

A blended learning-based curriculum on Web archiving in the national Széchenyi library

Web archiving
in the national
Széchenyi
library

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Abstract

Purpose – National Széchenyi Library is introducing a new blended learning-based curriculum model on Web archiving for public collection professionals. The purpose of this paper is to describe this curriculum concept together with its international context.

Design/methodology/approach – A qualitative case study is being offered. The concept of the curriculum applying the results of an international questionnaire of the International Internet Preservation Consortium. A detailed curriculum structure is being presented together with a brief description of the major professional/ methodological concepts. It is based on constructive pedagogical approach. Based on the same general approach, some major methodological differences among the on-site and e-learning elements of curriculum design are also being described.

Findings – There is a high need to offer trainings in Web archiving filed to digital library professionals throughout Europe. A complex curriculum is highly needed to different target groups by various course delivery forms. The course concept offers a solid base; however, the structure of the curriculum has to reflect to the differences of specific methodological requirements in on-site and e-learning environments. A main goal of the study is describing the possibility to build-up that kind of hybrid blended learning-based training structure. Based on the described curriculum trainings are starting on April 2019. Sharing practical experiences about practical training activities based on this course structure can initiate further discussion on web archiving education field in the future.

Research limitations/implications – This paper would like to imitate some further discussions about methodological issues by developing education and training curricula on Web archiving in various European countries. By the framework of the Training Working Group of the International Internet Preservation Consortium, these proposed discussions can be elaborated.

Practical implications – The main practical implications are to encourage other partner libraries by the framework of the Training Working Group of International Internet Preservation Consortium to build-up similar training programmes and to plan various collaborative activities in this field.

Social implications – The proposed curriculum aims to acquire some major skills and competences on web archiving field by librarians from both the research library and public library sectors. The course can be available to museum professionals and archivists [...]. The main goal is to learn to build-up small-scale web archiving projects in local, institutional environments in Hungary. It is quite necessary to preserve Web documents and other materials that are reflecting to the life of the local society. The social impact of preserving the local Web history can be overwhelming in the future.

Originality/value – Much untapped potential exists for librarians, archivists and museum professionals to plan and realize Web archiving projects in their own local institutional environments. This paper describes a



new type of national model to offer them getting the necessary skills and competences in this field. There is a significant gap of describing education concepts in Web archiving.

Keywords Education, e-learning, Blended learning, Curriculum, Web archiving, Onsite training, Public collections

Paper type Case study

1. Introduction

The article is mainly focusing on Web archiving in an education context. This is an area where international research efforts just have summarized by the first time and started to be coordinated by an international consortium. The major goal is of the National Széchenyi Library to introduce a new blended learning-based curriculum model to offer an introduction to Web archiving to public collection professionals that are working in libraries, museums and archives. First, the wider, international professional and research context of our project being shortly described. Second, an overview is being offered about the organizational background and context of our educational activities. Third, an insight is being offered to the concept and structure of the curriculum, also proposing an overview about the open educational resources that will be used through the course. The context of blended learning elements must be highlighted to show the structure of the onsite curriculum and describe the connection to the e-learning based course concept.

2. Broad, international context of curriculum building efforts

We started to build-up our Web archiving pilot project at the National Széchenyi Library by the framework of the National Library System Infrastructure Project from the spring 2017. To establish this pilot and together with our education activities, a major help was offered from Denmark. We could participate in an online research seminar for PhD students and Web archiving professionals organized by the NETLAB Research group, Aarhus University, Denmark. It was important to experience how to organize, build up and operate a course in Web archiving field.

From the beginning of 2018, the international collaboration of education and training forms related to Web archiving has formalized by the establishment of education and training working group (TWG) of the International Internet Preservation Consortium (IIPC). A short summary can be offered through the results of a brief survey on best Web archiving education practices and future made by this working group. In this chapter, we offer a quick overview about these issues as these describes the main international context of our own activities.

2.1 NetLab online course as a best practice in Web archiving field

The NetLab research group at Aarhus University, Denmark, is a part of the national DIGHUMLAB (Netlab, 2018a) research infrastructure network led by Professor Niels Brügger. Online courses have offered about Web archiving since 2016. The major target groups are PhD students, public collection professionals and researchers. In the autumn of 2017, the first course was introduced entirely in English for an international audience (Netlab, 2018b) The participation was free and it was really ideal to make new connections among the experts of the newly established Web archiving projects in Hungary and Belgium and work together with Danish colleagues as well. The online seminar was taking place in a password-protected Moodle-based e-learning interface. The exercises, training materials and results of

practical tasks could be accessed, and interactive conversations could be made on the course forum. This interface was only available during the course, but the participants could save all materials just after the finishing. The seminar covered five main topics. A free handbook by Janne Nielsen offered a general support through all topics and exercises (Nielsen, 2018) (Figure 1).

