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Digital library education on Master level in Borås, Copenhagen, and Oslo

Qualitative case study

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ABSTRACT

Digital library education has become a popular topic in the recent years. A recent book of Anna-Maria Tammaro and Sue Myburgh focuses on this topic in general. An earlier thesis by Nafiz Shuva described an overview about digital library education in Europe based on a quantitative survey design.

This thesis uses a narrower perspective. It offers a qualitative comparative case study on digital library education in master level focusing on three library schools in Borås, Copenhagen and Oslo. These schools represent the most comprehensive education and research capabilities in this region.

The main research design is qualitative. The major thesis sources are programme, curricula and course descriptions and academic articles. Some interviews made with programme coordinators in Borås and Oslo is also referred at the thesis but these are not primary resources just add some more details to the content based on written documents and articles. The thesis style more like descriptive than interpretive by an elaboration of comparative analysis and research findings subjects without long interpretive discussions.

The comparative case study initially focuses on curricula of digital library education programmes. The DILL is a programme that is coordinated from Oslo with two additional partners and two programmes from Borås are in this group. Furthermore comparison also focuses on digital library education elements of LIS master programmes curricula in all three cities.

The comparative analysis is placed into a global and European context by a literature review. The literature review introduces some models that help to contextualize the comparison and seems to be relevant in context of the evolution of digital library master programmes by DILL and in Borås. These models represent the iSchool community, the European LIS curriculum Project, the thesis framework of Nafiz Shuva about digital library education from Europe and the Digital Library Curriculum Project from the USA.

Followed by the literature review the thesis offers a short general introduction to Scandinavian LIS education for a further conceptualization of the main comparative topic.

The comparative analysis initially describes and compares digital library programmes with each other. In the following the horizon widens to the digital library elements of the LIS master

programmes. By the end all the programmes are placed and analysed in a common comparative framework.

The major research questions are: How do the three Scandinavian library schools in Copenhagen, Oslo, and Borås adapt digital library education related subjects in their master programmes? In which curricular form do these digital education subjects appear in the current programmes? Is it possible to determine some common features in the represented topics or education aims of the different programmes and schools? Sub-questions refer mainly to the internationalization of digital library education and to the effects of on-campus and distance course delivery ways to curricula.

Followed by the analysis the discussion refers some major issues regarded to the research questions and some issues refer to the analysis. Two main findings result from the comparison:

- A major common point of Scandinavian digital library education is the focus on cultural mediation in a digital environment. The aim is not to train IT-technicians but digital library experts with broad comprehensive competences and skills in all major digital library dimensions.
- Elena Maceviciute built up a model to compare digital library programmes in Borås with the DILL programme based on different main types of modules that represents all the major topic divisions of these programmes. That comparative framework could be extended to the digital library related modules of LIS master programmes in Oslo and in Copenhagen. The framework is focusing on the subject, content and contextualization ways of modules: the elements can be comparable with each other by their main topic dimensions regardless their belongings to different programme types

Table of Contents

List of Abbreviations

BA	**bachelor (degree/programme)**
CS	**computer science**
DB	**Danmarks Biblioteksskole (former Danish name of RSLIS)**
DELOS	**Network of Excellence on Digital Libraries**
DILL	**international master in digital library learning**
DISE	**Digital Services- Culture, Information &Communication Master Programme**
DL	**Digital Library**
DLIS	**Library and Information Science: Digital Libraries and Information Services Master Programme**
EU	**European Union**
EUCLID	**European association for library & information education and research**
HIOA	**Oslo and Akershus University College of Applied Sciences**
IFLA	**International Federation of Library Associations and Institutions**
IT	**information technology**
IVA	**I. an e-learning system developed in Tallinn university** **II. Det Informationsvidenskabelige Akademi (Danish name of RSLIS)**
LIS	**library and information science**
MA	**master (degree/programme)**
NORSLIS	**The Nordic Research School in Information Studies**
RSLIS	**Royal School of Library and Information Science, Copenhagen**
SSLIS	**Swedish School of Library and Information Science, Borås**

List of tables

1 Introduction

1.1 Background and rationale of the thesis topic

The education of digital librarians has become a popular topic in recent years. A basic analysis of the European context about Digital Library Education in Europe is available in a DILL Master thesis from Nafiz Shuva (Shuva, 2011). That thesis gives mainly a quantitative approach, but offers a framework for investigating the major topics of this field from a European perspective. Shuva's thesis seems to be the first attempt to define a European perspective of digital library education. Digital library education is really heterogeneous in Europe with greatly different institutional context and curricula models influenced also by national perspectives and traditions. Finding a common approach for investigation, defining various perspectives that can be compared with each other is the principle strength of Shuva's work. It offers a solid base for comparative analyses of different perspectives (either based on topical and/or geographical aspects within Europe).

In my thesis I offer a case study from a qualitative perspective about digital library education. My specific case is about digital library education on master level in three Scandinavian library schools. Beyond a general quantitative analysis about digital library education by Shuva I found useful to choose a narrower specific case. I would like to analyse digital library education programmes on master level from a qualitative point of view. I focus on the digital library programmes and to the digital library education elements in Library and Information Science master programmes. Scandinavia represents a good case study subject in a way that both types of programmes can be found here. The previous academic debates only discussed and compared digital library programmes of Borås with the DILL programme. I have not found any investigation before that directed to master programmes from digital library education perspective in the three targeted library schools. I can analyse the digital library programmes in my specific case by trying to set a common analysis framework with these two main types of digital library education. By a qualitative analysis I would like to compare the structure, design and types of modules of these programmes.

