resursseja jonkun verran, mutta ei kovin merkittävästi.

Avainsanat	CMS, Moodle, verkkokurssi, LMS, e-oppiminen, online-oppiminen

Contents

1 Introduction

The subject of this Master's thesis is an online e-course designed together with three Universities of Applied Sciences. The topic of this online e-course was to study and learn how to use the CMS systems. These three Universities of Applied Sciences are Lahti University of Applied Sciences (LAMK), Häme University of Applied Sciences (HAMK) and Laurea University of Applied Sciences (Laurea). They form a community named Federation of Universities of Applied Sciences (FUAS). One important task in FUAS is to provide joint summer studies to all students of the three UASs. A large part of these courses are implemented as online studies. That makes the participation for all students flexible and location-independent. One of the most important needs in FUAS, as well as in other UASs and universities, is to provide learning opportunities during the summer months to foreign students studying in Finland. UASs' management teams have also set a target to implement a number of these joint studies in the summer. This was one reason behind the implementation of this joint study period.

The research method selection in the present thesis was action research. Action research was a very suitable research method here because the researcher herself was involved in designing, implementing and developing this new course. Data collection methods in the present study were interviews, questionnaires, various existing and arising documents during the development, as well as free discussion.

In the theoretical section of this thesis e-learning, online learning and teaching are described in general, as well as the research data on the challenges associated with cooperation in planning and implementation of the several organization. The theoretical background chapter also compares a few different technology alternatives used for designing this kind of courses. Information was sought in the relevant literature and the literature section also describes the CMS systems and what is the difference between open source and commercial systems. As background information for the design of a new CMS course also the content and structure of two existing CMS courses from internet were studied. This obtained data was used to help planning future courses.

The new CMS course planning process begins with an explanation of the types of existing implementations in FUAS Universities of Applied Sciences that have been previously covered. Information about the method, the content of the course, schedules, and ben the technologies was gathered. After that the paper describes how the project was planned and implemented in cooperation with FUAS. The new course pilot implementation was in the summer of 2014 and after this all collected data and material was reviewed and analyzed. Students were asked for a written response to feedback surveys in the last session of the course. This course session was the so-called “reflection” session. All teachers planning and implementation discussions and documents during the project also provided as source material for this thesis. Finally the teachers from LAMK and HAMK were interviewed on their experiences and development ideas. Finally, the collected information was gathered and analyzed and based on the findings, conclusions and suggestions for the future were made.

2 Background, Objective and Research Questions

This project focuses on developing an online course together with three different Universities of Applied Sciences. This course is developed in cooperation with the Federation of Universities of Applied Sciences (FUAS) and represents a part of a larger development project. All three partners, Laurea University of Applied Sciences (Laurea), Lahti University of Applied Sciences (LAMK) and Häme University of Applied Sciences (HAMK), were committed to work together in this project.

2.1 Project Background and FUAS

FUAS - Federation of Universities of Applied Sciences - is a strategic alliance of three independent Universities of Applied Sciences (UAS) Häme University of Applied Sciences (HAMK), Lahti University of Applied Sciences (LAMK) and Laurea University of Applied Sciences (Laurea). It operates in the Greater Helsinki Metropolitan Area Uusimaa, Päijät-Häme, Kanta-Häme, and Southern Pirkanmaa. The strategic intent of FUAS for 2020 is to become an internationally respected federation of independent higher education institutions. This federation aims to strengthen the international competitiveness of the Helsinki Metropolitan area by offering to all the higher education, research and regional development functions the required by the Metropolitan area's industry, commerce and population (Laurea Intra, 2016). Figure 1 illustrates the logo of FUAS.

Figure 1. FUAS logo (Laurea Intra, 2016.)

Presently, the FUAS institutions have a combined number of approximately 21,000 students, representing approx. 15% of all Finland's Universities of Applied Sciences students. Due to the FUAS alliance, the Helsinki Metropolitan Area has a higher education network that can respond to international demands and this network also reinforces its international competitiveness. (Laurea Intra, 2016.)

All members of FUAS have a need to increase the number and quality of their online summer courses, and the most beneficial option would be to do it in cooperation within FUAS. Doing that in cooperation with FUAS, the work can be shared between participants, with the workload thus reduced. The teaching workload during the summer term will also be shorter because the work is distributed among all participants. Another major benefit is that they can utilize each other's know-how and expertise on a wider scale. Thus, the results of this development project will benefit all participating members of FUAS. Figure 2 illustrates the structure of FUAS. This study fits in the summer studies areas.

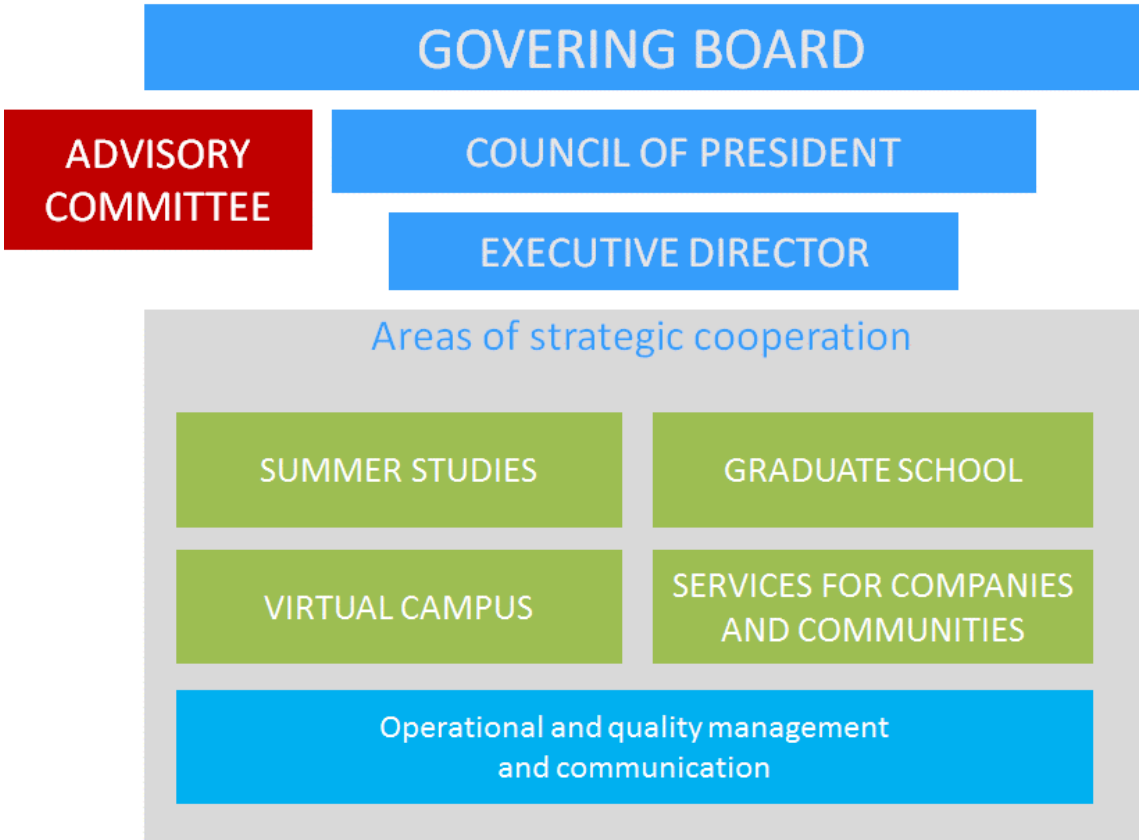

Figure 2. Structure of FUAS (Laurea Intra, 2016).

FUAS and its networked approach will bring three major UAS's expertise of the entire area of operation would be beneficial. For student alliance enables a wide and high-quality supply of study and flexible learning opportunities throughout the year. Trade and industry alliance enables comprehensive and varied skills consist of RDI-service products. For a member of the higher education institutions is a key benefit of expertise and resource efficiency improvement, particularly in strategic areas of cooperation and focus areas.

2.2 Objective and Research Questions

Currently, all FUAS members have various online courses of their own. There is a need is to do effective collaboration in the courses within the FUAS and get the benefits of scale and cooperation. The technical challenge is to find and choose the right technology. The functional challenge of the present study was to plan and implement one course - the new Content Management System (CMS) online course - as a pilot in cooperation with the FUAS.

Thus, the aim of the present Master's thesis study is to design and implement a new pilot online CMS course in collaboration with FUAS. The second aim of the study is to find the most appropriate solution for the technological environment as well as software. After having designed and piloted the course, the further aim was to analyze the results of the study findings and make proposals for further development.

The research questions of this study are as follows:

What should be taken into account when several organizations design and implement an online course in collaboration?

Does it save time and resources when the online course is designed and implemented in collaboration?

What kind of factors affect the choice of the most appropriate technology?

What kinds of experiences students and teachers gain from such an online course and how could the online course be developed based on these experiences?

This study is written in eight sections. Section one is Introduction. Section two describes the theoretical background, objectives of the research as well as the research questions. Section three describes the research method and the material. Section four discusses the best practice for online course development. Section five examines the benchmarks existing in the industry. Section six describes this projects own solution development process. Section seven presents the results and make an analysis for further improvements and discusses the validity and reliability of the study and Section eight draws conclusions based on the entire study.

3 Method and Material

This section describes the research approach, methods and data collection and analysis applied in this study. It describes research methods in general, differences and equalities of research methods and characteristics of the selected (action research) method.

3.1 Research Approach

Research methods can be roughly divided into two categories: quantitative or qualitative. The purpose of quantitative research is to measure the proportion of the population who think or behave in a particular way. Quantitative research focuses on numerical measurement results. (Keagan 2009: 11.) Quantitative study examines what is known and what kind of questions to ask, because quantitative study is based on theories and models which explain a given practical phenomena (Kananen 2013: 134). Definition of qualitative research is more complicated, since its main purpose is to explore meanings instead of numerical measuring. (Keagan 2009: 11.)

Quantitative research aims at doing generalisations and it is based on numbers. Qualitative research uses words and sentences and it aims ii understanding a phenomenon a more deeply. (Kananen 2013: 31-32). Because research approaches' basic division is embedded in qualitative and quantitative, such researches like case, design and action researches are often thought more as research strategies rather than separate methodologies. Research methodologies can be seen as a continuum with its extremes at qualitative and quantitative research (Figure 3). (Kananen 201: 28).

Figure 3. Research methodologies can be seen as a continuum with its extremes at qualitative and quantitative research. (Kananen 2013: 27).

This study uses qualitative research methods, such as inquiry, interviews and various methods of feedback collection, employed in many different academic disciplines, traditionally in the social sciences, but also in market research and further contexts. Qualitative researchers aim to gather an in-depth understanding of human behaviour and the reasons that govern such behaviour. The qualitative methods investigate the *why* and *how* of decision making, rather than what, where and when. Hence, smaller but focused samples are more often used instead of large samples. In this study, quantitative methods can also be used, in addition to qualitative, to seek empirical support for research outcome, for example at the stage of feedback collection. (Coghlan & Brannick 2014: 6).

Action research and design research in the Finnish language are separate concepts. In literature written in English they are treated as equals. In action research researchers participate themselves in the development process but in design research the researcher do not necessarily participate themselves. In action research prerequisites are a change in operations, cooperation, research and researcher participating in the change. The stages of action research are planning, action, evaluation and follow-up (Figure 4). (Kananen 2013: 42).

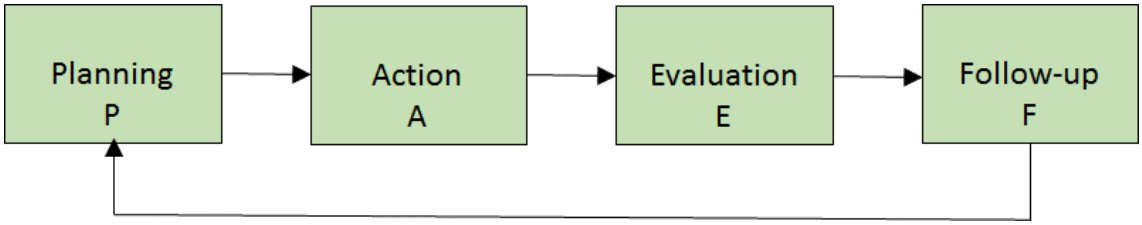

Figure 4. Stages of action research: action, its planning, evaluation and follow-up (Kananen 2013: 42).

The research approach applied in this study is action research. Rather than research about action, action research focuses on research in action. In action research a scientific approach is used, while exploring important social or organizational issues and where the researcher himself participates directly as an expert. The action Research approach is partnership and a collaborative way of work. Action research is also a research initiated to solve an immediate problem and aims at bringing change into organization. It is done by participants and includes a reflective process of progressive problem solving. It is led

by individuals working with others in teams or as part of a "community of practice" to improve the way they address issues and solve problems. This study presents the participatory action research, developed with the participation of the members of the researched organization. (Coghlan & Brannick 2014: 6).

The action research cycle covers a pre-step, context and purpose and four basic steps: construction, planning action, taking action and evaluating action (Figure 5). Action research begins with seeking an understanding of the context of the project. (Coghlan & Brannick 2014: 9-10).

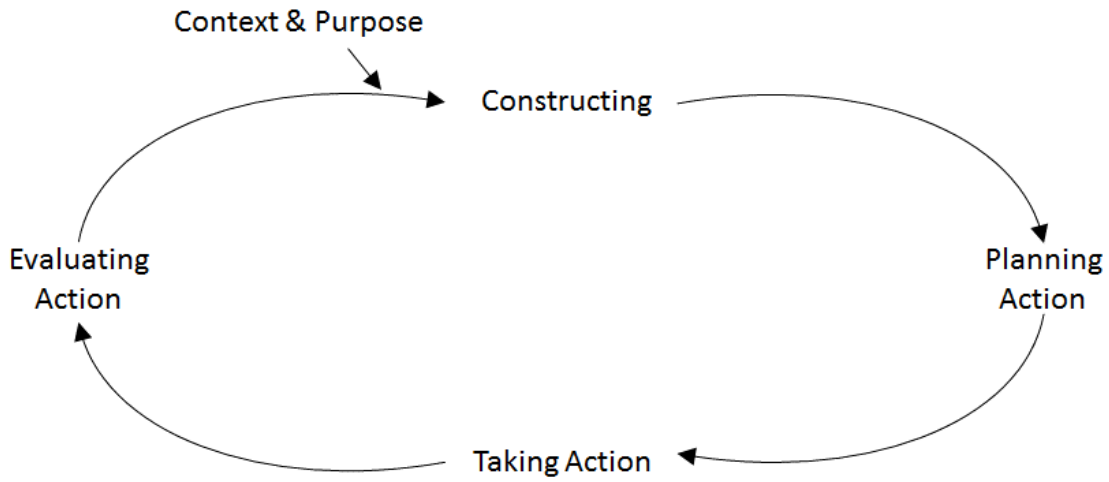

Figure 5. The Action Research Cycle (Coghlan & Brannich 2014: 9).

In the original and simplest form in the action research cycle comprises a pre-step and three core activities: planning, action and fact-finding. There is a continuing 'spiral of steps, each of which is composed of a circle of planning, action and fact-finding about the result of the action'. Figure 6 shows the spiral of Action Research Cycles. (Coghlan & Brannick 2014: 9).

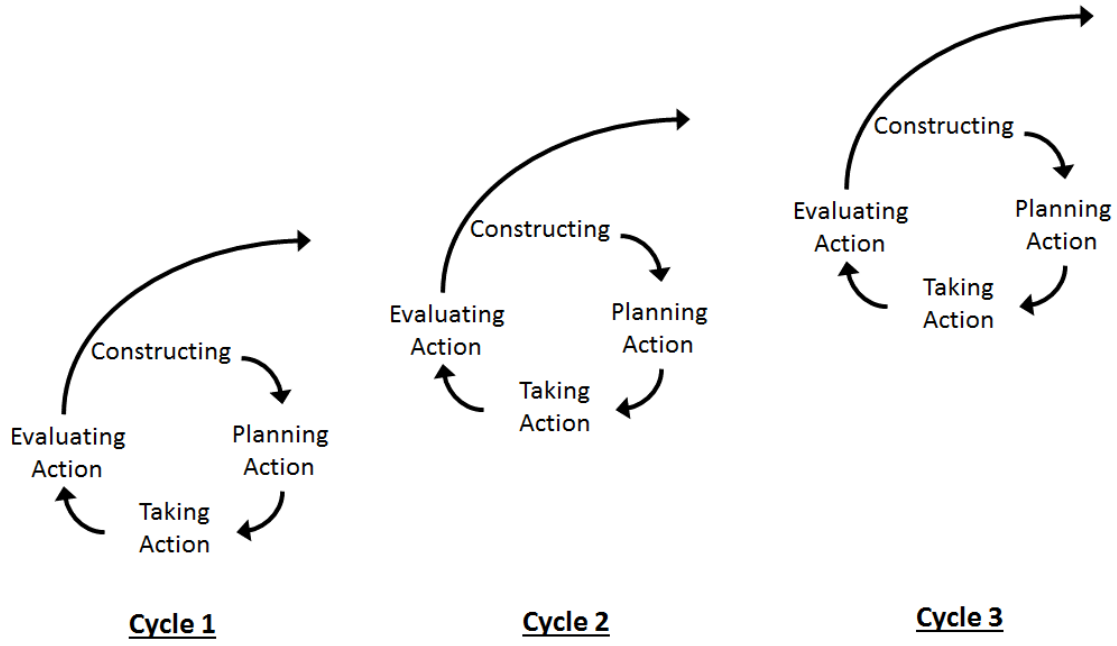

Figure 6. Spiral of Action Research Cycles (Coghlan & Brannich 2014: 11).