At the beginning of the course the professional background, expectations to the course and the types of involvement with Web archiving were discussed among the participants. The pedagogic style of the seminar was constructivist. It heavily relied on the professional profiles and level of involvement of the participants. In each semester the seminar is appearing in a different format based on study group activities. Followed by an overview about general interests in Web archiving of the members, the second task was to specify professional topics and tasks and formulate a small-scale research plan related to Web archiving. The third task was to find three websites by personal interests (the sites must be in operation for minimum one year) and describe the archiving challenges of them. Samples could be found in Internet Archive (Internet Archive, 2019) or any publicly available archived site from a national Web archive could be also used. By the fourth task, a collection strategy of websites had to be formulated. Followed by that the appropriate software background had to be selected and pilot harvests had to be initiated. Finally, the overall experiences had to be summarized in a report. This task seemed to be the most useful one. Some experiences about Belgian and Hungarian pilot projects could be shared with each other. Together we could find solutions to many common challenges. Various software tools were evaluated, and harvest results were analyzed. Danish colleagues from the Danish Web Archive (Netarkivet, 2019) also could share with us their experiences. The major goal was to formulate relevant questions about practical tasks to effectively formulate further our own Web archiving pilot projects in Belgium and in Hungary. The final, fifth task was to make a general closing overview by discussions and filling up an evaluation survey made by the organizers. At

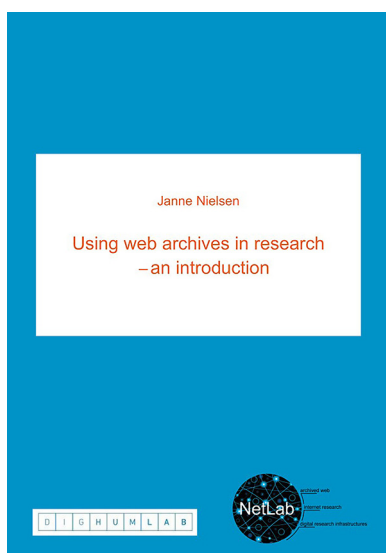


Figure 1.
Front page of the text
book of the NETLAB
course

the end, all participants got an official certificate, demonstrating the completion of the course (Figure 2).

In case of this Web archiving seminar, the applied pedagogical style turned to be effective. The theoretical background was available in written form for individual studying. The lessons based on this theoretical core were really practice-based focusing on specific tasks and challenges. A major aim was to ensure the long-term application of course experiences on our own job in an effective way. The most could be learned from each other. Various activities offered us really valuable experiences, such as planning tasks, discussing software problems, talking on archiving issues and resolving some actual challenges. The course effectively helped the theoretical and practical foundation of our own Web archiving pilot project in the National Széchényi Library and offered some grate advices to plan our training concept.

2.2 International Internet Preservation Consortium training working group

Members of the IIPC international consortium are public and private organizations, institutions that are preserving online materials (IIPC, 2019). Primary tasks of the consortium are the development of technologies, methodologies, standards related to Web archiving, sharing national best practices, supporting international collaboration, granting the broad access to the archived Web materials and helping to re-use these data sets in various ways. The TWG had been established at the end of 2017 (IIPC TWG, 2019). By their first project, a survey was compiled (IIPC TWG, 2017). The main aim was to collect basic information about national Web archiving projects: Who, Where and in What kind of frameworks are working with Web archiving. The survey



Figure 2.
NETLAB course-
Certificate of
completion

was also focused on human background of each institution and the aims and needs of professionals in education and training aspects of Web archiving; the survey was opened in January 2018. A quick summary of the results can be presented based on unpublished evaluation materials.

The answer of respondents to the survey was 224, representing a global professional group from five continents. Web archiving activities are mainly done by universities, research institutes and in a smaller but relevant scale: national libraries. The number of archives with Web archiving activities is also relevant; furthermore, museums, audio-visual archives and some commercial actors can be found in this field. The average number of people working with Web archiving issues is really low. By the half of the institutions, the respondents belonging to less than one full-time professional person is focusing on this issue. About a quarter of the respondents determined the number of people between 1 and 3. Nine percent of the institutions, organizations are working with at least ten people on Web archiving activities. The other institutions and organizations employ three to five people for these tasks. The third question focused on the type of activities related to Web archiving. Most of the related people are curating content and setting up regulations, standards. Other main tasks are (by relatively the same weight): making metadata; quality assurance, communication tasks, harvest management. The least number of people in Web archiving field are the software developers. Most of the respondents have public collection background and only a small portion of them have relevant IT experience. Most people started to work with Web archiving tasks very recently. To put these tasks to the general service portfolio of a public collection appears to be a big challenge to them. Many of the respondents referred a plan to work with Web archiving in the future but do not have any practical experience recently.