Tammaro and Myburgh offer a broad range of theoretical approach: the definition, models, modes, and methods of digital library education (Tammaro & Myburgh, 2012). They give a wide theoretical background for specific investigations. Furthermore the above mentioned book and thesis together offer a comprehensive literature review from a global perspective in the field of digital library education. It helps to contextualize the major curricula models, topics, designs and approaches that appear in a large variety in the US, Europe and Asia. These works also describe the position of digital libraries in the European Union's policy agenda.

In this way the general background of the digital library and digital library education topic can successfully be defined without describing it in a detailed, comprehensive way in this thesis. Therefore I can focus on my major topic.

The major aim of my thesis is to give overview of digital library education in Oslo, Borås, and Copenhagen. I would like to describe the major subjects in digital library education and make a comparison of the programmes.

There are some major elements that seem to be appropriate for an investigation. These were really determinative when choosing my topic for the thesis

In each of the schools we can find international and national programmes as well. To compare the international programmes with each other and determine the interrelationship of the national and international programmes of each school is a major element of my approach. The general European trends described by (Shuva, 2011) are apparent in Borås, Copenhagen and Oslo in the fact that digital library education subjects on master levels are contained the framework of Library and Information Science (LIS) master programmes. Furthermore from a European perspective it must be mentioned that in Oslo and Borås specific digital library specific educational programmes are also offered. The mixture of different kinds of programmes suggest to comparing the digital library programmes with each other. Then the digital library elements of LIS programmes can be also compared in this way. Follow that, some options have to be investigated whether a certain framework can be described to determine the common education subjects and issues that are appearing in both types of programmes. On the basis of the comparison I would like to find out whether we can talk about a special Scandinavian type of digital library education in the three library schools.

Some comparisons of the digital library education programmes of Borås and the Digital Library Education Programme (DILL) (Maceviciute, 2011) already exist. The different kinds of digital

library education segments in the LIS master and digital library programmes of the three schools have never been compared before on this scale. I found a research gap between the general European investigation of Shuva and the specific digital library programme based investigation of Maceviciute. I offer a comparison of the master programmes in the three library schools adding some additional elements to Maceviciute's investigation and also referring to the European context described by Shuva.

1.2 Research Questions and purpose of the study

The main purpose of the study is to define the major characteristics of digital library education through the description of Master programmes in the three LIS schools in Borås, Copenhagen and Oslo. Based on these descriptions I would like to compare them according to some specific aspects.

In my thesis I use the term 'library school' for an institution that has library and information science education with digital library elements. These elements can cover the full programme or just some tracks or modules as segments. Library schools in this context exist in various organisational forms as an independent institution, school, faculty or department. The exact institutional framework of the three library schools that I am focusing on in this thesis will be described in a following chapter.

I will use a qualitative approach. The main focus is on the qualitative analysis of curricula, course descriptions and other relevant online and offline materials. These documents can help to determine the academic focus, major features and elements of the different programmes.

Some personal interviews with leading professors from the three schools help to further understand the professional scope and future development ideas related to the education programmes.

I would like to find out whether there are any common general features or goals which these institutions share in their Master programmes digital library education. I would like to know if we can talk about some similar major issues or trends that appear in each general curriculum, strategy or profile of academic programmes. Is it possible to talk about a Scandinavian model in digital library education in these three traditional schools? Or just each of them represents a strong specific individual model in the European digital education diversity?

This master thesis aims to answer the central research question with also describing some relevant sub-elements of it. The questions were motivated by the European digital library

education described by a previous DILL Master thesis of Nafiz Shuva, by the literature review of the iSchool community and by some basic facts about Master programmes in the three schools in publicly available documents and academic articles. Furthermore the personal discussions with leading professors who are coordinating different programmes in Oslo and Borås also helped me to find the major focus of my thesis.

The general question is: How do the three Scandinavian library schools in Copenhagen, Oslo, and Borås adapt digital library education related subjects in their master programmes? In which curricular form do these digital education subjects appear in the current programmes? Is it possible to determine some common features in the represented topics or education aims of the different programmes and schools?

In my thesis I use a programme-based perspective. I am comparing the programmes with a special focus on digital library education.

An alternative solution could be to find a different focus from the perspective of some major traces of Digital Librarianship education and study the appearance of these traces in general curricula at each programme and school.

I chose a programme based perspective mainly because some programmes are specifically devoted to digital library education (in Oslo and in Borås). Some others appear by their names to be general LIS programmes seem to have also a certain digital library direction (in all three schools). The programmes themselves represent a context I could study. I can determine the position of digital education subjects in their curricular context in the programmes of the different schools then compare them with each other. I can use the previous results of Nafiz Shuva's thesis to help determine certain aspects of digital library education. I can determine how the general European subject preferences of the curricula on Master level according to the respondents in that thesis can be applied to the case of the three Scandinavian library schools.

The general question as I referred above can be further detailed by the following specific sub-questions. By these sub-questions I would like to focus on some specific elements in that comprehensive general topic. These elements can also be referred to as general LIS programmes and specific digital library master programmes in the different schools.

1. What are the major topics related to digital librarianship in the curricula in general LIS programmes on the master level? In which way are these topics represented in one or more specialisation tracks and in the single course level in curricula?

2. In case of specific digital library programmes, what kind of conceptions, models have formed current curricula in case of the specific digital library programmes? What kinds of topics are emphasized in the curricula? Can the modules or tracks in the specific digital library programmes be compared to topics and aims in some modules or tracks of the general LIS programmes?
3. What is the relationship between the theoretical and practical elements of the digital library curricula? What kind of perceptions some programme leaders have of the curricular appearance and strength of practical and theoretical elements?
4. Do the international programmes share courses with national master programmes in the same institution? What kind of cooperation can be determined among programmes in each institution?
5. How are the specific programmes in each city delivered: via on-campus mode or via distance education? Why the schools chose the current form of delivery? What are the major advantages and disadvantages of the available forms? What are the specific features of the on-campus and distance delivery mode that can be relevant to the management of the programme?