Action research can be used in organization development and because is based on collaboration between researcher and the client. In action research the researcher influences new developments. The researcher is working with development team and is part of the changing process. (McNiff, 2010: 55.) The general action research process can be divided into a four stages, namely the planning stage, the action stage, the developing stage and the reflection stage (Figure 7). These are a little bit different from what Kananen (2013) has used in her book but initially similar. An action research study contains the nine specific process steps. These steps are: identifying and limiting the topic, gathering information, reviewing the related literature, developing a research plan, implementing the plan and collecting data, analyzing the data, developing an action plan, sharing and communicating the results and reflecting on the process. (Mertler, 2016: 31.)

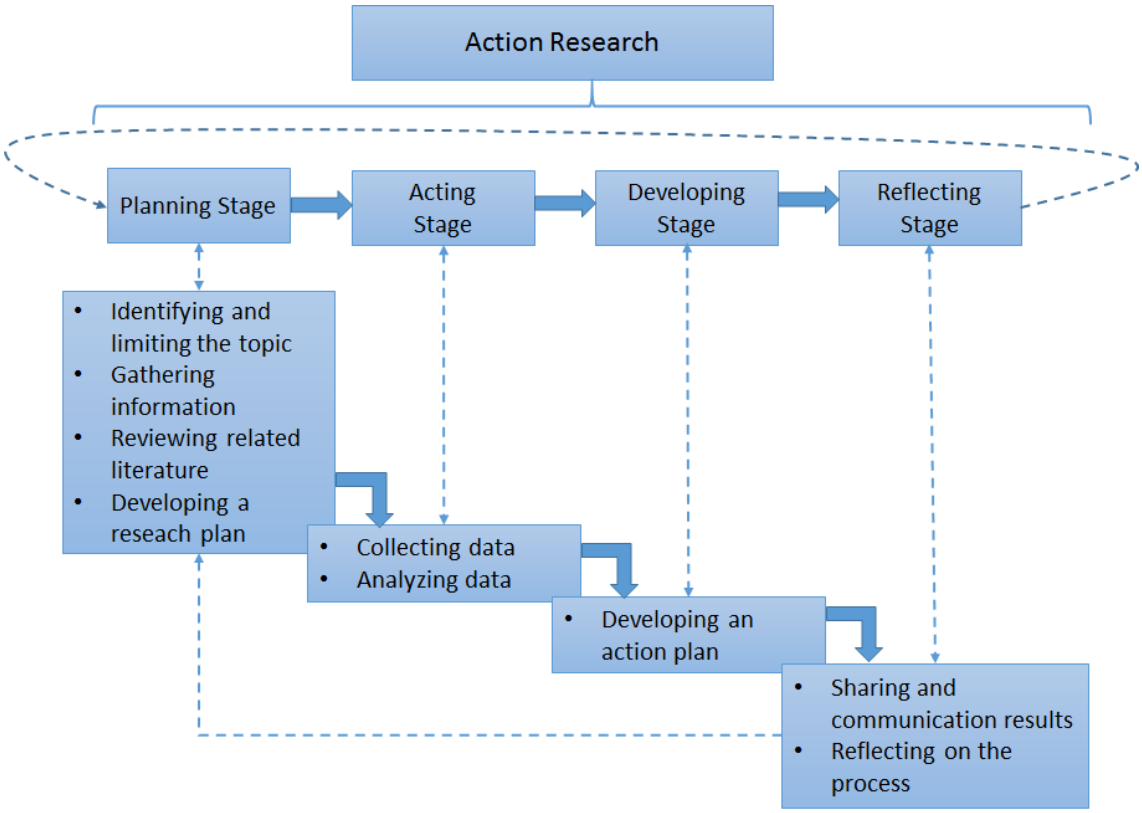

Figure 7. Integration of Two Organizational Schemes for the Step-by-Step Process of Action Research (Mertler, 2016: 31).

Overall, the research purpose of the present thesis study is to create a new online CMS course in collaboration with FUAS and also develop and enhance the work of our organization. Additionally, the researcher is a part of the work community and takes part in the study itself, as it is typical of action research. These aims make action research a suitable research approach for this study.

3.2 Research Process

The first step for the research process in this study was to identify and limit the topic. Figure 8 shows the presents study within the research process. It is drawn by using Business Process Model Notation 2.0 (BPMN). BPMN is a descriptive process model and suitable for high level modelling. (Object Management Group, 2011). Figure 8 is shows the process steps based on general action research process (Figure 7). Step two in the general process is gathering information and in this study it was done by discussing with other UAS teachers. The third process step is analysing the existing best practices

for e-learning models in general, review of literature about teaching and studying online, reviewing the literature of Content Management Systems and reviewing the literature of e-learning technologies. During the fourth step, based on general model step, developing a research plan, has been divided into five different actions. The first action is to find out solutions for effective cooperation models of e-learning. The next action was to find and analyse the available options for appropriate technological environment as well as software. The next two actions on step five was find out examples of existing CMS courses outside of own organization and collect to data from participant UAS about existing CMS courses. Collecting data about existing CMS courses from all FUAS Universities of Applied Sciences gives a general understanding of current situation. The last action in step five was the design the new pilot CMS course.

Step five is divided into three actions, implementing the new online pilot CMS course, collecting data from students (survey) and doing the instructors' interviews and collecting other feedback such as own experience about the empirical data. Step six was analyze data and figure out results. Step seven was to find a solution proposal for developing the new CMS course to use in future. Step eight is sharing and communicating the results and step nine reflecting the process.

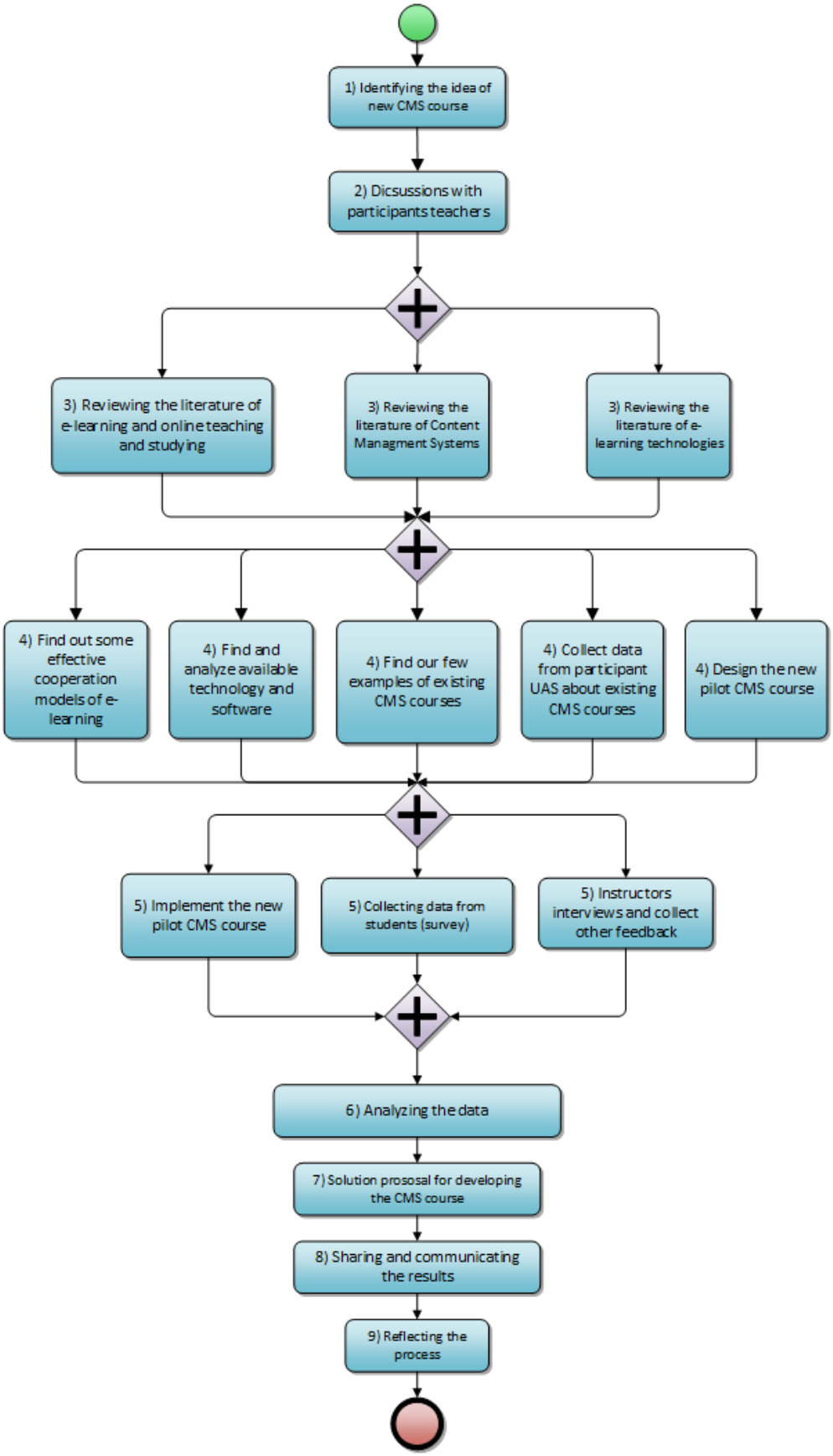

Figure 8. BPMN process diagram about research process in this study.

The study research process diagram helped the implementation of the work, and streamlined it. It made it easier to parse and execute a logical order of things. Also, writing a thesis it was helpful. Using the research process diagram it was also easier to understand the whole project.

3.3 Data Collection

In qualitative research there are three main data collection methods: observation, theme interview and different documents. Data collection method depends on the phenomenon subject to research and its characteristics, accuracy and authenticity of the information required. Figure 9 illustrates a process diagram for qualitative research. It shows the research process of an individual qualitative research. This process diagram can also be used in action research which are using qualitative research methods for understanding the phenomenon. (Kananen 2013: 103.)

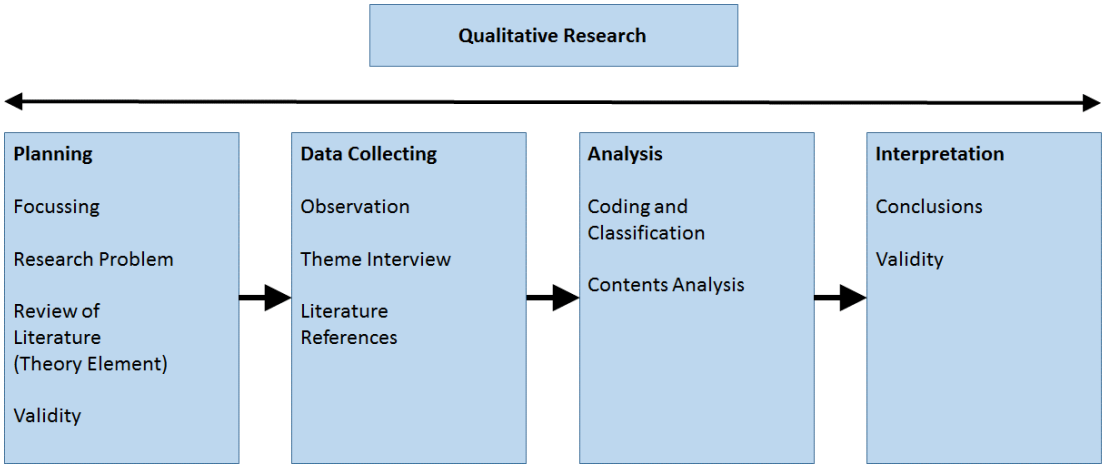

Figure 9. Process diagram for qualitative research (Kananen 2013: 103).

This study combined several sources of data for the solution development. The data was collected from the participants of development project and also from the students who participated in the pilot online CMS course.

Experiences of participating in the project development work was collected and analysed for further development. The survey was done for the students who participated in the course and the results were analysed.

As seen in Table 1, instructions interviews were conducted to collect data for the study before planning and after implementation. The survey to the students was made during the last implementation online session. Based on the results improvements and changes to the next course implementation can be planned. These improvement are described in Section 7.

Table 1. Details of data collection in this study.

	Type of data	Informants, how many	Topics discussed	Data, duration	Documented
1	Feedback/requirement for the existing online courses (interviews)	3 instructors	content, duration and implementation of course	table for course schedule	Field notes
2	Feedback for CMS pilot (interviews)	2 instructors	own experience of course implementation	written notes from interviews	Field notes
3	Feedback for CMS pilot (questionnaire)	14 students	students experience of course implementation	students written answers for questions	Text document

As shown in Table 1, the data collection included three different parts. The first part was feedback from three instructors from the existing online courses. The second was the interviews of two instructors and their feedback. Students' feedback survey was made at the end of the course and 14 students gave their answers to the questions.

3.4 Validity and Reliability

Usually the term 'reliability' is a used for testing or evaluating quantitative research. However, that idea are often used also in all kinds of research. The most important test of any qualitative study is its quality and whether the idea of testing is seen as a way of information elicitation. A good qualitative study can help to understand a situation that would otherwise be enigmatic or confusing. The difference in purposes of evaluating the quality of studies in quantitative and qualitative research is one of the reasons that the

concept of reliability is irrelevant in qualitative research. However, validity and reliability are two factors which any qualitative researcher should be concerned about while designing a study, analysing results and judging the quality of the study. To ensure reliability in qualitative research, examination of trustworthiness is crucial. (Golafshani, 2003: 601-604.)

The concept of validity is described by a wide range of terms in qualitative studies. This concept is not a single, fixed or universal concept. It is rather a contingent construct, inescapably grounded in the processes and intentions of particular research methodologies and projects. Even some qualitative researchers have argued that the term validity is not applicable to qualitative research, they say at same time, that they have realised the need for some kind of qualifying check or measure for their research. The discussion of quality in qualitative research initiated from the concerns about validity and reliability in quantitative tradition. If the issues of reliability, validity, trustworthiness, quality and rigor are meant differentiating a ‘good’ from ‘bad’ research then testing and increasing the reliability, validity, trustworthiness, quality and rigor will be important to the research in any paradigm. (Golafshani, 2003: 601-604.)

Reliability and validity are often thought of as separate ideas but, they are related to each other. One metaphor for the relationship between reliability and valid is that of the target. In Figure 10 the center of the target can be thought as the concept that are trying to measure. Each item measured takes a shot at the target. If it measures the concept perfectly for an item, it hits the center of the target. If not, it misses the center. In Figure 10 four possible situations are illustrated. In the first situation the hits are targeted consistently, but not the center of the target. That is why it is reliable but not valid. In the second situation the hits are randomly spread across the target. This means that there is a valid group estimate, but they are inconsistent. In the third situation the hits are spread across the target and they are consistently missing the center. In this case the study is neither reliable nor valid. The fourth situation in Figure10 exemplifies a “Both Reliable And Valid” case because in this case the hits are consistently in the center of the target. (Trochim, 2006.)