The next couple of question focused on the education and training aims in Web archiving field. By the answers, it appears that our professional way has just begun. Most of the responding people recently rely on online resources to develop their professional competences. The number of any kind of organized training activities is marginal. A relatively large number of respondents are currently without any kind of trainings. The least number of people are attending in courses by accredited curricula. Where any kind of training option is available it mainly focusing on workshops, formulated by informal frameworks or organized by a professional organization. Most of the respondents want to develop their Web archiving-related competences in IT field by focusing on digital preservation standards, technologies and the education of use of relevant software tools. The most popular learning forms are webinars and some courses based on personal attendance.

The IIPC TWG has started to plan various training activities based on the survey experiences. The major aim is to effectively support the Web archiving institutions and broad target groups of Web archiving-related professionals. The second step was the collection of a list of trainings and courses by all of their major features that are already available in various countries and learn from the best practices. The third step has been taken recently by starting to plan an online education environment that can be used by the IIPC members in general and can be adapted to each member's needs.

This survey has become valuable to formulate of our own plan. A clear overview has offered about the international training landscape in Web archiving field by various institutional models and user expectations. Furthermore, it had to be realized that there are not so much best practices that can be used as a model nowadays when a curriculum of a new training must be formed. On the other hand, some experiences by

curriculum building efforts from Hungary hopefully can be used in international environment as well.

3. Training concept in Hungary

3.1 Organization context and course frameworks

The National Széchényi Library (NSZL) has started a comprehensive project to establish a new national library system (called OKR-project). As a segment of this large project, the Web archiving pilot project has started at the beginning of 2017. By consulting public collection professionals, a definite aim has appeared to establish a 30-hour long onsite traditional training to this target group. However, by the nature of the discipline from the first moment it has become clear that this onsite course must be enriched with blended learning elements. An additional course by an e-learning system will provide additional materials and practice tools for the participants of the onsite course. On the other hand, most modules of the e-learning training can be handled as a full-fledge individual e-learning course for distance learning students based on open education materials (by a combination of text, video and animations).

The Vocational Training Department of the Hungarian Library Institute as a traditionally strong player in the training field of the Hungarian public collection sector has become our main professional partner. This department could manage and support an official accreditation process. At the end of 2018, accreditation has granted by the state authorities to the whole blended learning course concept. The department is offering the physical infrastructure and training management background for the onsite courses in NSZL. Currently the implementation phase is going on. The content of the e-learning course has established, nowadays the design and layout planning are being formed. The final step will be the integration of the complete set of materials to the e-learning system of NSZL. The implementation of this system is also under development. The accredited onsite course had been offered for public collection participants on April-May 2019 (2 × 2 days because of Easter holidays and some administrative issues). In all, 25 librarians were participating from both public and academic libraries.

3.2 General goals, target group, training staff

The key of success of a national Web archiving model is an active collaboration among archives, libraries and museums. The main goal of a special training is to introduce the major professional and technical background of preserving online content for public collection professionals. An overview is also being offered about international projects and software tools in both Windows and Linux environments. An outlook of using Web archives for research purposes, offering some ideas to strengthen collaboration forms and presenting our own ideas to build up a collaborative infrastructure by the framework of the national Web archiving project are also an integral part of the course. By completing this training, participants should able to have all the necessary skills and competences to create and run Web archive collections in their workplace or for any civil purposes. The people that are completing this course also must be able successfully participating on the building process of a Hungarian Internet Archive. Main target groups are librarians, archivists and museum professionals. The educational content of course will be offered by the Web archiving team of the Electronic Library Department of the National Széchényi Library and by IT professionals from the Department of IT services. The Hungarian Library Institute provides the necessary infrastructure and management background.

3.3 Onsite course curriculum

Onsite accredited course is expected to be offered at least two times a year. Both onsite and mainly e-learning-based course forms are based on five main modules (including the final evaluation process):

- (1) A general overview about digital preservation and about the responsibility of archives, libraries and museums in this field. Getting to know internet preservation terminology, definitions and models in a basic theoretic framework. A brief introduction to identify major institutional stakeholders in internet archiving field.
- (2) Get competences in a basic level of using some Windows-based archiving software, online services, and other useful software tools to build-up and support an archiving workflow.
- (3) Get basic capabilities in a user level to the workflow and major components of a Linux-based Web archive. Acquire skills and competences also on the curation of Web materials and on major tasks for metadata enrichment of the archived material.
- (4) Introducing Web archives as a research subject. A basic overview about using Web archives for research purposes. Foundations of planning and managing user-centred (mainly scientific) services based on Web archived materials. Describe major competences related to create and maintain appropriate conditions of long-term sustainability of Web archives.
- (5) Exam and user evaluation. Students are filling out a test quiz by open ended and multiple-choice questions. Each of them has to resolve an individual small-scale Web archiving task related to the use of the HTTrack software. Followed by the exam the major achievements and typical mistakes are being discussed with the lecturers. A final overall evaluation survey must be filled-out by the students as the final step of the course. The overall evaluation of the survey is usually available within one month after the completion of the course. The initial experiences followed by the first course are showing that the participants could follow the outline of the course properly. The test results were quite satisfactorily (around 80 per cent) and the overall majority of the participants could successfully take the practical task also (due to some PC configuration problems just one to two people made unsuccessful attempt). Based on the feedbacks we are planning some further meetings in our department, as some participants requested some extra consultation about presenting the functions of some software and services in a more detailed format (for example, Wail, WCT, WebRecorder, HTTrack and WebCite).