1.3 Major limitations and scope

I am focusing on the master level of education. In my opinion the digital library elements of general LIS programmes appear in this level in a more specific way than in the Bachelor level. By following the recent academic discussions specific programmes can be determined to have exclusive digital library focus in Oslo and Borås. My major targets are just three institutions. I am not trying to address the total scope of the master programmes in Library and Information Science and other disciplines related to digital librarianship in Denmark, Norway and Sweden. These library schools were the traditional centres of vocational library training; later the national higher education and research in the LIS field were formulated in these schools. Nowadays these schools are representing the broadest interdisciplinary approach of research and education in Library and Information Science the best professional and financial background and the highest number of students and professors in the LIS field.

A major trend in other LIS schools in these countries is that they are just focusing on a specific aspect of the broad LIS education field. This kind of specialisation fits the profile of the host institution of the LIS department. The appearance of LIS with some digital library education elements can be determined just as an additional academic perspective of the institution's education strategy. These departments generally do not have a strong academic,

interdisciplinary research profile in LIS field. They are not following the comprehensive educational model of the mixture of various disciplinary perspectives with strong research background that can be found in the three institutions I am focusing on.

In Denmark, Norway and Sweden there are not enough academic and financial resources and probably there is no academic need for more than one institution per country with an independent, complex interdisciplinary research scope in the LIS field. The three schools in Borås, Copenhagen and Oslo are strong independent players. In order to reach their strategic goals and broadening the spectrum of research and education they are taking part in various fruitful professional and interdisciplinary LIS collaboration forms on local, national and international levels.

The competition for the talented students nowadays is running globally in the higher education world. International master programmes in the three library schools conducted mainly in English with specific contents for different target groups. The scope of education in these programmes is generally global. However the international programmes are developed together with the national master programmes. According to the current trends it seems that at least in Borås and Copenhagen the national and international programmes are offered in a common general context having strong interrelationships with each other within the same school.

The content of programmes have been permanently approved mainly by national accreditation bodies in the home country of the programmes. The accreditation appears as a guarantee of education quality. In case of international programmes offered in collaboration of universities from different countries the accreditation can also appear in a higher (European level) as was the case with the Erasmus Mundus programme in the DILL (Digital Library Learning) International Master Programme. For certain up-to-date needs of the students from around the globe are the delivery form is mainly the distance education. Most of the students already have some professional experience so the international digital library education programmes in the Master level serve as further professional education.

The curricula and course descriptions of the various general LIS or digital library specific master programmes are available online on the website of each school. It is also possible to determine the various kinds of topics of the master theses as these can be found in open institutional repositories. Not all of them are available online in full-text. For a short comparative subject analysis the abstracts and titles seems to be sufficient in this form. By the help of the various schools I would also like to determine the various types of course delivery and communication

through online e-learning interfaces. It seems to be extremely important in the case of the library school in Borås. All the education programmes in the master level are delivered in the distance mode there. The online-learning system is the core infrastructure, education and communication tool in this institution. A major limitation of my comparative investigation is that the distance education is dominating in Borås. While in the other two institutions distance education is also offered as a delivery form but the preference is on the on-campus form of programmes. This difference has consequences for the answers to some major thesis research questions described above.

Another important issue is the International Programme in Digital Library Learning (DILL). This programme is delivered by an international consortium with the library school of Oslo have taken as the main coordinator. I am including this programme to my scope by the following reasons:

1. The DILL programme is a special programme in the field of digital library education. Not only Norwegian but Swedish professional experts from Borås were helping in the creation of this programme. Personal connections among the leading professors are really intensive (including the Estonian and Italian partners). DILL and digital library education programmes in Borås have certain influence on each other.
2. Elena Maceviciute, the main coordinator of DLIS international digital library programme in Borås compared the international and domestic digital library programmes of Borås with DILL. Some parts of her can be put into a broader perspective (including the international and domestic LIS Master Programme in Copenhagen) and can be used to compare the position and relevance of major curricula elements of the different programme. Her articles suggest that on the basic model level there are certain similarities in the Swedish digital library specific master programmes and DILL and it is worth to compare them and demonstrate these issues.
3. One of the major DILL modules in Oslo is permanently offered also as a part of the on-campus and distance LIS education programme of the school. This major DILL module has been developed by an interrelationship with the context and goals of a specific track of the national master programme.

1.4 Rationale for the thesis

My thesis is focusing on the digital library education programmes of three institutions in Scandinavia. It can be considered as a continuation of Nafiz Shuva's thesis from 2011. In my study I use some comparative aspects that he has already defined. On the other hand my

methodology is mainly qualitative and not merely quantitative with some qualitative elements as is the case with his approach. My thesis is based not on a general European, but on a narrower perspective. It covers digital library related education subjects in programmes on the Master level in Oslo, Borås, and Copenhagen.

Shuva's main focus was on quantitative data from all over Europe and he made some qualitative statements on this base. I would like to use a qualitative approach focusing on the content and delivery modes of the different programmes by analysing curricula, programme and course descriptions. I would like to compare them based on some specific points of view.

Definition, design and branding of the different programmes are also of interest. Each institution with their different programmes belongs to a certain geographical environment. At the same time each of them joins international collaboration forms positioning themselves also as a European and global education actor.

On the other hand the need is also present all over Europe that the different institutions of digital library education should offer answers to local, national needs and challenges. It can be managed with extensive collaboration among universities, colleges, cultural heritage institutions and profit-oriented market players. In the local-based programmes a global perspective also appears but only as a wide theoretical and practical context of the local education content. In this respect the leading LIS institutions in Scandinavia are both global and local players based on their programme offerings.