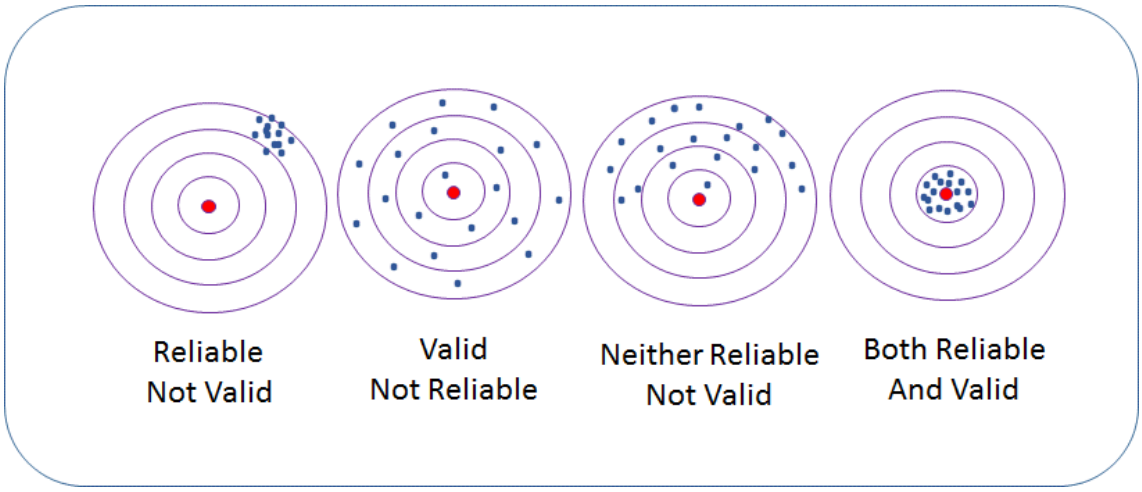

Figure 10. Relations between reliability and validity (Trochim, 2006).

In qualitative research reliability and validity concepts can be generally apply only by analogy. Qualitative research is the most relevant to assess study credibility and reliability. The results of qualitative research must not be arbitrary and the methods used in the study must be able to examine what the study is intended to explore. Used terms must be fit the study of the problem and the material content. The reliability can be assessed in qualitative research in many ways. Another aspect associated with the reliability of qualitative research is the generalizability or transferability: whether the study results be generalized or transferred to other objects or situations. (University of Jyväskylä, 2016.)

4 Best Practices in Online Course Development

This section discusses the existing knowledge, benchmarks and best practices for online courses which are currently available and can be useful in the development of the new CMS course in this study. First there is knowledge about E-learning in general, what it means and which kind of tools there are available etc. Then online teaching and learning are discusses followed by theory about design and implementation in cooperation with several parties.

4.1 E-learning

There are several definitions of e-learning. One simple definition is in William Horton's book, Designing e-learning. That definition is: "E-learning is the use of electronic technologies to create learning experiences." This definition does not mention courses, management systems or any particular authoring tool. Horton mentions some varieties of e-learning: standalone courses, learning games and simulations, mobile learning, social learning and virtual-classroom courses. Standalone courses can be taken by a solo learner. There are no interaction with a teacher or classmates but they are self-paced. Learning games and simulation is nowadays quite a popular e-learning form. Mobile learning is also used more and more because so many students have smart phones and tablet devices. Social learning means that a community of experts and fellow learners communicate among participants using on social-networking media like online discussions, blogging, and text-messaging. Virtual-classroom courses are structured much like a classroom course but have been implemented virtually using a variety of tools. There can be included reading assignments, presentations, discussions, homework, group works and so on. There can be included also online meetings. (Horton 2012, 1-2.)

Jean-Eric Pelet mentions in his book, E-learning and Web 2.0, that the roots of e-learning are in computer-based training. He also writes that e-learning is a broader concept than online learning and there is several definitions of e-learning. The definition on e-learning integrates the use of ICT in education and the tools of Web 2.0. This definition is meant to capture all types of teaching and learning activities which can take place in a computerized environment. To explain the phenomenon of Web 2.0 are used different terminologies, such as social software, social technologies, and emerging technologies. There

is no clear definition of Web 2.0. It is usually considered “a second generation of Perceived Web-based interactions, applications and communities”. In Table 2 there are examples of Web 2.0 tools. (Pelet 2014, 4-10.) There are a lot of tools available which can be used in eLearning. Only a few of them (synchronous communication tools and open content) were used in the present study.

Table 2. Examples of Web 2.0 tools (Pelet 2014, 10).

Type of Tool	Example(s)	Application
Blogs	• Stephen's Web (http://www.downes.ca/)	Allows an individual to make regular postings to Web, e.g., a personal diary or an analysis of current events
Wikis	• Wikipedia (http://en.wikipedia.org/)	An "open collective publication, allowing people to contribute or create a body of information
Social networking	• Facebook (http://www.facebook.com/) • MySpace (http://myspace.com/)	A social utility that connects people with friends and others who work, study, and live around them
Multimedia archives	• Podcasts • YouTube (http://www.youtube.com/) • Flickr (http://www.flickr.com/) • iTunes • e-portfolios	Allows end-users to access, store, download, and share audio recordings, photographs, and videos
Synchronous communication tools	• Skype • Elluminate • Adobe Connect	Allows free "real-time" audio and visual communication over the Web
3-D virtual worlds	• Second Life (http://secondlife.com/)	Real-time semi-random connection/communication with virtual sites and people
Multiplayer learning	• Lord of the Rings Online (http://www.lotro.com/)	Enables players to complete against or collaborate with each other or a third party/parties represented by the computer, usually in real time
Mobile learning	• Mobile phones • Ubiquitous computing devices and applications	Enables users to access multiple information formats (voice, text, video, etc.) at any time, any place
Open content	• MIT OpenCourseWare (http://ocw.mit.edu)	Digital learning materials available free over the Internet, for use either by instructors or learners

Table 2 shows that in eLearning can use many different kinds of tools. However, the use of different tools and techniques requires knowledge of the content and pedagogical knowledge on what to use in any given context.

4.2 Online Learning and Teaching

Learning is a social process, as often there is a social construction of meaning. On an online class, though, gone is the familiar place on campus where students and the teacher meet each other with a regular rhythm of attendance. (Shaughnessy and Fulgham 2011: 3.) The technology enables, encourages and commits engagement in the learning process, but then attention turns to the role of the teacher. If teachers are expected to be technologically knowledgeable and expected to understand how to develop strategies for teaching and learning, which is integrated with technology, the need for guidance about new pedagogical practices and professional development is essential. (Younie & Leask 2013, 83.)

The demand for online education is primarily student driven. It appears that once students have succeeded in an online course and enjoyed the freedom and flexibility it provides, personal preference, as well as, economic necessity drive them to take additional courses online. (Lamb, 2009.)

The past decade has seen online courses rapidly become an integral part of college educational systems, especially at the community college level. Many colleges, universities and training organizations have moved online, with the associated issues of student satisfaction and quality. In higher education the move to online teaching in a wide variety of forms continues unabated. There is less uncertainty about the value of e-learning. But, time and time again, studies have shown that the role of the online teacher or tutor – in whatever disciplinary context, level or type of technology in use – has a major influence on learners' flexibility and achievements. (Salmon 2011, 10)

What is known at the for sure is that the concepts of time, motivation and teacher development are the key factors in e-learning success. Online teaching needs to be improved in terms of both quality and quantity, whether in a blended, online-only or technology-enhanced mode. One cannot succeed in scaling up without enabling the role and training of the e-moderator. E-moderators need new attitudes, knowledge and skills, and ways of operating successfully and happily in the online environment. (Salmon 2011, 10.)

Rebecca A. Clay said in her publication in June 2012 that the average penetration rate for Online Study Courses percentage is 24. The researchers admit that the penetration rates differ between the various disciplines and, therefore, in the study was chosen eight different fields of science and throughput rates ranging from 16 percent for engineering programs to 33 percent for business programs. The members in favor of online learning, saw online learning to have several advantages compared to traditional face-to-face

learning. On this analysis made in 2010, it was found that students who took part in online education got better learning results than students who participated in face-to-face teaching. According to the report, this does not prove that online learning would be overwhelming were compared to traditional learning, but it can provide significant benefits. (American Psychological Association, 2012.)

One problem for teaching is often insufficient resources. If there is one teacher to teach a large group without any support, it is obvious that it will complicate the teacher's work and the teacher cannot create a sufficiently effective learning environment, because of the lack of resources limits the options available. If, however, teaching a small group, the teacher can easily choose many different teaching models and seek the help of a variety of learning environments. Yet, the fact that only a few resources are available, does not necessarily lead to poor learning outcomes, due to a lack of resources teachers have to use creative solutions instead of using traditional teaching models. This requires, however, that expectations are realistic, and the teacher will provide appropriate resources to support students. Even low resources can thus achieve significant learning outcomes, but miracles cannot, of course, be achieved. (Bates, 2016.)

Salmon Gilly (Salmon 2014, 5) give the name E-tivities to active and online learning. E-tivities are frameworks for enabling active and participative online learning by individuals and groups. Salmon Gilly said that E-tivities, in the world of online teaching and learning are important, because they are useful because of the choices of best principles and pedagogies and networked technologies. E-moderator’s can work more productive and focused with E-tivities.

One of the most important parts of the teacher aid is different online tutorials, such as www.w3schools.com, www.codeacademy.com, www.udemy.com, www.tutorialspoint.com etc. These enable teachers to upgrade their skills, and they also work well for students to help their studying new things. Nowadays teacher is no longer necessary, especially in the IT industry, to make as much as earlier they own material, because there are available a lot of material from the internet.

4.3 Design and Implementation in Cooperation with Several Parties

Institutions need a good communication strategy for the use of tools to ensure an efficient and well-managed communication both within the school and outside school. Schools also compete with each other and do not necessarily want to share resources with other schools, so that they can compete in order to get good students. (Younie &Leask 2013: 116.)

Individual teachers spend a lot of time planning and preparing studies, and a large part of the work is a duplication of effort, which will not get any financial benefit. This is very inefficient and also the quality of education may suffer. Some teachers continually create successful learning experiences for students, while others do not. One of the most noteworthy things which should consider is how the best teaching processes could be divided for a larger number of teachers. During the training process descriptions teachers could also share information about the reasons for their design also the less experienced teachers could benefit from the work of more experienced teachers and trainers. In addition to co-adapt and improve their own work, which would lead to improved quality overall. (Iiyoushi & Kumar 2008: 376.)

The question of open-source software development process could be applied to open teaching. Combining the expertise of the world's educators can produce more efficiency in training processes and improve the quality of it. The planning of training aims to describe the educational processes in a standardized way so that they can be shared and hence adapted and improved. Educators' learning design systems provide teachers tools on how to describe and capture a structured flow of content, as well as collaborative activities, when creating a wide range of learning experiences for students. They also provide a common structure, how to describe the learning objectives that guide the actions requested on the learning design systems. These can run some or all activities online, or instead, they provide a support for the printed material, which facilitates face-to-face teaching. In either case, the teaching and learning process will become more transparent and it can be shared, adapted and it can be improved. (Iiyoushi & Kumar 2008: 376-377.)

One of the most noteworthy things in cooperation together with several organizations designed and implementation the study courses is also teachers' copyrights. In the commercial organizations generally the materials which are produced by workers are owned

by the employer and they have the right to use them in their own activities. This practice cannot be directly applied for the teacher's work, because the teacher's basic work tasks includes teaching, but does not provide teaching material, unless it is specifically agreed. Thus, it is challenging if the course and course materials are designed and implemented in cooperation with several organizations. In that case is not clear who owns the intellectual property rights for these course materials. (IPR University Center, 2016.)

5 Potential Technologies in Online Courses

All educators need skills in computer technology, tools, and application knowledge. Especially those who teach online need these skills. (Jeschofnig & Jeschofnig 2011, 37.) Tools which are called Course Management Systems support online teaching and learning well. Course Management Systems are web applications which can be used with a web browser. They are run on a server. With Course Management Systems educators can create a course website where the enrolled students whose has access can participate. (Cole & Foster 2008, 1.)

Companies also are more interested in to e-leaming as a complement to face-to-face training. It is an attractive option for cutting the travel costs and time associated with out of office training. That's why companies are increasingly interested in open source software. According to research house Gartner, 90% of the world's companies, both large and small, will be using open source software by 2012. (Lawrence, 2009.)

The first and most important technology a science educator normally encounters in online education is a Learning Management System (LMS), also referred to as a course management system, or a virtual learning environment (VLE). Regardless of the name, these education-specific software application programs are typically licensed on an institution-wide basis for installation across all related campuses and departments, and they are utilized in support of campus-based course enrichment as well as online course delivery. There are many learning management systems on the market. Although each may have unique features, they generally perform the same specific functions. LMS platforms allow educators to upload and deliver contact and scheduling information, course syllabi and lecture notes, plus content materials and multimedia elements. They also allow instructors to create, deliver, collect, and grade a variety of assessments and to communicate with students using e-mail, bulletin boards, discussion groups, blogs, and similar social networking tools. Students use an LMS to access their course content and assessments, to deliver their assignments, and to communicate with their instructor and classmates. (Jeschofnig et al. 2011: 38)

Over the past few years have merged together a number of LMS developers. Although the lucrative LMS market associated with newcomers developers who encourage others to do continuous development. (Jeschofnig et al. 2011, 38.) One ranking list from the Internet concerning about the ten most popular LMS platforms are made by Ziff Davis article in PCMag Digital Group. This list can be seen in Table #. (Davis, 2015.)

Table 3. The Best Learning Management Systems (LMS) for 2015 (Davis, 2015).

Name	Absorb LMS	Grove LMS	Moodle LMS	Schoology LMS	Edmodo LMS	Instructure Canvas LMS	Litmos LMS	Axis LMS	Blackboard LMS	DigitalChalk Corporate LMS
Lowest Price	$1,250,00	$199,00	Free	Free	$1,00	Free	$299,00	$299,00	Free	$349,00
Editor Rating	4,5	4	4,5	4,5	4	4	4	3,5	3,5	3,5
Setup Fee	4,000	0	0	Inquire	0	Inquire	0	0	Inquire	1,099
SCORM Import	✚	✚	✚	✖	✖	✚	✚	✚	✚	✚
Bundled Course	✖	✚	✖	✚	✖	✚	✖	✖	✖	✖
Inctrutor- Led Training	✚	✚	✚	✚	✖	✚	✚	✚	✚	✚
Google Apps Integration	✚	✚	✚	✚	✚	✚	✚	✚	✚	✖
Single Sign-On	✚	✚	✚	✚	✚	✚	✚	✖	✚	✚
E-Commerce	✚	✖	✚	✖	✚	✖	✚	✖	✖	✚
Developer API Available	✚	✚	✚	✚	✚	✚	✚	✖	✚	✚
Camification Features	✖	✚	✚	✚	✚	✖	✚	✖	✚	✖
Mobile Access	✚	✚	✚	✚	✚	✚	✚	✚	✚	✚

Table 3 shows the list of ten best learning management systems. In the list can see the prices, editor rating number and the setup fees. In the table is also nine different features and information if this feature is available or not.

5.1 Open Source and Commercial Software

Open source and commercial software are the two prominent models of software licensing. These two different models raise the debate in various organizations, especially in the public sector. Software-licensing model in open source software typically mean that software are available royalty-free to the users. It usually allows redistribution, addition and modification. Services like support, training and updates are provided by range of entities. Many of these entities offer increasingly commercial services. (Business Software Alliance, 2016.)

Open source software differs from shareware or freeware. One definition describes it as both the concept and practice of making programme source code openly available. Users and developers have access to the core designing functionalities that enable them to modify or add features to the source code and redistribute it. Extensive collaboration and circulation are central to the open source movement. (Chief Information Officer, 2016.)

Many organisations begin their experience of open source software with help from a third party and use the training they gain to up skill their own staff. They may then choose to manage the ongoing administration themselves and use third-party consultancy help to explore more complex facets of the system and its application to their particular training environment. (Chief Information Officer, 2016.)

When comparing the costs of open source versus proprietary software, the greatest saving will be licence fees associated with closed source software. Not only are licence fees a considerable budget item, but there is a sense of unease among IT professionals when it comes to managing software licences - a sense that existing licensing models and the ability to police licences has fallen out of step with modern software deployment. (Chief Information Officer, 2016.)

With open source software an organization is not locked into a particular vendor and gains far greater control, speed of change and flexibility than might otherwise be possible. An open source application still requires hosting, development time and training, but active and mature open source software with a large and active user base generally incorporates improvements on a far more frequent basis than proprietary software. This is because there are teams of developers and community contributors across the world working in almost every industry sector, yet they all follow a published roadmap. Traditionally, closed software is developed via small beta trials, while open source software benefits from continual peer review and enhancements through its community of users. (Chief Information Officer, 2016.)

5.2 Technological Possibilities

In the following the backgrounds of the used or potential technologies which can be used in online teaching and learning are introduced. There is much more basic knowledge of tools which could be used in these kind of projects to be found but here is the basic information on the tools which are the most appropriate for this study.