The detailed curriculum is being described in [Table I](#).

The structure of the onsite course is less formal and appearing in a less detailed form than the curriculum of the online modules. Proper balance among theoretical and practice-based elements is an essential goal of the training. However, many presentations are being offered on frontal pedagogical style by the lecturers, the main design of the course is constructivist. Building on the already existing knowledge and actual expectations of the participants is an essential aspect of the course. Discussions have taken place with participants throughout the course to formulate how they can use the acquired skills and competences on the most effective way. As it could have been seen by the Danish experience, there are not any courses that are going on by the same way. Various ways of interactive discussions and evaluating final feedbacks of the participants make each course

Table 1.
Detailed curriculum
of the onsite course

1 st Main thematic units with a short description	2 nd Methods, teaching styles and activities	3 rd Required infrastructure for the corresponding unit	4 th Short description of evaluation methods	Evaluation	6 th Assessment form	7 th Theory	8 th Practice	Number of lessons and other teaching activities per unit
<i>1. Basics of Web archiving</i>								
1.1 Introduction	Method: Presentation by lecturer	computers with internet connection for the lecturer and students, projector for the lecturer						3 h
Why important to preserve digital born, online culture? What kind of responsibility the public collections and have in this field? What is the role of the national library in this context? Legal deposit regulations in Hungary and in international context.	Teaching style: frontal Teaching activity: lecture							
1.2 Overview	Method: Presentation by lecturer	computers with internet connection for the lecturer and students, projector for the lecturer	At the end of the course by test quiz	Exact interpretation of described concepts	Pass / Fail			1 h
A basic description of archiving methods, and various types of archives.	Teaching style: frontal Teaching activity: lecture							
1.3 Foreign projects	Method: Demonstration by lecturer and individual practicing by students	computers with internet connection for the lecturer and students, projector for the lecturer	At the end of the course by test quiz	Successfully interpret some foreign examples described on the course	Pass / Fail			2 h
Description and testing the services of Internet Archive, some national Web archives and some other types of archives.	Teaching style: frontal and individual student activities							
Introduction to the role and activities of IIPC	Teaching activity: lecture and practice-based lesson							
<i>2. Archiving tools on Windows environment</i>								
2.1 Demonstrating and testing Open Software tools on Windows environment to archive and preserve online content (for example: Grab Them All, HTTrack, Mink, PageArchiver, ScrapBook X, WALL, WARGreat, Webrecorder Player)	Method: Demonstration by lecturer and individual problem-solving activities by students Teaching activity: lecture and practice-based lesson	computers with internet connection and pre-installed open software tools for the lecturer and students, projector for the lecturer	At the end of the course solving a practice-based evaluation task	Solving an archiving task in a satisfactorily manner	Pass / Fail			3 h

(continued)

1 st Main thematic units with a short description	2 nd Methods, teaching styles and activities	3 rd Required infrastructure for the corresponding unit	4 th Short description of evaluation methods	Evaluation	6 th Assessment form	Number of lessons and other teaching activities per unit	
						7 th Theory	8 th Practice
2.2 Online services Presenting online services for archiving individual Web pages and complex websites. Testing those that are freely accessible. (for example: Archive-It, Save Page Now, archive.is, Webrecorder, Perma.cc, WebCite, Archive Ready)	Method: Demonstration by lecturer and individual problem-solving activities by students Teaching style: frontal and individual student activities Teaching activity: lecture and practice-based lesson	computers with internet connection for the lecturer and students, projector for the lecturer	At the end of the course by test quiz	Successfully interpret the use of some online archiving services	Pass / Fail	2 h	1 h
3. <i>Linux based archiving tools</i> 3.1. Establishment of a Web archive in a Linux server Presenting the Hertrix harvesting tool, Open Wayback display tool and NutchWax browser tool. Brief overview on WARC/ARC harvesting format and CDX index format	Method: Demonstration by lecturer Teaching style: Frontal Teaching activity: Lecture	Computers with internet connection for the lecturer and students, projector for the lecturer Computers with internet connection for the lecturer and students	At the end of the course by test quiz	Exact interpretation of described tools and concepts	Pass / Fail	2 h	
3.2 Web Curator Tool Present and test the WCT framework system, practicing metadata enrichment of selected websites	Method: Demonstration by lecturer and individual problem-solving activities by students Teaching style: frontal and individual student activities Teaching activity: lecture and practice-based lesson	internet connection for the lecturer and students, projector for the lecturer, pre-installed student accounts required on the server Computers with internet connection for the lecturer and students, projector for the lecturer				1 h	2 h

(continued)