Some programmes are exclusively offered in the digital library field. All belong (at least formally) to the Library and Information Science field. The education scope however is multi-focused. Specific tracks and courses are assigned to the different (human, social, information science, and IT) aspects of the digital library education field.

The major difference between the master programmes is not the branding of the programme names and designs (targeted to the general public) but in the education content. However this aspect is also relevant. Some common branding concepts might be important to establish a widely-approved attractive identity for the different schools and programmes (as is the case with the iSchool movement) to be acknowledged by the general public.

Most of the global digital library education programmes include beyond the IT topics also some of the human and social aspects of digital librarianship but the weight of different programme segments highly differs. The different perspectives are described in details by (Tammaro & Myburgh, 2012). Shuva on the other hand offers a practical approach by

emphasizing the importance of different programme segments based on the opinion of the professors representing LIS and digital library education programmes in Europe (Shuva, 2011)

Through some interviews with professors from the three institutions I attempt to determine what kind of motives have altered the curricula settings in the different institutions. I would also like to deal with their views on the dynamic balance of the different topics and perspectives in curricula of the three institutions. The nature of conflicts (relating to the different disciplinary aspects) in setting the curricula and the nature of compromises in the accepted form can be important in this context.

Some programmes are delivered for the students in the distance education form. This means that studying the different e-learning programme interfaces, the communication ways among students, between students and professors, the design and practical implementation of the virtual content delivery can also be important in this comparative context.

1.5 The structure of the thesis

Following the Introduction, the Literature review is the first main chapter. I will not try to give comprehensive review of the literature in digital library education. A comprehensive review can be found in some recent publications (Shuva, 2011; Tammaro & Myburgh, 2012). I only focus on certain aspects which are relevant for my thesis concept.

The analytical core of my thesis consists of three parts:

1. Analyse curricula, programme and course descriptions from Borås, Oslo and Copenhagen and comparing them based on the criteria described in the thesis topic definition.
2. Describe some personal approaches and motives based on the programme descriptions and curricula of the leaders of the programmes related to the topics set by research questions
3. Analyse the virtual interface of the course delivery from a content-based perspective related to the different topics set by the research questions. The possibility is available only in the case of Borås and Oslo through the help of the library schools granting access to their e-learning systems. In the Copenhagen case I can work only with the publicly available curricula and course descriptions.

In the literature review I will present two main topics. The first one is about the iSchool community in the field of digital library education. It represents a successful branding concept and a global collaboration form among research oriented institutions that share~~s~~ some common goals and values. All the three institutions that I am analysing are ~~a~~ members or want to be a member of this community. The theoretical influence of the iSchool community is essential in my concept. This relevance is apparent in the branding and conceptualizing of the different programmes, in the offering of new broader education forms, and in altering research activities in my target institutions.

The second main topic will be the European context of the digital library education. At first I will focus on the first large collaboration project in the LIS curricula field in Europe which is summarized in a publication edited by Kajberg& Lørring (Kajberg & Lørring, 2005). I describe the loss of digital library education as an individual field in this project and the way how some elements are appearing related to other contexts. Then I comment on the main concepts and findings of Shuva. This can be considered as a kind of continuation of the previous project although not focusing on LIS in general but only on digital library education. The similar points of the project and the thesis appearing in a term of their focus on the definition of curricula, defining curricula topics, subjects, elements and perspectives in a really divergent European landscape. They offer common basic approaches for discussion in the LIS and digital library education fields.

In the description of the European perspective I also refer to some sources published later then the thesis of Shuva or which provide some additional elements to his findings.

The third main topic is a basic overview about the Digital Library Curriculum Project by University of North Carolina, Chapel Hill and Virginia Tech. This project describes some important dimensions of digital library education. It also offers a comprehensive cookbook to be used in curriculum development by describing course and module types in the field of digital library education. The different suggested elements from this project model can be integrated into the local digital library programme frameworks by innovative curricula development planning activities. In this way this model has made a major impact worldwide for planning digital library subject curricula. Maceviciute also refers to it as a major source of ideas for the programme development process by the digital library education programmes of Borås.

The chapter following the literature review gives a short description of the developments of the LIS education in Scandinavia only mentioning some important traditional aspects. I briefly

describe the institutions which offer LIS education then I present the target institutions of my comparative investigation.

The core of the thesis is the main analysis chapter based on the research questions. In the analysis first I compare the digital library programmes of Borås and DILL followed by an already existing model (Maceviciute, 2011). Then I describe the digital library elements in the LIS master programmes and compare them with each other. Beyond that comparison I would like to attempt to describe a common platform for all programmes with digital library subject elements. In order to achieve this goal I try to insert the digital library related subject elements of the master programmes into the basic concept described by Maceviciute. Her model describes the different kinds of topic types of digital library programmes in Borås and of DILL.

After the detailed analysis I discuss some basic findings of the comparison, and then I summarize the whole thesis.

2 Methodology

I present in this chapter some major considerations about methodological issues of my thesis. I describe the research paradigm, give a short description of the theoretical framework of my thesis (the theories and models used in the thesis) and of the type of methodology. I will also give a short overview of the types of resources that appear in my thesis.

2.1 Research paradigm

The Research paradigm of the thesis is primarily descriptive and qualitative. I would like to refer to how the different LIS and digital library education programmes on Master level in Oslo, Borås and Copenhagen handle digital library education issues, and to find models and points by which these programmes can be compared. The thesis concentrates on the possibility of determining a common Scandinavian digital library education approach in the master level programmes of the three library schools (including the international DILL programme as well). The other possible scenario would be that their activities have developed mainly independently from each other without major common ties. The interpretation of the different programme structures and goals by certain qualitative resources can help to find an answer to that basic question.