Moodle

Moodle is software that enables the creation of courses, content, activities and communities online. It also supports tracking and assessment. It is often referred to as a

course management system, virtual learning environment or learning management system and it allows users to produce internet-based courses by creating a Moodle website for the purpose. Its recent surge in popularity mirrors the increasing use of the internet as a computing platform and the emergence of Web 2.0 tools and services. (Aberdour 2013, 14.)

There are no licence fees as Moodle is open source software, which means it is free to download and free to use. Users are also free to modify or extend Moodle to suit the needs of their organisation, it is distributed under the GNU General Public Licence, which in essence means it is copyrighted, but that there are additional freedoms. It is allowed to copy, use and modify Moodle as long as agree to provide the source to others; not modify or remove the original licence and copyrights; and apply the same licence to any derivative work. Moodle needs to be installed on a web server at an organisation's premises or at a web hosting company and is accessed by end-users through web browsers such as Internet Explorer or Firefox. (Aberdour 2013, 14.)

Moodle is designed to be flexible and has a host of features that users can tailor to the exact needs of their organisation. Modules include assignments, calendars, content, forums and chat, monitoring activity, options to add newsfeeds to sites, questionnaires, quizzes, resource links and wikis. (Aberdour 2013, 18.)

Moodle features also provide a better mechanism for communicating than some existing tools, with IT commentators recently reflecting that the workhorse of internal communication, email, is looking decidedly tired as more effective and more efficient communication and collaboration tools devised in the consumer realm work their way into corporate life. (Aberdour 2013, 18.)

Features in Moodle, such as forums and wikis, can help build rich collaborative communities of learning around their subject matter, while others prefer to use Moodle as a way to deliver content to students, such as standard SCORM packages, and assess learning using assignments or quizzes. SCORM compliant or other packages of content can be uploaded into Moodle, with no overall limit on size other than the server's limit. (Aberdour 2013, 18.) Learning activity management systems can also be integrated with Moodle.

Uses vary from totally online courses to using Moodle as part of a blended learning package. It can be used for a small number of users for very large deployments, such as those at the Open University and in private sector companies including Cisco and Subaru. The platform can be used for training and building communities of knowledge to share best practice and to collect corporate information for future training programmes. Features such as wikis and forums help learners to think, reflect and collaborate on what they have found particularly beneficial or enlightening on a course. (Aberdour 2013, 18.)

Reinforcing the move towards collaborative tools, IBM's 2008 paper, 'The enterprise of the Future', based on interviews with CEOs across the world, recommended that to improve the ability of the workforce to adapt to change, organisations should consider measures including embedding collaborative tools such as wikis into work processes that involve individuals distributed across multiple locations, and elevate collaboration to a core competence by incorporating it into performance management, learning and recognition efforts. (Aberdour 2013, 18.)

The use of Moodle is popular all over the world. This is partly because it is an open source application. Organizations that use Moodle can actually create a variety of templates, which have a specific structure. Moodle is popular for teaching purposes all over the world and also in Finland. UAS’s involved in this development work, HAMK and LAMK have used Moodle for a long time. Figure 11 shows the starting page of the online course, indicating roughly the course structure.

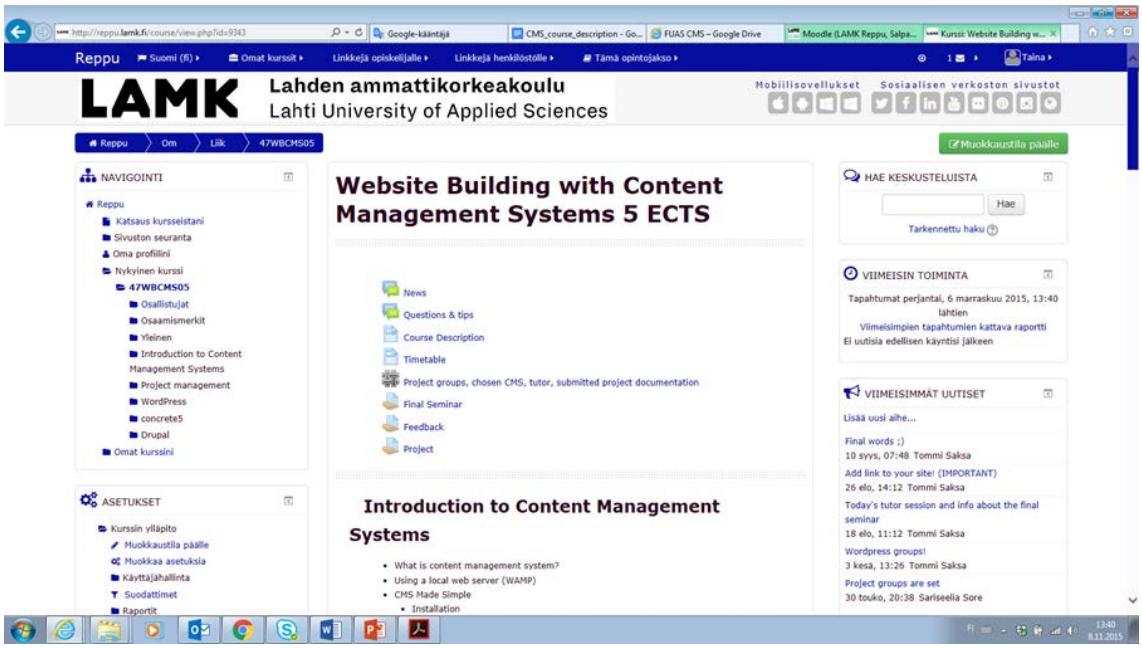

Figure11. LAMK Moodle view (LAMK, 2015).

Optima

Optima has been developed together with Discendum and its customers. Optima is operating through the Internet with high quality and cost-effective network environment for educational institutions, enterprises and other organizations. Optima allows to implement a wide range of training and planning projects or other community-based projects easily and flexibly online.Optima's learning environment is used mainly for online studying and teaching. Optima is accessed over the Internet with a web browser (e.g. Internet Explorer, Firefox, Opera). (Discendum, 2016.)

When Optima is used for teaching and studying there is a support for campus-based teaching and studying (e.g. for electronic distribution of course materials, saving and distributing students' course work, online interaction etc.). There is also a web-based environment for distance learning (e.g. during teacher training or student exchange, or to support thesis writing) and an online framework for international cooperation. The university staff can use Optima free of charge for teaching (also at the Open University) and doing research. Otherwise the charge is 15€/person/year. (Discendum, 2016.)

Laurea uses a teaching and learning environment Optima. The use of Optima is not as widespread as the use of Moodle, but it has its supporters. Optima can also be tailor according to an organization's needs. Figure 12 shows a view of Laurea's Optima basic view where the structure of one given course can be seen.

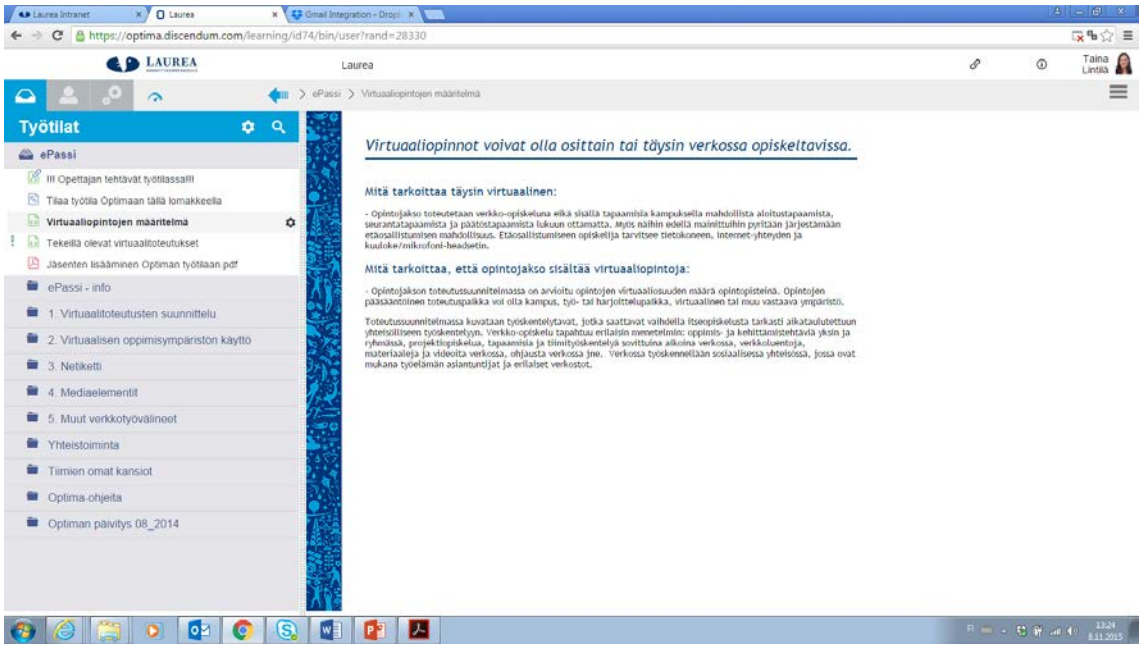

Figure 12. Optima view (Laurea, 2015.)

edX

edX is a not-for-profit enterprise of its founding partners Harvard University and the Massachusetts Institute of Technology (MIT). Stanford University and edX announced their collaboration to advance the development of edX's open source learning platform and provide free and open online learning tools for institutions around the world. (Stanford University to team with edX, 2013.)

According to a release, edX will release the source code for its entire online learning platform on June 1. In support of that move, Stanford will integrate features of its existing Class2Go platform into the edX platform, use the integration as an internal platform for online coursework for on-campus and distance learners, and work collaboratively with edX and other institutions to further develop the edX platform. (Stanford University to team with edX, 2013.)

Stanford will collaborate along with others around the globe on the ongoing development and refinement of the edX online learning platform. Developers everywhere will be able to freely access the source code of the edX learning platform, including code for its Learning Management System (LMS); Studio, a course authoring tool; xBlock, an application programming interface (API) for integrating third-party learning objects; and machine grading API's. edX will support and nurture the community of developers contributing to the enhancement of the edX platform by providing a rich environment for developer collaboration as well as technical and process guidelines to facilitate developer contributions. (Stanford University to team with edX, 2013.)

Figure 13 shows a view of edX's home page. From there, students can search for suitable courses for themselves and start independent learning. This landing page is a portal where students can choose the course and the course provider. The most of the courses are free, but if participants want to get a certificate for this course they usually have paid for that. Universities offer courses are available in abundance. The most famous are obviously Massachusetts Institute of Technology (MIT) and Harvard University. These universities have been participating in setting up this community.

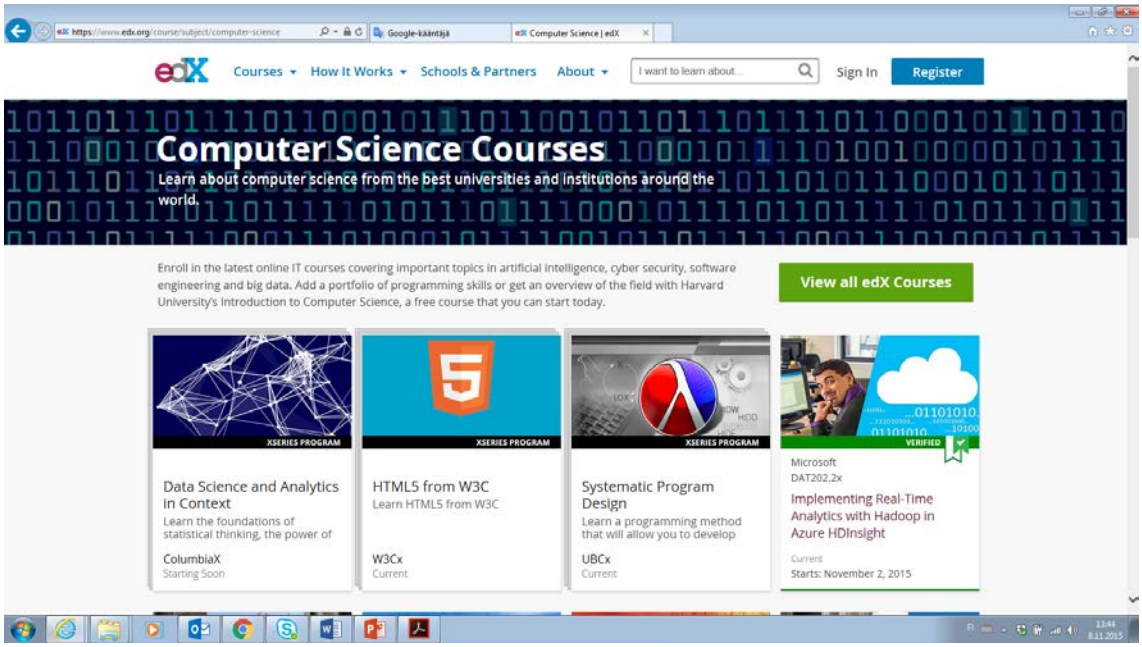

Figure 13. EdX view (edX, 2015.)

WebEx

One tool for creating a web-meeting is Cisco WebEx® Meetings. WebEx helps to make your web meetings more productive. With this solution can easily enable team members to share information though mobile device or computer. This tools are developed to people-centric collaboration. With WebEx Meetings people can attend to meetings any time, from anywhere, both outside or inside the organization. The teams can collaborate even more effectively when using a virtual meeting incorporating audio, high-definition (HD) video and real-time sharing of content. WebEx Meetings also help to reduce the number of e-mails and streamline of the entire meeting process by providing arrangements for the safe and centralized online space for organizing and sharing all meeting-related activities and information. WebEx Meetings is a software-as-service (SaaS) solution model that is produced through the Cisco WebEx cloud service. Availability of service is very high quality and safe service delivery solution has a good performance and it is flexibly integrated and ensures good enterprise-grade security. WebEx provides a web-meeting experience to facilitate the marketing of presentations, discussion of ideas and brainstorming between virtual project groups. WebEx can be used to share content and use integrated audio and HD video online with participants from different locations as easily as if were meeting face to face. (Cisco, 2015.)

WebEx Meetings automatically creates dedicated meeting spaces, which help in strengthening the functions and facilitate in sharing the content. Agendas, lists of participants and related documents can be stored in one convenient location. Instant feature messaging can be used to help to reach c-workers and chat. After the meeting, documents such as meeting notes, action items and recordings synchronized can be maintain and stored in and can be accessed using by the meeting spaces. Notifications comments, files and downloads also remain up-to-date. Integrated file sharing feature allows documents to be managed and edited. (Cisco, 2015.)

Figure 14 shows a view of the HAMK’s WebEx's starting page. The most common way of participating in the WebEx session is that participants obtain a link, which can be used to log in and participate in a WebEx session. The link can be sent by e-mail, or it can be, for example, available in students’ learning system.

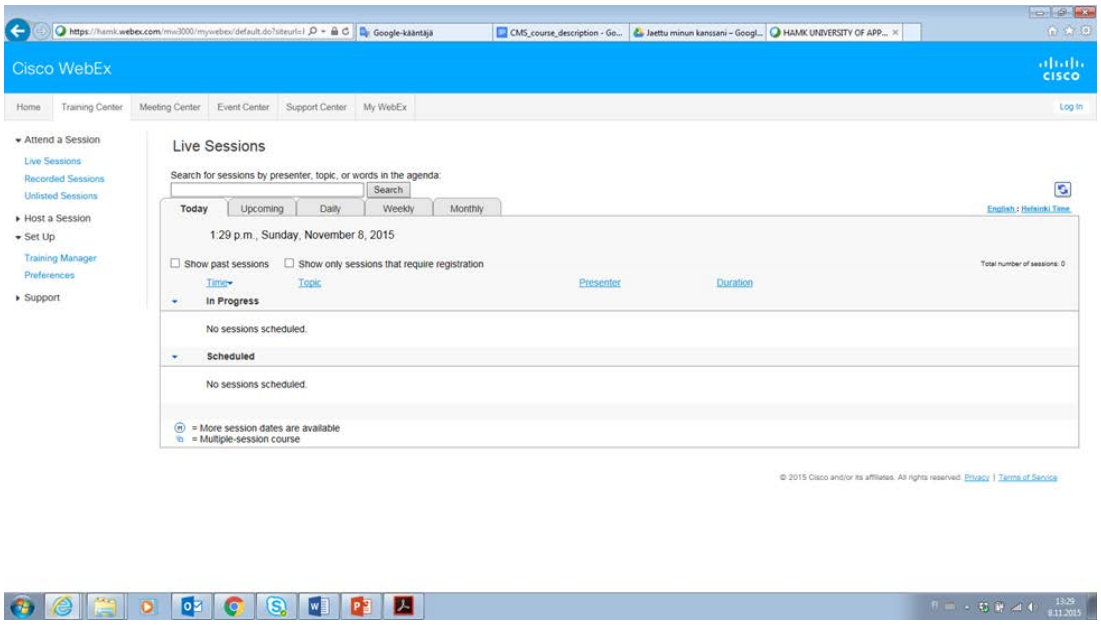

Figure 14. WebEx view (Cisco WebEx, 2015.)