1 st Main thematic units with a short description	2 nd Methods, teaching styles and activities	3 rd Required infrastructure for the corresponding unit	4 th Short description of evaluation methods	Evaluation	6 th Assessment form	7 th Theory	8 th Practice	Number of lessons and other teaching activities per unit
3.3 Netarchive Suite Presenting the NAS framework system.	Method: Demonstration by lecturer Teaching style: Frontal	Computers with internet connection for the lecturer and students, projector for the lecturer		5 th Evaluation requirements				1 h
3.4 Selective archiving, curation of Web materials Selection methods and practices, quality assurance of harvested content, describing the main features of an archive-friendly website, presenting good and bad examples for archive-compliance of and practice-based lesson selected websites.	Method: Demonstration by lecturer and individual problem-solving activities by students Teaching style: frontal and individual student activities Teaching activity: lecture and practice-based lesson							1 h
4 <i>Using Web archives for research and describing collaboration ways</i> 4.1 Using Web archives for research Describing various ways of use of Web archives for research purposes by various examples: Web history, permanent linking, data visualization, reconstructing websites. Briefly describing joint search and retrieval tasks on various Web archives (by memento protocol).	Method: Demonstration by lecturer and individual problem-solving activities by students Teaching Style: frontal and individual student activities Teaching activity: lecture and practice-based lesson	Computers with internet connection for the lecturer and students, projector for the lecturer	At the end of the course by test quiz	Exact interpretation of described tools and concepts related to the various research activities	Pass / Fail			1 h

(continued)

1 st Main thematic units with a short description	2 nd Methods, teaching styles and activities	3 rd Required infrastructure for the corresponding unit	4 th Short description of evaluation methods	Evaluation	6 th Assessment form	Number of lessons and other teaching activities per unit
4.2 Collaboration Discussions with the participants about their own professional plans related to Web archiving and describe the ways of joining to the national Web archiving project coordinated by the National Széchenyi Library	Method: Consultation among the group of student and lecturer Teaching Style: Group discussion Teaching activity: discussion			5 th Evaluation requirements	7 th Theory	8 th Practice
5.1 Evaluation of skills and competences acquired by the course Fill out a test quiz form with open-ended and multiple choice questions. Resolve a practical archiving task. Evaluation of the results and discussing the frequent, typical mistakes made by the students. Final evaluation of the course by students by a written survey	Method: Individual problem solving activities and group consultation Teaching style: Individual work and group discussion Teaching activity: Fill out a test and resolve a practical task	Computers with internet connection for the lecturer and students, projector for the lecturer, printed tests			Pass / Fail Final written student evaluation about the course by filling out a survey	1 h 2 h

Table I.

unique. Furthermore, as Web archiving is a rapidly developing field, all the course materials must be constantly supervised and must be modified on the necessary points. The framework by the described modules can be more solid with a dynamically formulated content on the background. Some blended learning elements are also an integral part of the course. The e-learning based distance education materials have become available also to the participants of the onsite course (see the details of these elements below at the following chapter). An opportunity is being offered to get a deeper knowledge in any sub-topic that makes an interest to any participants. The self-evaluation questions and tasks can be quite useful add-ons to the onsite activities on the same field.

3.4 Blended learning training concept by online e-learning modules with offline consultations
The detailed course plan of the e-learning course with onsite training elements is being described in [Table II](#).

The main target group consists those public collection professionals from archives, libraries and museums that want to create and implement web archiving services in their local environment, but not able to participate in an onsite course. On the other hand sometimes it is also possible to participate in offline personal consultation sessions. The course is designed on constructivist style based on self-learning by written and visual guidance, together with online and personal consultations.

The main base of the training is a textual description and guidance related to each subtopic within a main module of the training manuscript. This manuscript also contains references to open education materials such as videos about service projects and software tools, animations (that helps to visualize the textual content), lists of suggested literature by each module and wiki entry references from the Web archiving wiki (short description of each wiki topic on the manuscript with a reference link to the corresponding full entry on the wiki website). A set of self-evaluation questions and tasks are also appearing on the manuscript by closing each sub-module. The balance of the required theoretical and practical skills and competences is appearing similarly to the onsite course concept.

The major education form of this course model is e-learning-based. The course structure therefore is more formal than in the case of the basically onsite course described above. The basic module structure is entirely the same as in case of the onsite course. It has been organized in a detailed and flexible module and sub-module structure. Instead of personal lectures, with rich interactive discussion elements, the distance-learning course style has been based on a detailed manuscript including materials of each module. This manuscript is the initial base of the creation of the Scorm-based e-learning package with a properly designed interface that is currently under progress ([Figure 3](#)). The whole package will be imported later to the e-learning system of the National Széchényi Library (currently also under construction).

The third unit that is introducing Linux-based software tools and services by current conditions cannot be taught entirely on e-learning form. Set-up and operate a Linux-based Web server with proper software tools is far beyond the competences of the participants of this training. Some major overview about introducing those tools can be done through e-learning. However, to try these tools and practice on them, onsite meeting(s) are needed at the training room of NSZL or in some other places with proper IT and education infrastructure. In the future perhaps connecting to a Linux-based training Web server by student accounts for distance learning participants could become available. However, in this case some further training will be needed about the access and use of these server services.