2.2 Theoretical framework, Theories and Models used in the thesis

My methodology is basically a case study of a comparative qualitative analysis based on written sources. I compare different programmes from a certain perspective and try to find common interpretation points of the digital library education activities on Master level in these programmes. In the literature review I introduce some basic models and sources with certain theoretical considerations for the analysis. Furthermore Elena Maceviciute's comparative model for digital library education is used in the analysis part putting that model into a wider perspective than the original.

2.2.1 Literature, interviews

This thesis is based on a qualitative, descriptive comparison work I do not really have a sample as I am mainly working with written materials (programme descriptions, curricula plans, course descriptions, academic articles). However I made interviews with Helena Francke and Elena Maceviciute in Borås about their digital library master programmes to get some additional information beyond their articles. The main topics appear in the interview were in accordance by the research questions.

The interview made in Borås was neither transcribed nor recorded. Written notes were made about the basic points of the discussions. The thesis is mainly based on written resources. The main aim of the interviews and discussions was to get some additional information beyond academic articles and programme, curricula materials. The exact recording or transcription did not appear as a value-added element in the context of my thesis. The core of the thesis is not dependent on this interview source. The main aim of the interview (and some other informal discussions with Ragnar Audunson in Oslo) was to get information that would clarify some aspects of the written materials and offer some additional details on some issues directed to the research questions. Making written notes seemed to be the adequate way of recording information for this purpose.

The programme coordinators from Borås have granted me access to the Borås e-learning system to study more course materials.

Unfortunately in Copenhagen I could not organize personal meetings. However I met and made a little informal talk with their study director Jette Hyldegaard and with some of the main organizer students in the Bobcatsss conference 2013, Ankara, Turkey.

The style of the thesis is rather descriptive than interpretive. It elaborates the major issues of comparative analysis and research findings without long interpretive discussions about them.

Most topics described in the literature review appear implicitly in the analysis and discussions without directly refer back to the associated models, descriptions and discussions.

2.2.2 Major sources of theories, models appearing in the thesis

I give a literature review to describe the European context of digital library education in order to find the major comparative points in the master programmes of the three library schools to be used in my thesis. In the literature review in order to define the European perspective I use academic articles, books about European LIS education, the common European LIS curriculum project documents from 2005 and a previous DILL master thesis by Nafiz Shuva. The European project gave an overview of the European LIS education in general. The recommendations of the project were used during the planning of the digital library programmes in Borås and also by the DILL consortium. However the digital library education is not appear in a specific way through the project it offered some major elements to understand some thoughts and ideas behind the written curricula by the library schools.

The thesis of Shuva is on the other hand offers an overview of the digital library education in Europe in a specific way. The model of this thesis helped me to formulate my research questions and realize a wider European perspective of some comparative points appearing in the analysis.

In the literature review I also use academic articles and documents about the iSchool policy framework to find out to what extent the described programmes are corresponding to it (Copenhagen has already a member, Borås has just applied to and Oslo is a prospective member of this community). The general guidelines of the iSchool community are important for me to understand those institutional strategies having a major impact from a digital library perspective on the curriculum planning on master level in the three Scandinavian library schools I am focusing on.

Another main model, the Digital Library Curriculum Project by University of North Carolina, Chapel Hill and Virginia Tech, is also mentioned in the literature review in order to help to compare the master programmes from a digital library perspective in the three library schools. This model offers a cookbook of different modules and course elements together with a certain methodological background which had been used before in the master level programme curriculum planning phase in the three library schools in Scandinavia.

In the analysis some models appear according to an article of Elena Maceviciute (Maceviciute, 2011) and an article of Elena Maceviciute, Helena Francke and Tom Wilson. Maceviciute and

her colleagues offers a basic overview of the planning and first implementation phase of their digital library education master programmes in Borås (Wilson, Francke, & Maceviciute, 2009). Maceviciute furthermore compares the DILL with their two digital library master programmes in Borås. She also describes the complementary nature of their model and the Delos conception as the core of the DILL structure. I believe that her basic comparative model focusing on the course structure and the categorization of main programme elements can be used to compare these programmes with the LIS master programmes in Copenhagen and Oslo.

3 Literature review

3.1 Introduction

In the literature review I concentrate on some issues that are to some extent relevant for the topic of my thesis and can put my thesis topic into a broader context. This partly means the broadening of the geographic horizon, partly helps to represent the European context, and also introduces the few Scandinavian resources related to my comparative topic on Master's level LIS education programmes and curricula.

All the three respective library schools I focus on through my thesis (Oslo, Borås, and Copenhagen) consider joining to the originally US-based iSchool community that has emerged to a global scale. IVA in Copenhagen (and another Nordic representative: the School of Information Sciences from the University of Tampere in Finland) has already joined the iSchool community and it will organize the first representative iSchool Caucus meeting beyond the US (as the IVA representatives announced it in the special LIS school session at the BOBCATSSS 2013 conference in Ankara). Introducing the basic objectives, development and goals of the iSchool community, can be useful in my thesis to find out what kind of future perspectives the Nordic institutions plan to follow (together with other European institution members of the iSchool Caucus from Finland, the Netherlands, UK and Germany).

The digital library curriculum development project of North Carolina, Chapel Hill and Virgin Tech offers several theoretical and practical modules with flexible elements for implementation into local curricula environments in the digital library education field. The results of the project are used in the three library schools are the focus of my thesis. A brief description of the project is presented the second part of my literature review.