Adobe Connect

Adobe Connect (AC) is web conferencing software which offers solutions for online meetings, eLearning, and webinars. It is well suited for both small group collaboration and large scale webinars.

AC is based on Adobe Flash technology and it supports the rapid creation of online training courses, which are held in a virtual classroom in real time. Adobe Connect Meetings includes all the features including Adobe Connect Webinars and Adobe Connect Learning. Adobe Connect is widely used in Finnish Universities of Applied Sciences. AC is a virtualization environmental tool and it allows students to get online support from teachers. Students can also watch the lessons later, if the teachers have recorded for the online lessons. AC can be used also outside the school campus and students can also use it to work independently between their own groups. (Adobe Systems Software, 2016.)

One important feature of Adobe Connect is that it supports a variety of operating systems. Students can use the AC in their own computer via a Linux, Windows or Mac OS X operating systems and a lot of different support channels are available where they can

get help if necessary. User interface in the AC can be divided into manageable elements called pods. (Adobe Systems Software, 2016.)

Figure 15 shows a view of the AC basic display. In AC can create the so-called own AC rooms. The address of the AC room, then will be informed to the participants and then they can log in the AC session. Laurea and LAMK use AC for online sessions between teachers and students. In Laurea all teachers have their own AC room. Figure 15 shows Taina Lintilä's own room. Teachers can use either their own AC room, or they can create also separate AC rooms for courses. Also, students can create their own AC rooms, which allows them, for instance to do group work.

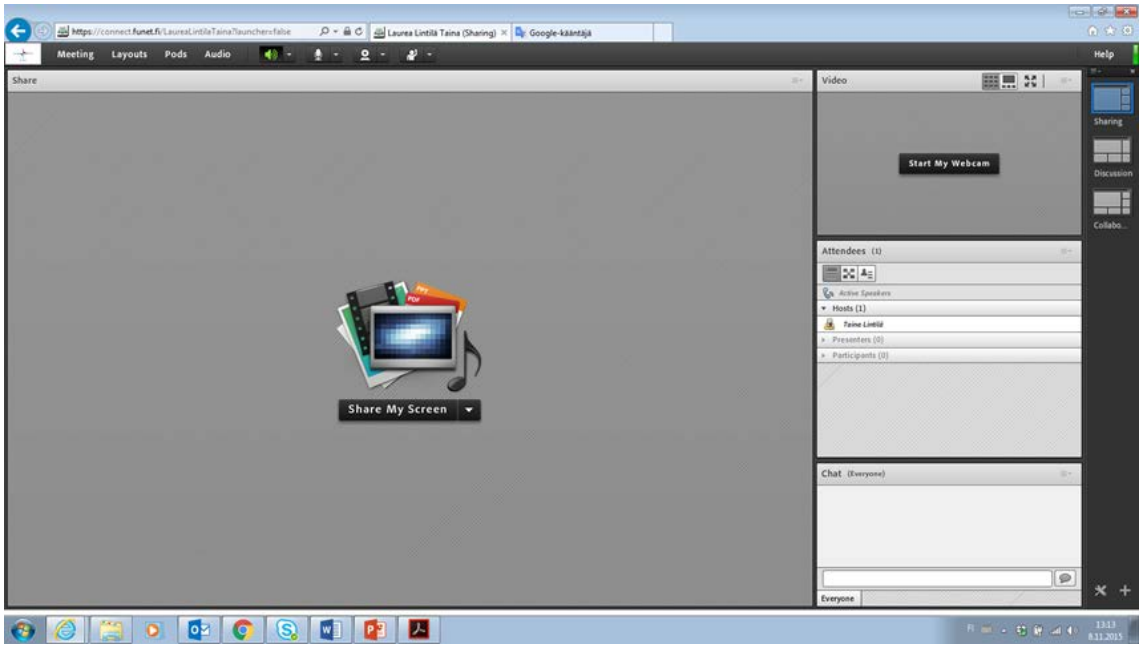

Figure 15. Snapshot from Adobe Connect Pro view (Adobe Connect, 2016).

Google Drive

Google Drive is storage and file synchronization service created by Google. It allows users to store their files in a cloud, share files, editing documents, spreadsheets and presentations in cooperation. Google Drive includes Google Docs and Office software, which allows for cooperation editing of documents, spreadsheets, presentations, drawings, forms, etc. Google Drive was launched on April 24, 2012 and had 240 million active users per month in October 2014. (Google, 2016.)

Google Drive is a great tool when there is a need to share files or to edit them at the same time online. For the design phase of this course the teachers created a common workspace to Google Drive. This worked well during the course planning, because all teachers saw there what had been done and were able to even simultaneously edit the same document. Figure 16 shows a view of the Google Drive folder which was used during the design phase and in which all planning documents have been saved.

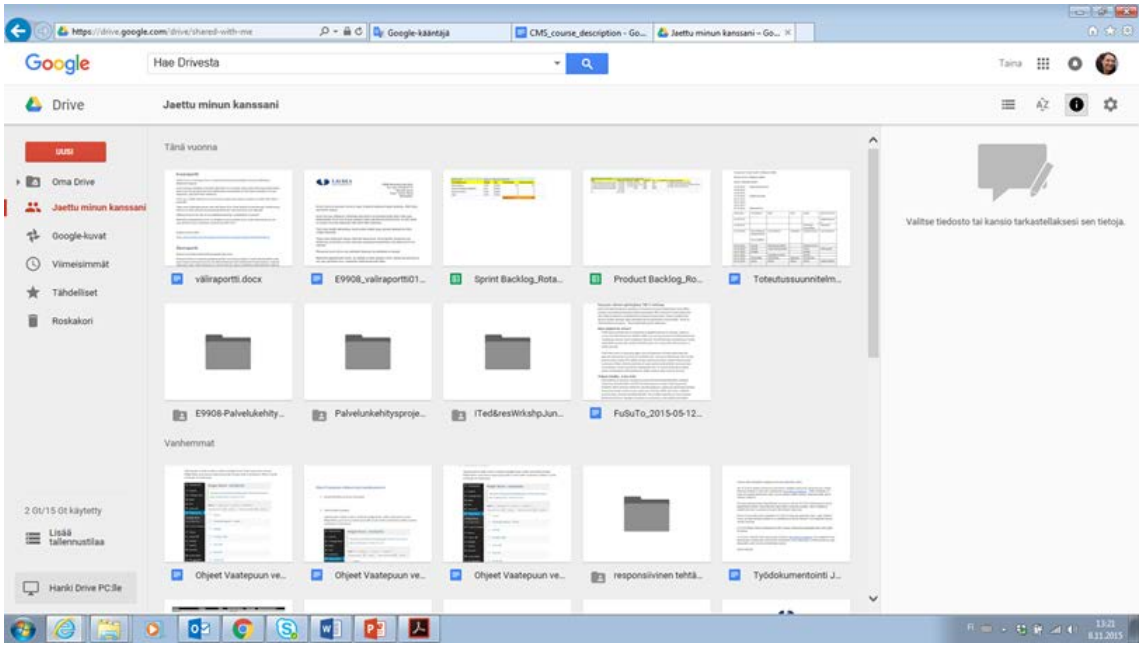

Figure 16. Snapshot from Google Drive view (Google, 2016).

Google Drive was a good was a good tool for project planning stage. It makes working together easy, and files did not have to send by e-mail. In addition, all participants were able to use it already.

5.3 Content Management System (CMS)

Content management systems are software that help keep track of each and every piece of the content on the website as like using a local public library of books and manage them. The content on the website can be anything e.g. simple text, documents, photos, music, videos or any other thing what can think off. The best part of a

CMS is that it requires almost no technical knowledge or skill to manage and maintain it, everything about the content is managed by CMS.

Website building has become easier with the availability of many content management systems because anyone does not have to struggle much with html/css coding for web pages. There are many content management systems (CMS), but many of them are excessively complicated and require greater level of technical knowledge. Some of them are very simple, easy to use and also give the flexibility to customize the website. In this study has been included two ranking lists from the Internet where systems are listed ten most popular content management systems (Table 4) that have made web developers' and website publishers' job much easier. There are, of course, many other ranking lists but in this study these were chosen because in both of them all three CMS, WordPress, Drupal and Concrete5, that has been used in the present online course are present. (10TopTenReviews, 2015 & makeuseof, 2015).

Table 4. Two ranking list of ten most popular CMS (10TopTenReviews, 2015 & makeuseof, 2015).

	Name of CMS *(source: 10TopTenReviews)*		Name of CMS *(source: makeuseof)*
1	ocPortal	1	**WoldPress**
2	**WordPress**	2	Joomla
3	WebGUI	3	ModX
4	**Drupal**	4	TextPattern
5	Rubero	5	Refinery CMS
6	Joomla	6	**Drupal**
7	eZ Publish Platform	7	**Concrete5**
8	ModX	8	DotNetNuke
9	**Concrete5**	9	Umbraco
10	X3CMS	10	TinyCMS

In Table 4 can see that WordPress is on 10TopTenReviews list on second and on makeuseof list at first. Five CMS system are in both list, WordPress, Drupal, Joomla, ModX and Concrete5. The remaining five CMS systems are on these lists different systems.

Content of Existing Online CMS Courses

Begin on this project, one task was to find examples of CMS courses. Many different kinds of CMS courses were found. Some of them users can freely enroll for over the net and some of them was payable. In this thesis was elected two examples. From these elected CMS courses where looked for the content, descriptions and what kind of tasks and assignments was included in these courses. Also the timetable was one thing which

was interesting. These two examples were elected for because in these courses contains both individual assignments and project work, as it was thought to include in the new CMS course.

The first example is from George Mason University. The name of the course was web development using content management systems. The course was scheduled to start at the end of August and it end 8th December 2014, all in all 15 weeks. There were ten assignments, twelve online discussions, four quizzes and a project assignment. The CMS tool chosen was Joomla. There was also one textbook which was required for this course. There were also pre-requirements for the participants. A MASON email account has to be activated and the students have to have access to the Blackboard Learning System, which was their learning platform. They also had two exams, first midterm exam in October and the final exam in December. The final grade from the course was planned to contain midterm exam, final exam, project, assignments, online discussions and online quizzes (table five) (George Mason, 2014.)

Table 5. Content of George Mason University CMS-course

Grade Instruments	**Points Distribution**	**% of Final Grade**
Midterm Exam	1 * 20%	20%
Final Exam	1 * 20%	20%
Project	1 * 20%	20%
Assignments	10 * 2%	20%
Online discussions	12 * 1%	12%
Online quizzes	4 * 2%	8%
TOTAL		**100%**
**Extra credit points*		*Up to 10%*

The second example (see attachment one) was Harvard Extension School course. The name of the course was web content management systems site development. The course was scheduled to start on January until 16th May 2014, all in all 15 weeks. There was a small spring break in March. There were three assignments which all were

33,33% of grade of the course. They had chosen three CMS tools for this course: Joomla, WordPress and Drupal. Assignment was to build a website with all of these tools. The first assignment was with Joomla and it had to be ready 14th March 2014. The second assignment was with WordPress and it has to be ready 11th April 2014 and the last assignment/final project was with Drupal and it has to be ready 16th May 2014. There were no required textbooks for the class but two recommended books for those who prefer textbooks. In this example they had three different CMS, Joomla, WordPress and Drupal. Two of them (WordPress and Drupal) were the same that had been chosen for the present project.

6 Own Solution Development

This section describes the starting point for planning a new online course and development activities for a new online course. It describes the FUAS current online courses, technologies used in those courses and content of those courses. It also describes solution development of the new online course, chosen technologies and content of new courses.

6.1 Starting Point: Current Online Courses in FUAS

All three FUAS partnerships Universities of Applied Sciences, Laurea, Lahti and Hämeenlinna have earlier teaching experience about the Context Management Systems on their own students. Because of the limited number of teacher's resources it would be must wiser to combine resources. The all participants have a common interest to work together and they have discussed about developing this kind of online course together. A teacher form Lahti asked for teacher's interest from Hämeenlinna and Laurea. One teacher from Hämeenlinna and two teachers from Laurea were willing to start more detailed discussions about the subject. That was the starting point of this study.

The people involved in the early planning were from LAMK Sariseelia Sore, from HAMK Tommi Saksa and from Laurea Mika Stenberg and Taina Lintilä. At first, the participants were discussing who was interested to be involved in planning and implementing this work. All teachers were interested, but a prerequisite for the continuation of the work was that the teachers also should have time to design and implement this course. It was agreed that each will discuss with their supervisor and asks whether they have the possibility to participate in this work and could they have working hours for this. More detailed planning was started when the resources were clear. Resources for this work got Sariseelia from LAMK, Tommi from HAMK and Taina from Laurea. All three teachers got 50 hours of working time.

The aim was to design and implementation the new online CMS course in cooperation with FUAS. With the FUAS cooperation has implemented a number of different study courses, which mainly have been the summer courses. Most of them is implemented with online implementation, and they have been open to students of all three Universities

of Applied Sciences, Laurea, HAMK and LAMK. However, these courses are generally designed and implement only one of the FUAS Universities of Applied Sciences alone. This new course purpose was to get the experience of how these kind of courses could be designed and implemented together with all three Universities of Applied Sciences. The aim was also to find out that how that kind of cooperation succeed together with three University of Applied Sciences and what this kind of cooperation requires. The aim was also to find out, that would such cooperation reduce an individual teacher's time and workload and how the various teachers' competences can be taken into account in the work.

6.1.1 Technology Used for Online Courses in FUAS

Laurea's teaching and learning platform are Optima where the content, material and assignments of courses are usually stored. A communication tool for Online courses in the Laurea is generally used Abode Connect (AC), where teachers can make their own rooms which students participates. Teaching and learning platform in HAMK and LAMK is Moodle. Communication tool which HAMK used in online courses is usually WebEx and LAMK communication tool is AC

In addition, students often used many different open source repositories and communication tools such as Google Drive, Facebook, Dropbox, Whatsapp, Skype, etc. when their work in groups and have to contact each other and when they need to store documents. During teachers designing this common online course with FUAS cooperation has been also used Google Drive, where were stored all planning documents. Google Drive was familiar to everyone and document editing in Google Drive was easy and flexible.

6.1.2 Content of the Existing CMS Courses

All three Universities of Applied Sciences have had earlier their on implementation of CMS courses. LAMK's course name was Content Management Systems. In this course, students could choose themselves, which CMS they want to use. They have individual tasks and project work in groups. In individual tasks they have among other things, have to compare three different CMS systems. The duration of the course

was eight weeks and implementation was 100% online. In table six can see the content, tasks and timing of the course.

Table 6. Content of LAMK CMS course.

Week	Learning Assignment	Work with the Client
1	Task 1: Introduction	
	Task 2: Basic knowledge	
2	Task 3: Fundamentals of CMS	
3	Task 4: The process	Task 1: Contact with the client
		Task 2: Requirements specification
4		Task 3: Selection of the CMS
		Task 4: Project plan
5	Task 5: Advanced CMS	Task 5: Project follow-up
6		
7		Task 6: Manual
8	Task 6: Presentation	Task 7: Website release
	Task 7: Evaluation and feedback	

HAMK course name was Www-Content Management Systems. The content includes basic knowledge for CMS, CMS installation, use and configures, widget installation and editing, web pages templating based on web standard, installing, using and editing online shop system and comparing which CMS fit for which purpose best. Students could also choose which CMS they want to use, but the teacher recommendation was WordPress, CMS Made Simple, Joomla, Drupal or Concrete5. The course was started in September and ending on December. There has been two kinds of implementation of this course, face-to-face (classroom) implementation for daytime students and online implementation for mature students.

The Laurea course name was Drupal CMS. In the basic description of the course was saying that Drupal CMS is a web publishing system, a program, or a web application which can use to manage content on a website. It is a tool to build tools to manage content on websites used by web developers to build customized web publishing tools.The aim of this was learned Drupal core basic like nodes, users and permissions, blocks, menus and other basic Drupal core settings. In course description said that after studying

this course students are able to develop and manage web services, maintain web servers, install and implement a publishing system and develop company content production solutions.

This CMS course implementation was 100% online with the Adobe Connect sessions. Between the contact sessions, students study themselves and send their assignments to Optima which was they learning platform. Students have both individual assignments and also a project which they made by groups. Table seven can see the content of AC contact sessions.

Table 7. Content of Laurea Drupal CMS course.