This course will be offered mainly in virtual form. Offering various ways of consultations with the lecturers and among the participants is essential through the whole training process. Granting Virtual student chat and forum services, questions and answers sessions with the

Main thematic units with a short description	Methods, teaching styles and activities	Required infrastructure for the corresponding unit	Open education resources	Short description of evaluation methods	Evaluation requirements	Assessment form
<i>1. Basics of Web archiving</i>						
Time Framework: 7X45 min. lecture units						
1.1 Introduction	Method: Text presentation with major concepts and definitions illustrated by animations	computer with internet connection	Text materials, animations, illustrations, list of corresponding Web pages, bibliography for the unit	Open-ended questions and multiple-choice quizzes are available for self-evaluation	Exact interpretation of described concepts	Pass/Fail upon the self-evaluation tasks of the unit
1.1.1 Why important to preserve digital born, online culture? 1.1.2 What kind of responsibility the public collections and have in this field? 1.1.3 What is the role of the national library in this context? Legal deposit regulations in Hungary and in international context	Teaching style: constructivist with text and illustrations/animations plus additional literature being offered					
1.2 Overview	Method: Text presentation with major concepts and definitions illustrated by animations	computer with internet connection	Text materials, animations, illustrations, list of corresponding Web pages, bibliography with a list of further suggested materials for the unit	Open-ended questions and multiple-choice quizzes are available for self-evaluation	Exact interpretation of described concepts	Pass/Fail upon the self-evaluation tasks of the unit.
A basic description of archiving methods, and various types of archives	Teaching style: frontal					
1.3 Foreign projects	Teaching activity: presentation with text and animations					
1.3.1 Description and testing the services of Internet Archive, 1.3.2 Introducing some national Web archives and some other types of archives. 1.3.3 Introduction to the role and activities of IIPC	Method: Text and video presentation by lecturer and individual practicing by students Teaching style: constructivist Teaching activity: text presentation, video materials about various projects	computer with internet connection	Text materials, Animations, illustrations, list of corresponding Web pages, bibliography for the unit. Video materials (6-7 min each) describing each featured Web archiving project	Open-ended questions and multiple-choice quizzes are available for self-evaluation. Setting tasks to practice the use of each Web archiving project interface	Exact interpretation of described concepts and service models. Sufficient skills and competences to use the public services of featured Web archiving projects	Pass/Fail upon the self-evaluation tasks of the unit
<i>2. Archiving tools on Windows environment</i>						
Time Framework: 7X45 min. lecture units						

(continued)

Table II.
Detailed curriculum
of the e-learning
course

Main thematic units with a short description	Methods, teaching styles and activities	Required infrastructure for the corresponding unit	Open education resources	Short description of evaluation methods	Evaluation requirements	Assessment form
2.1 Demonstrating and testing open software tools on Windows environment to archive and preserve online content (for example: Grab Them All, HTTPTrack, Mink, PageArchiver, ScrapBook X, WAIL, WARCreat, Webrecorder Player)	Method: Text and video presentation by lecturer and individual practicing by students Teaching style: constructivist Teaching activity: text presentation, video materials about various projects	computer with internet connection install some open software tools	Text materials, animations, illustrations, list of corresponding Web pages, bibliography for the unit. Video materials (6-7 min each) describing the use of some major Windows-based open software tools	Open-ended questions and multiple-choice quizzes are available for self-evaluation. Setting tasks to practice the use of some windows based open software tools	Exact interpretation of described concepts and service models. Sufficient skills and competences to use some windows-based open software tools	Pass/Fail upon the self-evaluation tasks of the unit
2.2 Online services for Presenting online services for archiving individual Web pages and complex websites. Testing those that are freely accessible. (for example: Archive-It, Save Page Now, archive.is, Webrecorder, Perma.cc, WebCite, Archive Ready)	Method: Text and video presentation by lecturer and individual practicing by students Teaching style: constructivist Teaching activity: text presentation, video materials about various services	computer with internet connection	Text materials, animations, illustrations, list of corresponding Web pages, bibliography for the unit. Video materials (6-7 min each) describing the use of some major online Web archiving services	Open-ended questions and multiple-choice quizzes are available for self-evaluation. Setting tasks to practice the use of some online Web archiving services	Exact interpretation of described concepts and service models. Sufficient skills and competences to use some online Web archiving services	Pass/Fail upon the self-evaluation tasks of the unit
3. Linux based archiving tools Time Framework: 8X45min. (requirements are available.)	Method: Face-to-Face Lectures, Text and video presentation by lecturer and individual practicing by students Teaching style: constructivist Teaching activity: text presentation, video materials about various services	Computers with internet connection for the lecturer and students, projector for the lecturer, guest accounts to a Linux server with the presented services if this unit being offered online	Text materials, animations, illustrations, list of corresponding Web pages, bibliography for the unit. Video materials (6-7 min each) describing the use of some individual and/or group	Open-ended questions and multiple-choice quizzes are available for self-evaluation. Setting tasks to practice the use of some Linux-based software tools	Exact interpretation of described concepts and service models. Sufficient skills and competences to use some Linux-based software tools	Pass/Fail upon the self-evaluation tasks of the unit. Individual and/or group evaluation tasks in case of on-site course