The next aspect of the literature review is the broader European context in the LIS field. The implications of the European LIS education through the reforms announced by the Bologna-

movement, the perspectives of the establishment of the common European Higher Education Area are also relevant for the Scandinavian library education. Through EUCLID, (European Association for Library & Information Education and Research-that organisation represents the higher educations in the LIS field in Europe) the Nordic institutions had a major role in the first large European collaboration programme in the LIS field. It emerged from several meetings and a final publication (following the last central meeting in Copenhagen) that gives a comprehensive overview of the complex forms of LIS education in Europe by defining major topics and indicators (Kajberg & Lørring, 2005). That major work inspired several other referred publications on the European perspectives of LIS curricula development, the national divergent forms of LIS education throughout Europe, discussions about possible ways of convergence, the different forms of European collaboration on LIS education

3.2 The iSchool cooperation model

As (Chu, 2012) points out, the iSchool movement is active primarily in the LIS education field. Moreover by following an interdisciplinary approach for the definition of information, not only LIS schools (around 75% of all members) but schools of Computer Science and Management are also members of the iSchool community. That mixture of institutions with different profiles (but with LIS school dominance) refers back to the traditional debate on the definition of information in different disciplines. This community can create a broader partnership in research by the different disciplinary considerations in partnership than before. This seems to be the major positive impact of this cooperation model. The major community aim is to define a new brand. This brand broadens the focus of the education from training librarians in order to work in library to a more general direction. The aim is to educate people to all kinds of professional position in broad professional fields where managing, handling and retrieving information is an important issue. Beyond this brand based on this broader viewpoint however the content of education by programmes and courses cannot be considered as representing a new model comparing these elements with other accredited LIS schools in the US.

The establishment of the iSchool model goes back to 1988 when Toni Karbo, the Dean of the LIS School in Pittsburgh founded the “Gang of Three” with the deans from the Drexel and Syracuse LIS schools just to facilitate interaction between the member schools. The iSchools were not meant to be exclusive at the very beginning but wanted to stimulate more active cooperation in research and education in the LIS field. However the membership criteria defined in three points later brought some hidden exclusivity mainly for financial reasons (it

will be described in a following paragraph). The development of the network is described in Table 1 (below) and by another table that can be found in the appendix.

Table 1: Evolution of iSchools followed by Chu (2012)

Year	Membership
1988	Gang of three (Pittsburgh, Syracuse, Drexel)
1990	Gang of Four (Pittsburgh, Syracuse, Drexel, & Rutgers)
2001	Gang of Five (Pittsburgh, Syracuse, Drexel, Washington, & Michigan)
2003	Gang of Ten: Pittsburgh, Syracuse, Drexel, Washington, Michigan, Illinois, North Caroline, Florida State, Indiana (Informatics & Computing), & Texas at Austin
2005	iCaucus: Gang of Ten plus Berkeley, Irvine, UCLA, Georgia Tech, Indiana (LIS), Maryland, & Toronto
2009	27 members
2011	31 members
2013	39 members (see Table 2)

From an institutional perspective the members can be divided into three groups (Chu, 2012). The first group consists of pre-existing LIS schools (such as University of Pittsburgh, Drexel University). The second group was formed by merging pre-existing schools but disparate academic programmes (like University of Michigan). The third group is based on (entirely) new programmes hiring faculty mainly from outside the institution (like in Pennsylvania State University). As (Chu, 2012) points out before the founding of iCaucus in 2005 only one institution could have been defined as a non- traditional LIS School (the School of Informatics and Computing at Indiana University).

The collective efforts of the iSchools are currently managed by the iCaucus and it is mainly based on organising common conferences, managing the ischools.org website and running special research projects. The website is offering some brief introduction elements for the member institutions about their students, faculty, research and academic programmes. These content elements can be set into various parts of the site. The institutional information can be managed by a central RSS newsfeed aggregator as well. The members of the iCaucus have to pay an annual fee and each of them has one vote at common decisions (Chu, 2012;“Membership in the iSchools,” 2012). The membership criteria are currently defined in three main points as major characteristics of the iSchools (“The Characteristics of iSchools,” 2012) :

1. substantial sponsored research activity (an average of $1 million in research expenditures per year over three years)
2. Engagement in the training of future researchers (usually through an active, research-oriented doctoral program)
3. A commitment to progress in the information field.

These three points lead to certain consequences (Chu, 2012).The first point exclude the smaller institutions with smaller research budget then $ 1 million. All the three criteria are mainly research based. It seems that the iSchool Caucus community is more research based then non-research LIS education factors would imply (education, curricula, students). This kind of approach excludes the schools which are small in size and/or are part of non-research universities. The hidden effects of the 3 point criteria are clearly against the founder's aims to enrich interactivity and collaboration among various institutions without forming any kind of closed exclusive circle of LIS schools…

The purpose of the establishing of the iSchool community is summarized on the website according to their charter: "The iSchools take it as given that expertise in all forms of information is required for progress in science, business, education, and culture. This expertise must include understanding of the uses and users of information, the nature of information itself, as well as information technologies and their applications. The iSchools have organized to pursue common objectives with a collective commitment of resources ("The Purpose of the iSchools," 2012)

This seems to me to be a really traditional LIS approach by talking about the nature of information and about the users and uses of it. But that definition on the other hand is broad enough to cover different (inter)disciplinary perspectives of the different fields of LIS, Computer Science, and Management. In an interview, Per Hassle (Rector of RSLIS from Copenhagen) points out that his school represents a complex information-based discipline and it is no longer a library school. The new Danish name (Information Science Academy without the "Library" term) reflects the fact that iSchools represent a holistic (comprehensive) view of the information-based disciplines. It covers the traditional library education topics too, but in a new broader context (Saabye, 2011). It includes a more professional research element as before, when library schools mainly served as a form of vocational training (offering skills and competences for the traditional library profession). Nils Pharo points out this historical element in his article about the LIS research education in the Scandinavian countries (Pharo, 2005). A broad, comprehensive overview of the historical development of vocational education in the Nordic countries is available in a book (Pors & Harbo, 1998). The new broader

context with new perspectives brings more dynamism into education and research according to Hasle's view. RSLIS has joined the iSchool community, because their long term development goals are in complete harmony with the major purpose and characteristics set by the definition of iSchool Caucus.