Contact Session 1 (Adobe Connect pro-ACP)
- Introduction to Drupal & Project tasks
- Setting up the environment on local machine (XAMPP)
- Creating database and installing Drupal
- Installing themes, changing logo, favicon, homepage images
- Create pages/article
- Installing modules
- Installing theme
Contact Session 2 (Adobe Connect pro-ACP)
- Installing WYSIWYG module
- Note: download ckeditor 3.6.5. for Drupal 7 http://ckeditor.com/download and place it in right location & also you will need to download IMCE http://drupal.org/project/imce
- Adding image gallery using Colorbox installation / Video gallery
- Feedback/contact us page with MAP
Contact Session 3 (Adobe Connect pro-ACP)
- Checking the project progression
- Editing navigation on Drupal project
- Editing blocks in Drupal website structure
- Uploading Drupal on website on webserver

6.2 Solution Development of the New CMS Online Course

The theme of a new online course, which were designed and implemented together with three universities of applied sciences. In the beginning of planning process, there was one teacher for LAMK, Sariseelia Sore, one teacher from HAMK, Tommi Saksa and two teachers from Laurea, Taina Lintilä and Mika Stenberg.

Together all teacher's decide that course topic will be CMS systems and perspective will be the Web developer. In every school has already implemented earlier, this kind of courses where the perspective has been a developer, but still the subject was, however, quite fresh. In addition, each school had already knowledge of the various CMS systems, and this support our goal to provide a broader knowledge to our students.

The design for the new 100% online implementation of the new CMS course was also working completely online without contact session. Planning meetings have been held less frequently at first, but when the deadline approaches there was more meetings. A variety of communication tools were used in the meetings. Used tools were WebEx, Adobe Connect and LYNC. For planning document storage location was chosen

Google Drive and selection of course teaching and learning platform (LMS) was Moodle. Reason why Google Drive was chosen for storage for design phase was that it supports well online document editing for all participants for a same time. That feature doesn't include in Moodle. There are many reasons why Moodle was chosen for teaching and learning platform for this online course. One was that it is worldwide known and ranked in the top ten LMS for many ranking lists. Other reasons was that it is an open source platform and it was already in use at LAMK who was the participant who was responsible for learning administration.

As to the resources, i.e. working hours, for the planning and implementing the course Tommi Saksa from HAMK, Sariseelia Sore from LAMK and Taina Lintilä from Laurea all got 50 working hours.. Mika Stenberg, who was participated at the early stages of the design phase, had to quit because he did not get the resources. All participants also needed resources for the implementation part of the course.

Each University of Applied Sciences gave resources to implement this course for their teachers corresponding to the resources allocated for two credits course work. The number of these hours varies slightly between the Universities of Applied Sciences as well as in different courses. The general principle is, however, that teachers receive 19 to 24 hours working time per one credit.

At first the participants wondered what should be the goal of the course and how could it best succeed to reach. In the beginning participant also have to plan the provisional timetable of the course implementation. Together all teachers came to the conclusion that the schedule of course should be long enough that students can succeed to finish it. Participants agreed that the course will start after the middle of May and it will finish the end of August. This is because the students have usually before beginning of May a number of other courses which they have not yet been completed and therefore it is for them a very hectic and busy time. Participants also expected that a number of students participate also in other courses or works during the summer. Therefore, it was decided to schedule the course in the end of August.

One of the most important tasks was to agree on the course learning outcomes, structure, method of implementation and the evaluation criteria. The main goal of the course was set that after the course the students should have the know-how to produce a web site that could manage and update by content management systems (CMS). Students

should be able to choose an appropriate CMS, install it on a service and tailor the site according to the requirement specification. Participants decided to motivate the students to acquire the actual customers for their development project. However, it was taken into account how demanding the course can be, so it was decided that the real customer project is not an obstacle to the completion of the course.

Learning Objectives were reached with a three-step approach: the orientation phase, phase to deepen the knowledge and reflection phase. The aim of the orientation phase was to assimilate the working model of the course (adopted Scrum) and acquire an initial understanding and experience of CMS systems in general. The aim of the deepening the knowledge phase aim that everyone would study the chosen CMS system profoundly. The gold of the reflection phase was to recall the lessons learned and reflect it.

Participants concretised every stage and agreed on every phase objective, content and implementation (lecture, group work, individual work, customer work, etc.). Participants shared the responsibilities Technical questions were raised and teachers discussed if there was a need for using the server and which one of schools could take responsibility to manage the server. One thing which also has to agree was that which school would take responsibility to take care of the course management. Also the differences between the schools as to practical issues were discussed, for example the students' registration issues, as well as the tools used. Sariseelia Sore from LAMK took the course management part and student registration to LAMK.

Together it was decided that Tommi Saksa from HAMK took responsibility for the starting session and the first individual assignment because he had earlier experience for that part. Taina Lintilä from Laurea took responsibility for teaching and evaluating the project management assignment part. Sariseelia was responsible for the instructions to students and the administrative part of the course. Different CMSs were divided so that Tommi was tutoring the WordPress group, Sariseelia was tutoring the Concrete5 group and Arvind Sharma was tutoring the Drupal group. The reason why Arvind take tutoring task was that he had taught Drupal in Laurea before. All four teachers participated in the common online sessions, starting phase, project starting phase and final seminar. In addition, the tutoring teachers also had tutoring sessions with students.

When participants had agreed on all the necessary course related implementation issues, they wrote to the final implementation descriptions and the exact timetable and

agreed on the course evaluation criteria. Online tasks of the course were divided in such a way that Tommi Saksa from HAMK was responsible for the first individual task, Taina Lintilä from Laurea for the teaching practices of agile development and project management guidance. These two areas were common for all participating students. The distribution for CMS systems was agreed in such a way that HAMK was responsible for teaching and tutoring WordPress, LAMK Concrete5's and Laurea Drupal. The course material production was the responsibility of the teacher responsible for the target part. Tommi Saksa had already had similar individual tasks for students in his earlier study unit implementation, so the majority of his course materials were already in place there.

The agile development and project management materials Taina Lintilä from Laurea made specifically for this study unit herself. However, the background material was already done for other courses, so the material was quite easily produced by editing and supplementing those materials. All the tutor teachers' (Tommi, Sariseelia and Arvind) course material already existed, because they had all previously held courses related to those topics. In addition, the teachers put a lot of links to Moodle for students in various online tutorials to support the students in their studies.

6.2.1 Technology Used for New CMS Online Courses

It was discussed which tools for the online course implementation could be used and teachers considered which tools should be used in this case and which ones might be the best and most reasonable. The teaching and learning platform in LAMK and HAMK was Moodle and in Laurea it was Optima. Both tools, Moodle and Optima, have good features but both have also some weaknesses. One possible option would have been to take the some new open source tools, such edX and together learn how to use it. Many successful and famous universities such as MIT, Harvard and Berkeley University already use it and that is why it would be a good choice. edX could be the best solution in future, but for this new CMS course Moodle was chosen Moodle . Moodle is one of the best LMS platforms worldwide and it has a high ranking rate in many lists. Moodle is free and it has a lot of features and possibilities to choose from. One reason for choosing Moodle was the fact that it is already used in two of the schools, and it was also familiar to many Laurea's students because they have used it in earlier FUAS summer studies. The reason edX was not chosen was the fact that none of our schools had used it earlier and learning to use for new tool would likely be a risk for the completion of the proposed CMS course in the tight schedule.

Teachers agreed that the students' online sessions communication tools would be WebEx because this is a tool which HAMK usually uses and they were responsible for leading the course. Tutoring sessions were shared in all schools and each teacher could choose which tool he or she would use with the students. At Laurea and LAMK that tool was Adobe Connect and HAMK used WebEx.

As regards the CMS course, there were also discussions about the CMS systems. Teachers considered which one of the CMS systems would be selected for the students to study. For individual tasks was chosen CMS Made Simple, because it is simple to learn and it is easy for using it to get an idea of what can do with the CMS systems and how the basic principles work. This was also a familiar tool for the HAMK teacher who was responsible for teaching this part of the course. Before choosing these CMSs to be taught to the students, a survey was done. Based on the results three popular CMSs were chosen: WordPress, Drupal and Concrete5. The choice of these three different CMSs was also easy, because Laurea already had experience of Drupal and had organized courses with Drupal. HAMK had a long experience of working with WordPress and LAMK in Concret5These CMSs are also in the lists of the ten best CMSs in the world.

6.2.2 Aim for New CMS Course

The new CMS Course name was Website Building with Content Management Systems. It was designed to be five credit points and it start in May and ended in August 2014. The course aim was that after participating this course, students would be able to create a website managed and updated with content management systems, as well as be able to install a CMS, using plug-ins, using and editing templates and themes, user and access management, system updates, selecting a system based on a given case and customize it according to requirements. The student can also evaluate and choose a CMS based on different points of view of the website production process.

The new CMS Course was implemented 100% online. All study sessions were online sessions. Students had individual assignments and project work (teamwork). Individual assignments were that students can learn basic knowledges for CMS and trained these skills themselves. The idea of the project work was that students learn the agile project

method, do customer needs analysis and requirements specification and learn how to work with the virtual team.

6.3 New CMS Course

The new CMS Course starting day was 19th May 2014. There were two online sessions where the teachers have a lecture, the starting session was on 27th May 2014, where the subject was agile methods and project work. The course included four tutoring sessions. The first was intended for an individual task guidance and the other three were for the group work guidance where students receive the necessary guidance for the selected CMS. The last tutoring session was meant to be a check point for the group work where all tutoring teachers check what the situation of project works and do they need help. The online session was the final seminar where the groups presented their project works to teachers and other groups. The idea for this final seminar was that the students could reflect what they have learned during the course. In Table 8 can be seen the timetable of the course.

Table 8. Timetable and content of new CMS Course.

Timetable			
Phases	**Date**	**Time**	**Content**
Starting phase	19.5.	18-20	Starting session, basics about CMSes, introduction to one CMS, presentation of individual assignment
	23.5.	13-15	Tutoring
Project phase	27.5.	18-20	Presentation of project work, forming groups, agile methods
	3.6.	13-15	Tutoring: WordPress, WebEx (HAMK) Drupal, Adobe Connect (Laurea)
	4.6.	13-15	Tutoring: Concrete5, Adobe Connect (LAMK)
	8.6.		Return Product Backlog
	9.6.	13-15	Tutoring
	18.8.	13-15	Tutoring
Final seminar	26.8.	13-16	Presentations of project works

The evaluation of the course was discussed together. Numerical grades in UAS are between 0-5. Evaluation in the new CMS Course consists of four different parts. Table 9 shows how much weight each part of the assessment was given.

Table 9. Consist of evaluation.

Part	**Weight %**
"The basic of building website using CMS" – assignment	20
Project work (technical qualities, level of execution, finishing, meeting deadlines)	60
Participation in final reflection session	10
Teamwork	10

Individual assignment weight was 20 %, which was the first part of the course. The project work the biggest part of the course and this partial weight of the assessment was 60 % of the course grade. The weight for the final reflection session and teamwork was both 10 %.

7 Results and Analysis

The used research methods for this Master's degree study was qualitative method. Based on the theory of qualitative research, the aim of this study was to understand the practical phenomena. In action research also the target is usually smaller but focused samples than in quantitative research. As a practical result of this study there was a pilot CMS course, which was conducted in spring 2014 and which was the target sample for the study. The research strategy of this study was action research. In the theory of action research the researcher himself participates directly in the development process and approach is a partnership and collaborative way of work as it was in this project. The course was designed and implemented with FUAS cooperation between the three Universities of Applied Sciences teachers. The author, as a researcher, participated in the development project. The course was designed and implemented 100% virtual. The students were asked for feedback at the end of the course and the feedback was analyzed, so that it is possible to continue to develop the course based on the students' feedback. The participating teachers' conversations and memos also served as material for the analysis of the results of the study. Teacher interviews were also part of the source of the material.

7.1 Developing New CMS Course

This developing project can seen as an organization development project because it has been done in cooperation with FUAS. The aim of the project was to develop a new joint CMS course in a collaborative way to work with FUAS partners. Organizational issues and collaborative way of work are based on action research theory. The one reason for this development work was also the need for increasing the number of joint summer courses within the FUAS without increasing the teachers working hours. The theory of action research was also initiated to solve an immediate problem and bring the change into an organization by improving the way they address issues and solve problems and that was also one reason for choosing the action research approach.

In action research theory the first stage is planning and it consists of four steps: identifying and limiting the topic, gathering information, reviewing related literature and developing a research plan. This development project started with the planning stage in autumn 2013 when the teachers from LAMK, HAMK and Laurea jointly decided the topic of the

course. This was the first step for the planning stage. The next step was gathering information which has done by discussion with UAS teachers. After that there were reviews of related literature and based on all this information was developed a research plan for this project.

7.2 Piloting CMS Course (Results from the Summer 2014)

The second stage in the action research theory is acting stage. In this study it was CMS course implementation and data collecting and analyzing. The CMS pilot course was implemented in May-August 2014. The course was entirely an online implementation. 35 students enrolled to the course and the number of students of all three Universities of Applied Sciences was quite equal. The course's first online meeting was on 19th May 2014, at 18-20. The online session communication tool was WebEx. All teachers participated in the first online session where they introduced themselves to the students. The division of labor of the course between teachers had been agreed earlier and the main responsibility for the starting session was at HAMK. In the starting session, the teachers first went through how to use Moodle, which was the chosen as the teaching and learning platform. After this the teachers presented the contents of the course, the related tasks and course schedule. At the first time, teachers also went through the basics of the CMS systems, presented one CMS system (CMS Made Simple), and went through the students' first assignment, which was an individual task.

The total number of course online sessions was seven. Four of them were reserved for students tutoring sessions. Online sessions in May were three, in June and August two. In July there were no scheduled online sessions at all because the teachers were on their summer holiday, but the students could choose themselves whether they wished to study during July. The second online session, which was the first tutor session, was intended to support the students in matters of their individual task. In the third online session the students were divided into project work groups and the teachers went through agile methodologies, which was selected as the project implementation method in the course. Teachers were chosen in three different CMS systems, Drupal, WordPress and Concrete5. The reason for choosing these CMS systems was that they all are quite popular in the ranking lists and teachers in LAMK, HAMK and Laurea had already used these CMS systems earlier. Out of these three tools the student project work groups had to choose one in which the project was made. The groups were allowed to choose which system they wanted to use, however, so that all three systems were elected. For all

different CMS system there was a private tutor teacher, each of the different universities of applied sciences. All tutor teachers were allowed to choose which communication tool they wanted to use during the tutoring sessions.

In the last online session all teachers and students were involved together. In the last online session, the students presented their project works to another. In the beginning of the last session all students and teachers gathered together and later on the students were divided into different groups where each group had a student or students who had used the different CMS system in the project work. In these groups the students then presented their project works. The presentations took place according to the agreed things through the script, where the students told their study and project work experiences on CMS system which one they use and told what was easy and what was perhaps a little harder. In this way, they all got an idea of all these three different CMS. The purpose of this task was that the students would then be able to reflect on what they had learned.

7.3 Feedback Collection from Students

Students were also asked for feedback on the course. This was important because this was the first time when the three Universities of Applied Sciences implemented together a totally virtual implemented and planned course. There were 35 students enrolled in the course 19 out of them participated in the first session. The number of students varied during the course. Passing and evaluation criteria of the course was that everyone had to do both an individual task and participate in the project work. 18 students completed the course (Table 10). 14 students out of the 18 gave feedback on the course. The course feedback was collected after the last online session. Based on the theory this study, the average penetration rate for online courses is 24 percent. In this case the penetration rate was not so easy to calculate because all enrolled students did not start to study at all but even if all the enrolled students were calculated, the penetration rate is more than 50 percent.

Table 10. Enrollments and participations of students.

	Students						
	LAMK	%	Laurea		HAMK		in total
Target	10	33,33	10	33,33	10	33,33	30
Number of enrolled	8	22,86	10	28,57	17	48,57	35
Notification of acceptance	8	25,81	10	32,26	13	41,94	31
Approved involved in first session	5	27,78	3	16,67	10	55,56	18
Not approved involved in first session	0	0,00	4	80,00	1	20,00	5
Dropped after the first session	2	33,33	1	16,67	3	50,00	6
Number of students receiving the evaluation	3	16,67	6	33,33	9	50,00	18
Approved (grade 1-5)	2	13,33	5	33,33	8	53,33	15
Abandoned (grade 0)	1	33,33	1	33,33	1	33,33	3

With the students' feedback it was wanted, among other things to get answers about the group's functionality and get the students give a verbal and numeric value on their own and the group members skills and teamwork activities. It was also wanted to know what the students had learned during the course and what would they have liked to learn. In the last question the aim was to find out what they liked about in this course and was there something what they might want to do differently. In the next chapters there are the feedback questions about the course.