(continued)

Main thematic units with a short description	Methods, teaching styles and activities	Required infrastructure for the corresponding unit	Open education resources	Short description of evaluation methods	Evaluation requirements	Assessment form
harvesting format and CDX index format 3.2 Web Curator Tool Present and test the WCT framework system, practicing metadata enrichment of selected websites	presentation, video materials about various services Method: Face-to Face Lectures, Text and video presentation by lecturer and individual practicing by students Teaching style: constructivist Teaching activity: text presentation, video materials about WCT, on-site practice by the use of WCT	Computers with internet connection for the lecturer and students, projector for the lecturer, guest accounts to a Linux server with WCT if this unit being offered online	major Linux-based software tools Text materials, animations, illustrations, list of corresponding Web pages, bibliography for the unit. Video material (6-7 min.) describing the use of WCT	Quizzes at the end of on-site group meeting Open-ended questions and multiple-choice quizzes are available for self-evaluation. Setting tasks to practice the use of WCT. Taking individual and/or group Quizzes at the end of on-site group meeting	Exact interpretation of described WCT service model. Sufficient skills and competences to use especially metadata enrichment functions	Pass/Fail upon the self-evaluation tasks of the unit. Individual and/or group evaluation tasks in case of on-site course
3.3 Netarchive Suite Presenting the NAS framework system	Method: Face-to Face Lectures, Text and video presentation by lecturer and individual practicing by students Teaching style: constructivist Teaching activity: text presentation, video materials about NAS, on-site practice by the use of NAS	Computers with internet connection for the lecturer and students, projector for the lecturer, guest accounts to a Linux server with NAS if this unit being offered online	Text materials, animations, illustrations, list of corresponding Web pages, bibliography for the unit. Video material (6-7 min.) describing the use of NAS	Open-ended questions and multiple-choice quizzes are available for self-evaluation. Setting tasks to practice the use of NAS. Taking individual and/or group Quizzes at the end of on-site group meeting	Exact interpretation of described NAS service model. Sufficient skills and competences to use NAS in general	Pass/Fail upon the self-evaluation tasks of the unit. Individual and/or group evaluation tasks in case of on-site course
3.4 Selective archiving, curation of Web materials Selection methods and practices, quality assurance of harvested content, describing the main features of an archive-friendly website, presenting good and bad examples for archive	Method: Face-to Face Lectures, Text and video presentation by lecturer and individual practicing by students Teaching style: constructivist Teaching activity: text presentation, video materials about Web curation, on-site	Computers with internet connection for the lecturer and students, projector for the lecturer if this unit is being offered on-site.	Text materials, animations, illustrations, list of corresponding Web pages, bibliography for the unit	Open-ended questions and multiple-choice quizzes are available for self-evaluation. Setting tasks to practice some Web curation skills and competences. Taking individual and/or group Quizzes at the end of on-site group meeting	Exact interpretation of described methods and practices due to Web curation and selective Web archiving.	Pass/Fail upon the self-evaluation tasks of the unit

(continued)

Table II.

Main thematic units with a short description	Methods, teaching styles and activities	Required infrastructure for the corresponding unit	Open education resources	Short description of evaluation methods	Evaluation requirements	Assessment form
<p>compliance of selected websites</p> <p>4.1 <i>Make a Web archive sustainable: Using Web archives for research and describing collaboration ways</i></p> <p>Time Framework: 3X45 min. lecture units</p> <p>4.1 Using Web archives for research</p> <p>Describing various ways of use of Web archives for research purposes by various examples: Web history, permanent linking, data visualization, reconstructing websites</p>	<p>practice by the use of Web curation</p> <p>Method: Text presentation with major concepts and definitions illustrated by animations</p> <p>Teaching style: constructivist with text and illustrations/animations plus additional literature being offered</p>	<p>computer with internet connection</p>	<p>Text materials, animations, illustrations, list of corresponding Web pages, bibliography for the unit</p>	<p>Open-ended questions and multiple-choice quizzes are available for self-evaluation. Tasks for individual practice to make some research job with a selected Web archive collection</p>	<p>Exact interpretation of described methods and practices due to use Webtasks of the unit archives for research purposes</p>	<p>Pass/Fail upon the self-evaluation tasks of the unit</p>
<p>4.2 Joint search and retrieval Web archives by Memento protocol</p>	<p>Method: Text presentation with major concepts and definitions illustrated by animations</p> <p>Teaching style: constructivist with text and illustrations/animations plus additional literature being offered</p>	<p>computer with internet connection</p>	<p>Text materials, animations, illustrations, list of corresponding Web pages, bibliography for the unit</p>	<p>Open-ended questions and multiple-choice quizzes are available for self-evaluation. Tasks for individual practice to use joint search functions</p>	<p>Exact interpretation of described methods and practices due to use jointtasks of the unit search in Web archives by the help of Memento protocol</p>	<p>Pass/Fail upon the self-evaluation tasks of the unit</p>
<p>4.3 Collaboration ways with various stakeholders. Use of crowdsourcing through Web archiving activities</p>	<p>Method: Text presentation with major concepts and definitions illustrated by animations</p> <p>Teaching style: constructivist with text and illustrations/animations plus additional literature being offered</p>	<p>computer with internet connection</p>	<p>Text materials, animations, illustrations, list of corresponding Web pages, bibliography for the unit</p>	<p>Open-ended questions and multiple-choice quizzes are available for self-evaluation. Tasks for individual practice to use some collaborative tools and techniques in a Web archive environment</p>	<p>Exact interpretation of described methods and practices due to various collaboration tools and techniques</p>	<p>Pass/Fail upon the self-evaluation tasks of the unit</p>