Another major publication is also relevant in this context as it discusses whether the iSchool movement represents a deliberate disengagement from the traditional LIS education or just an ingestion of traditional disciplinary content into a new field (Bonnici & Burnett, 2009).

The authors followed the fractal cycle mechanism in a philosophic sense to model the positioning of iSchools in relation to the traditional LIS schools by programme descriptions, curricula and iConference abstracts. They found that the progression mechanism from LIS into iField by defining the conception of information follows a kind of inverted fractal cycle mechanism from the practice based on specific locales (library) into a more broader perspective as practice in general (in a location independent way). "The iField is not only the heart of everything but has ingested the L into his heart." (Bonnici & Burnett, 2009)

The meaning of "i" as a content or branding element is still quite confusing when we want to make a difference between the two groups: iSchool MA programmes with ALA (American Library Association) accreditation and the non iSchool LIS MA programmes with ALA accreditation.

The iField deals with all the issues, opportunities and challenges regarding our information age. From this article it became clear that the cooperation network of iSchools representing a broad partnership network can offer a wider perspective of research with multiple aspects of information. By various broader professional impulses and through different institutional practices and traditions, the interdisciplinary evolution in LIS is going forward in a more efficient way- than if the cooperation stayed within the traditional LIS school field with narrower perspectives.

According to some relevant academic articles (Bonnici & Burnett, 2009; Saabye, 2011) somehow the whole iSchool movement is a major initiative as a policy issue in a social and political arena. The aim is to create certain re-interpretations of old forms and their replacement with new frameworks, using new definitions in compliance with the natural evolution of the LIS field. Different interpretations of information have existed in different disciplines for a long time. This new kind of cooperation model as an initiative offers a broad partnership framework to amalgamate all these perspectives into a common context. As

(Bonnici & Burnett, 2009) mention it and also Per Hassle refers to it in his interview (Saabye, 2011), the leaders of the iSchools have become clearly aware not to use the traditional 'library science' 'library studies' terms in information studies programmes by information science schools. This is a clear indication of the re-modelling of the educational perspective as I have referred to it above. They are creating a new (broader, interdisciplinary) brand (the name of library as a target of vocational discipline and information locale no longer exists) with new expressions. At the same time they are integrating all the traditional library science issues into the content of the new programmes behind the fashionable branding slogans. In this way we can define the iSchool model as an initiative, a policy issue connecting to LIS with major new social and political interpretation and branding goals.

The iSchool model focuses on the appearance of traditional issues in new forms as it is defined in an article in another context (Braman, 2008). This article is theorizing some types of policy issues in the context of theorizing the impact of IT on library and state relations. The 'traditional issues in new forms' term is a major type of general policy issues concerning reinterpretation, trigger adaptation or replacement of traditional professional forms in a new context. Originally it appeared in the context of law (replacement, reinterpretation or trigger adaptation of the law in digital environment) but it can be used by other subjects as well, for instance by a public policy theory (Braman, 2008).

This policy game with the branding slogans and names of the master programmes however is not as simple as it seems to be according some sources, referred (Bonnici & Burnett, 2009) and (Saabye, 2011). As (Chu, 2012) points out, within the iSchool cohort one of the members of the gang of three,- Drexel - continues to have LIS in its degree names. North Texas at the same time offers two majors: information science and library science in its master's programme. By the author there is a little difference among iSchools and non iSchools according to degree names (however these have a higher consistency in degree naming practices in the US). As (Chu, 2012) also points out the differences of the programme requirements in iSchools and non iSchools cannot be defined clearly.

The ALA (American Library Association) professional accreditation requirements guarantee a common standard for schools in the LIS field in the US. The same is true for the core courses as there are no major differences among the ALA accredited iSchools and non iSchools. The differences appear mostly in the concentrations. The non iSchools have a more traditional approach to topics. On the other hand three of the non iSchools from the sample of the research did set up a digital library concentration while only one iSchool (Drexel) offered it

(Chu, 2012). However without deep content analysis of the courses there is no chance to make accurate statements about the differences of the contents in relation to the divergent focus points of the programmes. It is really difficult to carry out this kind of research because of the lack of accessibility of hard data about courses in the institutions for comparison.

iSchools generally offer a broader variety of courses than non iSchools according to the research sample. The weakest point of the branding conception of the iSchool movement is that there is no hard evidence of a fundamentally different form or superiority of ALA accredited iSchool programmes from the ALA accredited non-iSchools in the LIS field…. (Chu, 2012). The other main problem is what I mentioned above: the lack of accessibility of hard data about courses to compare them.

The cooperation and interaction of the LIS institutions and their interdisciplinary partners are constantly growing. Based on the literature it seems that the iSchool community provides a major contribution to this effort. Debates about the various kinds of education and partnership forms can help the development of the LIS and other related disciplines. Further study is required on the research potential of the iSchool community (as according to their criteria they are defining themselves more like a research than an education based-community). Also further research work should focus on the globalization impacts of the iSchool movement, discussing how the Non-American partners can alter the branding, education and research efforts of the iSchool community.

Hassle in his interview points out that they want to create a European dimension of the iSchool community together with their iSchool partner institutions from the continent (Saabye, 2011). This goal appears also in the internationalization strategy of the Danish library school (Royal School of Library and Information Science, 2012). RSLIS want to join EU-networks with relevant large EU-funded research projects. A major cultural mission would be to interpret the European cultural dimension towards in North-America. When in the interview, Hassle is talking about the collaboration in education; he is highlighting the research collaboration in the PhD level. In a global sense the collaboration aim with their iSchool partners is to find the best experts and research environment that can help to manage the different projects of the PhD students. The internationalization of education is used as a keyword in the interview concerning the declaration of the long-term goals. This keyword is also referring to the Master level education but without concrete examples in that field. The internationalization strategy offers some details about general institutional goals of international collaboration. It not holds any specific issues about master level education, just points out to the major collaboration

directions and partners. The strategy and the interview with the rector reflects well to each other (Royal School of Library and Information Science, 2012; Saabye, 2011).