First question: Describe the functionality of your group.

The answers to the first question, relating to the group's functionality were very different in different groups. Some of the groups experienced of the teamwork was that it functioned perfectly without any major problems, while the others had, especially at the beginning, big challenges to get the communication and co-operate work properly. One group where the students were all in different university of applied sciences, feel that the beginning was difficult, but the other group did not experience a similar problem, although they, too, were all in different university of applied sciences. In few groups there was a problem that one member of the group was more passive than others, and that is why team members feel that workload did not evenly distributed.

Second question: Describe the know-how and activity of your own and your group member(s) on the scale of 0-5. Give reasons for your assessment (a number alone is not enough).

The second feedback question was asked to give a written estimate and the number of their own and know-how and teamwork activity for members of the group. Students estimates of their own and their group member's know-how and activity were pretty much in line with what the teachers estimate about students expertise and activity.

Third question: What did you learn during the course? What other Issues were you hoping to learn?

The third question asked about what students have learned during the course and what would they have liked to learn. Most of the students felt that they learn well these subjects of the course and what they were wanting to learn, that is at least the basics of the selected CMS. Those who had already been using a CMS, said that they had learned things during the course in greater depth. Some students felt it was useful to learn how agile project produced documentaries, while some of the students felt that this project was too small to use this kind of method. Many students would also have liked to learn more than one CMS system, but they understood, however, that in such a short period of time, it would not have been sensible. However, they found it useful that everyone got the idea of the other CMS systems in the last online session.

Fourth question: Please, let us know what you did like and what you didn't, what would you like to have done differently, how?

The last question students were asked what they liked about this course, and what they did not like so much and what they would have liked to do differently and how. Most of the students thought that the course was good and they felt that they get that experienced what they wanted to have. Many liked that thing that the course scheduling was relatively free, with the exception of a few deadlines. A few students would have wanted a little more guidance and support. The timing of the course divided the opinions. Some students thought that the course should have been the end earlier because over the summer course was stretched a little too far. Some students felt that this solution was good, because it brought flexibility and made it possible to get the project work ready without much pressure on the timetable. Some students had hoped that the last seminar would be held in the evening time, because some students were working during the daytime and participation in the final seminar was problematic. In this course the final seminar was held at 13-16. Some of the online sessions were scheduled at 18-20 and some was at 15-17. Most of the students, however, thought that the final seminar was good,

because in the final seminar they got the idea how the other groups have done their project work, as well as they got an overview of other CMS systems opportunities and possibilities.

7.4 Teachers' Feedback and Ideas

Teachers' experiences from this online course was collected in informal discussions between teachers and in the meetings where have been discussing these subjects. Most interesting of the teachers experience were such things as how the teachers felt cooperation between the three different Universities of Applied Sciences, how the tasks were divided between the three Universities of Applied Sciences, had some University of Applied Sciences more responsibilities than others, was there any problem during the design or implementation phase, did it reduced the teacher's workload and time when designing and implementing the course together with FUAS compared to the corresponding course. In addition to these it was also taken into consideration the issues that affected the selected technologies used during the course design and implementation.

An interview was conducted with two teachers, Tommi Saksa from HAMK and Sariseelia Sore from LAMK. The interviews were done with AC and the teachers were sent in advance the interview questions so that they had the time to find relevant information and prepare for the interview. In addition to the interviews, in the thesis also includes the researcher's own view and the answers to the same questions, because the researcher was personally involved in this work. The interview was in the form of a semi-structured theme interview, where the aim was to get answers to the research questions of this thesis.

In the first interview question it was asked what benefit the participants felt they received for participating in this cooperation planned and implemented online course. Participants' opinion was that they did not get any concrete benefit, but everyone thought, however, that cooperation among the group of these teachers went smoothly and the fact that the course was designed and implemented cooperation between different UAS's teachers which all were professional, gave new insights. All teachers have a little bit different background and knowledge and that was useful for students because they got the maximum advantage of teachers 'knowledge of the various systems and sub-areas. Technological choices influenced by a lot of it which tools and applications the teachers had

previously made a successful online course. The respondents' previous experiences also contributed to the fact that did it spare the time and resources. If a teacher had already done her or his own implementations of this kind of courses, then they think that it took more time than if it would have done alone. The most time consuming work was the planning work together. As regards the course implementation spending of time was a little bit less than if the course has been done alone, although this influenced the thing how work was distributed within the Universities of Applied Sciences. In the theory can be found in some kind of correlation between the number of resource teachers and learning outcomes, but it is not quite straightforward, even with limited resources to generate significant learning outcomes. In this study, teachers' resources were pretty much in line with what is normally available, and it probably contributed to the fact that the students felt they had learned what they wanted to learn.

Teachers had two kinds of opinions concerning the length of the course and they had to decide which one to choose. It was discussed should the course end after summer in August or should it be quicker and more compact implementation. Teachers chose a longer implementation which ends in August. On the basis of feedback from the students also their opinions about this subject split up. Some students thought that chosen option was good, because otherwise they might not have had time to complete their project. On the basis on my own and the students' experience it might be good if in the future students could choose two kinds of implementation, rapid to rapid and over the summer implementation for the rest.

The teachers were also interested in what kind of experience it was for the students to work online with the different UAS students virtually without any face to face meetings. It was also interesting whether it had an effect or not if the members of the group were of the same or different UAS. On the basis of the feedback, it seems that it was not of great importance are the members of the group from the same UAS or not. The most relevant thing was own activity and motivation to learn and complete the course.

All teachers’ experiences of the course planning and implementation were quite similar. The course design without face to face meetings was quite natural to all teachers and there were no big problems with the connections. The design session length has been usually one hour long, and after online session, everyone continue with their own agreed tasks. All the participants were very committed to this work and all teacher’s ideas were quite similar. The division of labor between the UAS was easy to agree and everyone

had clear roles of the course implementation. The only thing, concerning the implementation of the course was the choice of the course implementation language. The justification for the choice of the English language was clear, but some teachers were a little bit unsure how well and naturally English speaking in online sessions would be. Everyone believed that the production of English-language material was not a problem, but talking and teaching in the English language was found a bit challenging, especially when the participants did not have visual contact and the teaching was carried out online tools. The reason why a web camera was not used in the online sessions where all students participated at the same time, was the large number of participants. Based on the experience teachers had encountered problems when a single online session was attended by large numbers of people and all of them use a web camera, it often leads to disconnection or connection can be very slow. In tutoring sessions the teachers used the web camera. The students made no comments about the teachers' language skills in their feedbacks.

All in all, the teachers thought about this course was that it was successful and offered good tools to plan and implement online courses together in the future. There is always room for improvement, but nothing very large and revolutionary failures was experienced. Working together was immensely rewarding. Teachers learned a lot about a new kind of way of working together and their skills complemented each other perfectly.

7.5 Evaluation of Results vs. Objectives

One aim of this study was to examine what kind of things should be taken into account when several organizations plan and implement together an online course. In the background there was FUAS and its network-based operating model which aim is to help to transfer the knowledge and expertise of the three Universities of Applied Sciences to their entire operating area. The key benefit for students is the broad and high-quality education provision that the students can utilize the whole year around. This was the background for designing a study of this period. Teachers’ experience was that there were several benefits. Perhaps the most important benefit was that teachers can share together their competencies. The teacher’s basic knowledge is one important thing what should be taken into account in these kind of cooperation projects. In this case there was no one who had to learn a lot of new things for this study course. The competencies among all three Universities of Applied Sciences teachers were divided in very different

areas of expertise and have been able to take advantage of the course planning and implementation.

Based on the theory, schools who work in cooperation are often also competitors. They also might not want to share resources and materials with other schools. These matters have to be addressed first, so that they do not have a negative impact on the development work. In this development project, these factors did not cause problems. In part, this was due to the fact that all belong to the FUAS, which has already a good practice of carrying out joint development projects and partly to the fact that the participating teachers trusted each other. Teaching material property rights can also be problematic for such a project, because, according to the Finnish law the teachers own the rights of their own material. However, even this fact does not become a problem with this project, because most of the materials were ready made or free-to-find online.

The second research question was that did it save time and resources when design and implement cooperation with several organizations. This is an important issue in UAS, as the number of employees has decreased, while the amount of work has remained the same or even increased. Although this course was implemented together for the first time, all felt that this good cooperation saved time and reduced the amount of resources in all UASs. It might take a little bit more time to plan, compared to if it was done only one UAS alone but because of the cooperation went smoothly, the planning part was not too extensive. All meetings were held about an hour long and after the meeting each contributed their own part themselves. The job sharing went well also in the planning phase. In the implementation part all teachers working hours were significantly lower than where it should have been taken alone. This was made possible by well-planned job sharing and a good cooperation between all. This result is consistent with the theory, because the theory describes the joint working and sharing of information to reduce duplication of work and at the same time it can also improve the quality.

An interesting research question was that which factors influence the choice of the most appropriate technologies. This would have imagined that IT teachers would like to choose the best technological solutions on the market. This has not, however, usually been possible in many cases in practice. A selection of teaching and learning platforms was compared. One of these, Moodle, is in use in LAMK and HAMK, Laurea has enabled Optima and the third option edX is used by many famous universities, such as Harvard

and MIT. Getting information about edX was a little difficult because none of the participants did not know much about it. Metropolia University of Applied Sciences was taking edX as a trial run, but because it did not fit in this project schedule, it could not be taken into consideration in this study course. Moodle can also be found in the list of the Best Learning Management Systems (Davis, 2015). So the choice between the teaching and learning platform was made in practice between Moodle and Optima. Moodle was used in two of the three University of Applied Sciences and it is ranked in one of the best LMS in the world, so it was a clear winner.

Technological choices also included the choice of the CMS systems. All teachers had their own opinion which CMS systems should be chosen.. On the list of the top CMS system was also the systems which were previously used in Laurea, HAMK and LAMK, so the choice was made for based on that. HAMK had used for a long time WordPress, LAMK had used Concrete5 and Laurea had used Drupal. These were, therefore, easy choices for the CSM system to use in the new CMS course, because the expertise of those already existed. The teachers discussed quite a long time on which CMS system the students should do their individual assignments, and eventually it was decided that the first individual assignment was to be made by CMS Made Simple, which had already been used at HAMK.

Other technological solutions also went quite naturally. Planning online meeting was held by WebEx at first, but since everyone had access to Lync, the rest online meetings were held through Lync. The common planning document, records, etc. was stored on Google Drive, which was familiar for all. This enabled the cooperation to go smoothly and it was an easy tool for use and it enable everyone to make their own notes even at same time. The communication tools for students each University of Applied Sciences agree themselves. HAMK used WebEx, which they generally use anyway and LAMK and Laurea used Adobe Connect Pro, which they students were already accustomed to using.

The last research question aim was to find out what kinds of experiences students receive for this course and how could this course be developed on the basis of their feedback. Based on qualitative research in this study was designed to understand the causes of students' behavior and on that basis to get information about the development of the course in future. Generally speaking, the students felt that the course was useful and interesting. The most of the students felt that they learn these skills which was they looking for in study course. Some student would have wanted that the course timetable would

have been shorter and quicker. Others felt that a longer implementation was suitable for them. On the basis of this finding in the future, it would be useful to provide students with the opportunity to choose between a faster or slower timetable for the implementation of the course. Some students also felt that the jobs and tasks were not distributed evenly in the group. At the beginning of the course the teachers wondered should the students try to be divided into groups where all students are from same UAS or is it better to make the mixed groups. Eventually, the teachers chose the mixed groups and it was interesting to review how the work was conducted in different groups. Whether the students were from the same or from different Universities of Applied Sciences did not affect the work of the group and not the results. Some mixed groups the working did not function without difficulty, but in some groups do the excellent job and they did not have any problems. The only factor that affected the work of the group was how well motivated the students were, not so much that factor from which Universities of Applied Sciences students were.

On the basis of these observations, it can be said that the objectives of the study were achieved very well, although there is always room for improvement. The result was a good course frame, the basis of which can, if desired, and, if necessary, to implement a new or new courses. On the basis of new courses implementations feedback this course can be developed further in future.

7.6 Validity and Reliability

When looking at of this study, validity and reliability, it must be kept in mind that qualitative research and in this case the action research study, validity and reliability is less important than, for example, quantitative research. It is essential to assess how credible and reliable research is, in the case of qualitative research. In this study in the methods used for interviews, questionnaires, free conversations between the teachers as well as all the material which were produced during the study. All research materials were collected in accordance with good research practice and they are available if needed. This makes the research more reliable and valid. The chosen research strategy was action research because it is suitable for this kind of research. The method for collection and analysis data was selected so that they would find just the information about what to look for, and it can be used for further development. This also makes the research more reliable and more valid based on theory.

In an action research study the author is usually involved in the development of the subject which is the target of development. This makes the researcher's vision usually quite subjective tight. However, in this study the researcher has tried to be as objective as possible in the case of the research results. In this respect the research is so reliable and credible as it can be, and if the same examination be carried out by another person, he should have parallel conversion. The generalization of the results of the study is difficult to make because it is unique, but with portability would say that the results of this study could usefully be transferred to other equivalent action research studies where participants were equally committed and motivated to design and implement together an online course.

7.7 Further Prospects

Proposal for further development is that this course should be implemented more than once and there should always do a new survey at the end of a course. The basis of these feedbacks can every time have new development ideas. The next time it would be wise to implement the course on the basis of a new plan and then can get interesting information about how the students felt the new timetable. It would be interesting to investigate how this model would suit for some other subject area method to design and implement a new online course.

This kind of model for cooperation could also try for another subject areas. It might fit even better for subject areas which are not so technical and system depending. At FUAS level, it would be good to share information about these kind of cooperation courses and then choose the right courses which can be developed together.

7.8 Proposal for Final Version of CMS Course

The new CMS pilot course was a good experience for all FUAS members. On this basis there has been made a proposal for a new CMS course implementation, which can be used in the future when in the FUAS cooperation is carried out similar online studies for the summer courses. Based on the action research theory this can see as a third stage of the process, developing stage. Although the CMS pilot course succeeded quite well,

there is always room for improvement of course. Development ideas came from student feedback as well as the teachers' own experience and comments. In the new CMS course version in future would be good to take into account the fact that there could be two different timetables, one for shorter and quicker implementation and another longer which can continue over the summer. However, this requires careful planning with the start phase when student groups are planning. At the beginning of the course, or perhaps even before the start, the teachers have to ask the students would they like to have a shorter and quicker implementation or do they want an implementation which is longer. After this query the students can be divided into appropriate groups.

The new CMS course implementation should therefore have two different possibilities to choose from. The content does not need too many changes, because the basis of the received feedback from students on the content of the course they that content was good and it contained everything what they needed. One thing what might be considered to be added to the course, was that the students could choose more than one CMS which they can study. A few students were willing to learn more than one CMS systems. Now they are studying only that CMS what they use in their project work. However, at the beginning of all students also study one simple CMS system, CMS Made Simple. So in that way all students study at least two CMS systems. In addition, students received information from members of the other groups in final seminar how other CMS systems works and how the works have done with these systems. This reflection phase of the course was in the teacher's opinion a very important thing and also the students thought it was meaningful.

The number of participants in the new course implementation could be higher if the implementation included two alternative schedules. The optimal number of students in such online course implementation could be 20 to 30 students. Now, therefore, in the best case the number of participant can be up to 60 students. Half of them would choose a quicker and shorter implementation and the other half would choose a longer implementation and can continue to work over the summer. In the new study course, all students would work on individual tasks in the beginning of course, but after that the project phase could then continue over the summer for half of the students. Table 11 shows a preliminary plan for new content and scheduling.

Table 11. New content and schedule of CMS course.

Timetable			
Phases	**Date**	**Time**	**Content**
Starting phase (for all students)	Mid May	18-20	Starting session, basics about CMSes, introduction to one CMS, presentation of individual assignment
(for all students)	May	13-15	Tutoring (individual assignment)
Project phase for all, divide for two different implementation groups (imp 1 and imp 2)	May	18-20	Presentation of project work, forming groups, agile methods
(for all students)	June	13-15 (or 18-20)	Tutoring: WordPress, WebEx or Adobe Connect Drupal, WebEx or Adobe Connect Concrete5, WebEx or Adobe Connect
(for all students)	June		Return Product Backlog
(for all students)	June	13-15 (or 18-20)	Tutoring
For imp 1 students	June	13-15 (or 18-20)	Tutoring
Final seminar (imp 1)	End of June	13-16 (or 17-20)	Presentations of project works
For imp 2 students	August	13-15 (or 18-20)	Tutoring
Final seminar (imp 2)	End of August	13-16 (or 17-20)	Presentations of project works

With this new schedule it also needs to be considered how resources are managed between each of the different UAS. The new scheduling, with two different implementations, which end in different time, brings a little bit of extra work for everyone, but basically it only effect for the project work. An individual assignments are at the same time for all and it is a good that everyone can do it at the same time because then the teaching time is the same for both groups. Checking the student assignments is the only thing which is a little bit time consuming therefore it would be good if this work could be shared.