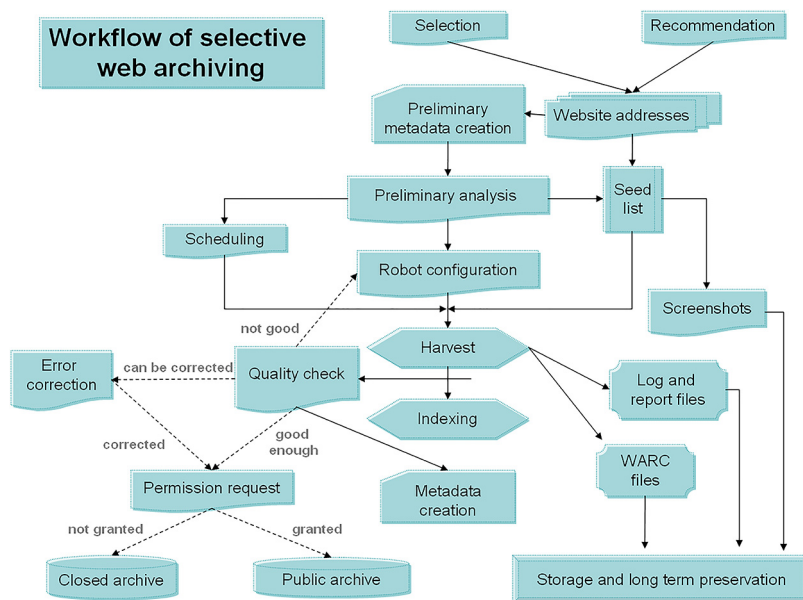


Figure 3.
Workflow of selective
web archiving

lecturers and some personal consultations (either in person or by some video-conferencing tool) seems to be an essential added value to the education portfolio of the training.

4. Conclusion

In our paper, an overview has been offered about the structure and outcomes of an online professional course about Web archiving that has been managed from Denmark. We also offered a summary about the preliminary plans and basic activities of the IIPC TWG that offered us a major overview about the current framework, background and status of Web archiving activities throughout the world. We elaborated our curriculum from Hungary. It is vital to train people with certain competences to build-up a national Web archive network. Based on this collaborative framework, archiving activities can be done ordinarily and efficiently. A major pre-condition of the establishment of a well-functioning national network is to guarantee permanent professional development (both individually and on institutional level). Accredited trainings must be offered for Web archiving professionals in a permanent way to constantly keep their knowledge on a required level.

Bibliography

- IIPC Training Working Group portal (2019), available at: <http://netpreserve.org/about-us/working-groups/training-working-group/> (accessed 12 June 2018).
- Nielsen, J. (2018), "Using the web archives in research (theoretical course book of NetLab web archiving course)", available at: http://netlab.dk/wp-content/uploads/2016/10/Nielsen_Using_Web_Archives_in_Research.pdf (accessed 12 June 2018).
- Netarkivet (2019), "Website of the Danish web archive", available at: www.netarkivet.dk (accessed 12 June).

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35,2

Netlab (2018a), "A brochure of NetLab web archiving course", available at: <http://netlab.dk/wp-content/uploads/2017/04/NetLab-Web-Archiving-Course-Brochure.pdf> (accessed 12 June 2018).

Netlab (2018b), "Website of the NETLAB web archiving course", available at: <http://netlab.dk/services/courses/> (accessed 1 June 2018).

Further reading

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IPC Training Survey (2018), available at: www.surveymonkey.com/r/V7MVXXW (accessed 12 June 2018).

IPC Training Survey Call (2018), available at: <https://netpreserveblog.wordpress.com/2017/12/14/iipc-training-survey/> (accessed 12 June 2018).

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