In this new implementation all teachers' projects work tutoring time was increased, but it fit in each teacher's calendar and they could take their summer holidays at the agreed time. The first group course, therefore, would finish before the teachers' summer holidays and the other group course ends after the teachers' summer holidays when teachers have already started the new teaching period.

The fourth stage of the action research process is the reflecting stage. In the reflecting stage the first step is sharing and communication results. This study report is one result which is shared with all participants. All participants have also discussed together after the course implementation and Sariseelia Sore and Taina Lintilä has also written one article which has been published in the e-newletter Lahtinen on May 2015. All these activities include in the reflecting part of this project.

8 Conclusions

The writing and working of this study was interesting and it gave new ideas to develop new online courses in future cooperation between several different UASs. The background to this thesis was FUAS where HAMK, Laurea and LAMK are participating. In the future cooperation with other metropolitan areas UASs is also important. The ministry of Education and the Culture drive strongly forward for better cooperation between universities and Universities of Applied Sciences for the reduction of unnecessary duplication of studies.

On the whole, this new CMS course designed and implemented in cooperation with FUAS succeeded well. Different Universities of Applied Sciences often have their own ways and practices how things are done, and it might in some cases make it difficult to cooperate with others. Also, the choice of technological solutions is often different between all UASs. It can also be a big problem that so many staff members cannot use well all the necessary technological tools and applications. However, in this case, this was not a problem, partly due to the fact that all the teachers were IT teachers, so they were accustomed to using a variety of IT tools and software. That is why it was quite easy to all the teachers to start to use the new tools.

One challenge in the early stages of design the new course was the fact that none of the teachers had the necessary resources to their working plan. All Universities of Applied Sciences working plans are made quite early before the start of a new semester or calendar year, and in these working plans had not been able to incorporate into account the planning of this course. The idea for this cooperation for planning and implementation of this course came from the LAMK. Their situation was that they had to, in any case, plan and implement a CMS online course. LAMK teacher asked from HAMK and Laurea IT teachers if they were interesting to cooperate with LAMK and plan the new CMS course together. A group of enthusiastic teachers was agreed, and thus the work started.

The biggest challenge in the early stages of the work was the fact that no one had reserved any resources for this work on their working plan. However, this did not prevent teachers from starting the design work. During the initial stage, no one knew how the work would continue, but in any case, the planning began. There was a teacher or teachers from each UAS participating in the planning. First there were discussions about how

to design the work can do on a concrete level. All together came to the conclusion that the best solution for also the all planning stage is to work with online tools.

Often the challenge in such co-operation when several organization work together is that the policies and practices of organization differ a lot and it may cause unnecessary problems. Also, various technical tools and applications which are needed in the work are often vary a lot in different organizations, as in this case. This is often a challenge and many teachers are reluctant to learn how to use new tools, especially if they do not feel it to be useful for themselves. Many also fear that they do not know all these kind of things well enough and it can become a problem. However, in this case, this was not a problem, because all the teachers were IT teachers, and all were accustomed to using a variety of tools and software, and they were also willing to learn new skills.

When operating in collaboration with various organizations in the same sector, the problem is often the fact that even if the co-operation can benefit all, such organizations are often in competition with each other. Also, all University of Applied Sciences are in principle each other's competitors and they might not always want to share everything with other UAS's. In this case, however, all UAS are included in FUAS, which has been operating for a long time and all participating UAS's have worked together also in other areas and this was a good background. Also, all participating teachers had that kind of attitude that they are not competitors. They all thought that it made sense to combine their experiences and recourses and to start planning the courses in co-operation.

One research questions the study aimed at finding an answer to was what kind of things should be taken into account when working with such cooperation designed and implemented online course. There are many kinds of issues which affect directly these kind of collaborative projects and the experiences of these vary a lot, but the fact that this cooperation was done together with other University of Applied Sciences operating in the same field, was a rewarding experience and lessons learned could be shared among others. Choices of technology was most affected by participants previous experiences of what tools and applications will work best. In the longer term, the universities and UAS's could be wise to choose a common or compatible technological solutions, because then the implementation of cooperation should also be technologically easier. Universities and UASs should better design in cooperation which technological platforms and applications should be used in the future and to join forces with regard to these issues.

The study aimed to answer the question whether this joint course saved the teachers' time and resources. From the replies can be drawn the conclusion that, if the teacher had already concluded this kind of course implementation, no time is hardly spared. This is mainly due to the fact that designing together took more time than if the course should be planned alone. The issues about which teaching area came to whose responsibility, contributed to the fact whether it saved time or not. Tommi Saksa from HAMK got more personal responsibility for the course implementation than the other teachers. Tommi was responsible of the students' individual tasks designing, implementing and evaluating. In addition, Tommi worked as a teacher-tutor in WordPress. With regard to resources all the given resources were used, but increasingly all resources were sufficient.

The pilot implementation, this joint course, provided great information also to the last research question, which sought information on how both students and teachers could develop this course. The first development idea which is worth to try is to plan two different schedules, a faster implementation of an aspiring opportunity to complete the course at the beginning of the summer and a slower implementation for students who will want the possibility of continuing courses over the summer. Many students also wished that they would have to learn from more than one CMS. This possibility could also be considered to be included in a new course.

The teachers' opinion about this cooperation designed and implemented the CMS online course was that it was a rewarding experience, and the resumption of cooperation would also be good conditions. That should be taken into account in terms of the continuation of such cooperation, would be the fact that the subject of the course should be carefully selected and the participating teachers should be well committed to do cooperation work. In less technology-dependent courses such cooperation model would certainly be better than this CMS course study. The background on these kind of courses which have been implemented in cooperation, especially as online summer courses, was FUAS cooperation. Without FUAS cooperation background this study course might not have been carried out at all, and some teachers relate to such co-operation projects a little skeptically. Even in this case, the common goal came from the so-called "top administration" and served as the driving force.

As a final comment it can be said that in this case all participating teachers were very committed to the design and implementation of this course. At the beginning of project the participants did not yet know that they would receive the resources for the design and implementation of this CMS course, but they were still committed to the work from the beginning. When teachers then had their work resources, both course design and implementation was finally completed. A new implementation of this course has not been carried out since the summer of 2014, which may be partly due to a lack of resources for teachers and / or the fact that the ministry has required UASs also to cooperate on a broader front.

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Harvard Extension School Course

INTRO TO WEB CONTENT MANAGEMENT SYSTEMS SITE DEVELOPMENT - SYLLABUS

Harvard Extension School DGMD-25 (formerly CSCI E-30) Spring 2014

Last Updated: 1/17/14

COURSE DESCRIPTION

In a rapidly changing world, the need for online publishers to keep up with the needs and expectations of their site visitors is paramount. Today, many web publishers use content management systems (CMS) to allow them to instantly and dynamically update web pages and properties as new content becomes available so that every visit to a site is engaging, informative, and meaningful. This course explores the use of the three most popular open source web-based content management systems—WordPress, Joomla, and Drupal—to create dynamic and flexible websites and landing pages. Participants explore the fundamentals of planning dynamic websites, CMS database management, developing CSS-controlled site templates, and creating database-driven websites through the planning and creation of their own topic-based sites. *Formerly CSCI E-30.*

COURSE PREREQUISITE

A solid understanding of the Macintosh and/or Windows operating system environments; basic understanding of any computer based painting or drawing program.

CSCI-E-12, DGMD E-20 or the equivalent experience with hand-coded HTML and CSS is also required.

INSTRUCTORS

Jen Kramer, Instructor Email: jen@jenkramer.org Twitter: @jen4web Facebook: www.facebook.com/webdesignjen

Erin Boyle, Teaching Assistant Email: erinmarieboyle@gmail.com

CONTACTING THE INSTRUCTORS

Please email Jen and/or Erin with any personal issues that are affecting your class experience or with any information you do not wish to share with the rest of the class. Example: death in the family, severe illness, grading issues, etc.

Please do NOT email Jen and Erin with questions about the week's material. It is better to ask these questions in the forum for the class, where others can benefit from the answer as well. (See "How Class Works" below.)

CLASS OBJECTIVES

• Introduce learners to the three most popular open source content management systems (CMS) in use on the web today, including WordPress, Drupal, and Joomla.

• Understand the difference between a CMS website, a static website, and websites using other server-side technologies.

• Understand the benefits of working with a server-side database and the power it brings to creating and managing websites.

• Compare and contrast the three most popular open source CMS.

• Create and deploy websites using CMS, including creating and editing content, adding functionality, and creating custom templates and themes.

• Understand ongoing maintenance considerations with CMS websites.

LECTURE TIME

Offered wholly online. New lectures will be posted each Tuesday, sometime during the day.

HOW CLASS WORKS

1. This class is wholly online, which means there is no synchronous portion of the class. You may do the work whenever you wish.

That having been said, this is a technology class. Do not wait until the last minute to get your work done! In technology, things go wrong all the time, so anticipate this and aim to have your assignments complete a day early... just in case.

2. For reference, you may use Boston or New York as the city for calculating time and date. The time zone here is US Eastern time. Please refer to http://www.timeanddate.com/worldclock/ for your local time and date for when

assignments are due. All dates and times posted in class refer to Eastern time, and you should adjust your time and date accordingly.
3. We have students from around the world in class. We try to make lectures as clear as possible, but sometimes we are not clear to those who are outside the United States. Please ask questions if the lectures or assignments are not clear. This helps us to improve, and we want you to succeed in class!
4. A new class will be posted every Tuesday.
5. When the new class is posted, you will find an entry describing exactly what you should do and what you need to turn in. If you have questions on what you should be doing, what the assignment is, when things are due, ask!
6. There will be a discussion forum posted every week where you can ask questions about the week's assignment, interact with other classmates, and answer each other's questions.
7. We anticipate that there will nearly be 100 students in this class. Please, do not email Jen and Erin with questions about the assignment, what you should be doing, something you didn't understand in the reading, etc. Post these questions in the forum so we can ALL answer them. We'd rather answer your question once than individually for each student.
We will occasionally ask you to post emailed questions in the forum where they can be answered, rather than answering them by email.
8. This having been said, please email if you have personal issues that will prevent you from completing assignments, pertain to your grade, or contain other personal information you don't wish to share with the class.
Jen's email is jen@jenkramer.org
Erin's email is erinmarieboyle@gmail.com
9. Be warned: each lecture builds on the last one. If you don't understand something, be sure to ask in the forum. DO NOT GET BEHIND. Complete the weekly assignments and you should have no trouble keeping up. In fact, your graded project will take no time at all!
If you have any questions on expectations for this class, please ask!

GRADING

GRADED ASSIGNMENTS

There will be three projects in this course, as described below in the course outline. Each project is worth 33.33% of your grade. This includes the last project, which is considered the “final” project.

HOMEWORK ASSIGNMENTS

Each week, you will be assigned some "optional" homework assignments. There is no place to submit these assignments, nor will they be viewed or examined by the instructor or the teaching assistant.

These small, interim assignments are actually pieces of the graded project that is due at the end of each unit. **If you complete each optional assignment each week, the graded assignment builds itself and will take no additional time on your part.**

GRADING PROCEDURES

Projects are due on the dates specified in the course outline by 11:59 PM Eastern time that day. It is **expected** that you will turn the assignment in on time.

If you are unable to turn the assignment in on time, you must notify Erin Boyle by email no less than 24 hours before the assignment is due and negotiate a new date when you will turn in the assignment. In general, *you will not be given more than a 3 day extension*. It is our feeling that there is little reason for an extension, when you are given parts of the graded assignment each week. If you keep up with the weekly assignments, you'll complete the graded project a week in advance of the due date.

If this email request for extension is not received, you will receive a zero for the assignment. **Do not email Jen Kramer, the instructor – email Erin Boyle, the teaching assistant.**

Grades will be posted online in Jupiter Grades. You will receive a login for this in the first few weeks of class.

TURNING IN ASSIGNMENTS

Your assignment will be a fully functional website, built in each of the three CMSs covered in this course. You will post these in your web hosting environment (directions provided in the first class). You will then paste the URL for the home page of your assignment in a text file and upload this to the assignment box for this course. Detailed instructions will be provided for your first assignment.

REGRADING OF ASSIGNMENTS

Regrades of assignments are permitted. If you are dissatisfied with a grade you receive on the first three assignments, you may resubmit the assignment for review. This resubmission must occur **within 3 days** of receiving your grade. If you choose to resubmit your assignment, please email Erin Boyle when you have posted the resubmit to the assignment box. **Regrading is not available for the third ("final") project due to grade submission timing.**

ACADEMIC HONESTY

Once again, the purpose of this course is to teach you the fundamentals of content management systems. This means that copying the files of other students and submitting them as your own work is not only a violation of school academic policies but a real shortchange to your ability to learn what you need to learn.

We fully expect that there will be no issues in this area. We ask that you help keep us out of situations where we might need to take action regarding plagiarism, cheating and other acts of poor academic integrity.

TEXTBOOKS AND EXTERNAL VIDEOS

We will be working with Joomla 3.2, WordPress 3.8, and Drupal 7 in this course. Any supplementary materials should match these version numbers. For example, you may find that Joomla 3.0 and 3.2 have some differences – and the differences between Joomla 2.5 and Joomla 3 are even more pronounced.

There are no required textbooks for the class. It's possible that you could complete this course simply by watching the lecture videos and looking up your own resources online. However, a book may help to fill in gaps and supplement the lecture videos.

After the registration period for the term is complete, all students will be given access to lynda.com via Harvard at no additional charge. You will have assigned videos to watch in the lynda.com library, as well as optional material to help understand topics or expand your learning. More information will be provided after the start of class.

For those who prefer textbooks, look for books with those versions featured. I recommend the following books, but if you prefer books that are a different fit to your learning style, you are welcome to try them:

• **Drupal 7 Explained: Your Step-by-Step Guide**, Stephen Burge, ISBN 0133124231

• **WordPress: Visual QuickStart Guide**, 3rd Edition, Matt Beck and Jessica Neuman Beck, ISBN 032195761X

I do not have a recommended Joomla book, as these are all out of date as of the start of this course.

COURSE OUTLINE (SUBJECT TO CHANGE)

Class #/date	Agenda
01- 01/28/14	**Introducing Content Management Systems** This lesson will give learners an overview of some of the different tools and methods that today's web publishers are using to create highly-tailored dynamic web content. • Review of Syllabus and other materials • Grading and attendance policies • Purchasing and configuring a domain name and web hosting • Exploring CMS terminology, including open source, PHP, MySQL, server-side, client-side, static HTML website, how CMS web pages are generated, and so forth. • Website strategy and planning, site mapping, content planning
02- 02/04/14	**Introduction to Joomla** This week marks the start of an exploration of Joomla!, the second most popular web CMS solution available today. We will explore the CAM model (Categories, Articles, Menus) approach to creating content for Joomla environments. Special attention will also be spent on the administration and management of users and media. • Installing Joomla • Exploring the Admin Interface • Content creation using the CAM model

• Content customization: images, video, audio, tags, formats, etc.

03-02/11/14	**Joomla Menus** This week we will focus on creating and controlling menus for our Joomla site. We will learn how to link to articles and create special menu items. • Adding and displaying menus • Linking menus to articles and other features
04-02/18/14	**Extending Joomla** This week we will explore the use of Joomla, Plug-ins, Modules, Components and other extensions. Special attention will be paid to the installation of extensions. • Finding and adding Joomla extensions • Must have extensions for any Joomla site • Adding and setting up 2 “big” extensions (choose blog, calendar, image gallery, Paypal-based shopping cart, or portfolio. Other extensions on approval)
05-02/25/14	**Custom Templates** This week we will explore the addition of creation and uses of customized Joomla templates as well as take a look at modifying templates using CSS and HTML tricks.

Interview Questions

- What benefits did you received from this cooperation with FUAS design and implemented CMS online course?
- What issues affect to technological choices?
- Did this save the time and resources?
- How much resources you have for going this job?
- What was the outcome with regard to the resources used (hours worked)
- How should this CMS course be developed on the basis of the feedback received?
- How you feel about continuing this cooperation?
- What else? (you can respond freely what you have on your mind or is there anything else what you want to add)