The Swedish School of Library and Information Science (SSLIS) has just announced that the institution wants to be a member (the first in Sweden) of the iSchool community (Borenstein, 2013). The effects of membership could strengthen the internal collaboration of the Business and IT schools within the university college as all schools belonging to it. It also can help to develop some new partnership forms with the Skövde University College in the information technology field. The international collaboration of the members of the iSchool community can also develop new research projects and might have positive impacts on the quality of the academic programmes according to the hopes of the SSLIS management. The iSchool brand can also help to finance research projects and the membership can offer a kind of quality assurance of these activities. The partners are representing the highest quality of research and can share the latest results with each other through various collaboration forms according to the Swedes. These arguments concerning Borås are similar to what the management uses in Copenhagen. However in the Swedish case locally there is a better coordination of research activities among the different schools of the Borås University College. A West-Swedish regional dimension of the collaboration with the partner from Skövde also represented. The advantages of collaboration occur on in different levels (local, regional, international). The interdisciplinary profile of the institution can be stronger by positive impacts on research and education. The decision about the joining request comes about in summer 2013.

3.3 A basic overview about the Digital Library Curriculum Project by University of North Carolina, Chapel Hill and Virginia Tech

3.3.1 Background

The project initiated by the University of North Carolina Chapel Hill and Virginia Tech ("Digital Libraries Curriculum Development," 2011). Project results by a broad range of customizable module and course offerings made a deep impact for curriculum development by SSLIS in Borås (Wilson et al., 2009). That is the main reason why I take a short overview about the conceptual model and the basic curriculum development steps of this project. The project was financed by the US National Science foundation.

The two institutions around 2006 realized an urgent need to develop a digital library curriculum. Hundreds of million dollars had invested to digital library research from the early

1990's till the mid 2000's included some research on how digital libraries can help education. Though there was no parallel investment on teaching and learning about digital libraries (Pomerantz, Wildemuth, Yang, & Fox, 2006). On the background of the project an urgent need was realised to invest in the education of information professionals in digital library field. These experts fully understand the processes by which digital libraries are developed and their users are supported. Simultaneously they can realize the potential of digital libraries to develop new information services (Pomerantz et al., 2006).

Without investments to DL education, a future was realized with many digital libraries but a few digital librarians with success. Developers of DL software could not be aware of crucial requirements and the result could be a flow product. Getting to know about efficient and effective techniques about implantation and key factors of success by digital libraries are also essential. On the user's side a confusing situation was described where failures with usability and interoperability seriously restricted the efficiency by working with useful information. On a financing and sponsoring side the sustainability of digital libraries and the long-term digital preservation issues appeared as a challenge. To manage and solves these challenges and problems the leaders of the projects found really useful to ensure formal training for people affiliated with digital libraries (Pomerantz et al., 2006).

The project leaders recognised two neighbouring discipline with digital libraries: Computer Science (CS) and Library and Information Science (LIS). For CS graduates digital libraries represents opportunities to develop and then apply new technologies. New technologies lead to integrated information systems that go beyond the fragmented scope of web portals, search engines, database systems and web-based information systems (Pomerantz et al., 2006).

For LIS graduates the main opportunity based on the application of these new technologies to provide library services to an increasingly diverse and distributed population by digital information needs (Pomerantz et al., 2006).

The initial situation was the appearance of digital library related courses, tracks, specialisations in LIS and CS programmes in the US by a little agreement of content and scope of these activities. An additional challenge was recognised by weak coordination among different education institutions or among LIS and CS departments within the same institution. The second main initial challenge was the lack of consensus on unifying formal theories and offering integrative, firm foundation for digital library education.

3.3.2 Theoretical foundations of the project

The whole project based on the 5S model. This is a result of an activity to describe digital libraries in a rigorous manner. The model based on five fundamental abstractions: Streams, Structures, Spaces, Scenarios and Societies ("Digital Library Curriculum Development Module: Conceptual Frameworks, Models, Theories, and Definitions," 2011). The model use fundamental formalisms such as sets and graphs from Mathematics and Computer Science. It captures the social, philosophical, technological, economic and ethical elements of digital libraries.

Short descriptions of the abstractions:

Streams are sequences of an arbitrary type (like bits, characters, images) and they can model both static and dynamic content. Static streams correspond to information segments as basic elements (like sequence of characters). Complex object like a book maybe a stream of simple text and images. A dynamic stream is used to model any information flow and representing any kind of communication that takes place in a digital library. Streams are typed and the type is defining their semantic and application area ("Digital Library Curriculum Development Module: Conceptual Frameworks, Models, Theories, and Definitions," 2011).

Structures are the organization ways describes the way on which parts of the whole being organized. They can be used to represent hypertext, and structured information objects (taxonomies, system connections, and user relationships) ("Digital Library Curriculum Development Module: Conceptual Frameworks, Models, Theories, and Definitions," 2011).

Spaces are set of objects together with operations and those objects conforming to certain constraints. It is useful when a part of a digital library cannot be described by other abstractions of the 5S model. Document spaces are the key concept of digital libraries in this model. Spaces are used in various contexts like indexing and visualising. Different type of spaces can be proposed like measurable spaces, topological spaces, vector spaces, probability spaces etc. ("Digital Library Curriculum Development Module: Conceptual Frameworks, Models, Theories, and Definitions," 2011).

Scenarios are sequences of events that may have parameters and events represent state transitions. "The state is determined by the content in a specific location but the value and the location are not investigated further because these aspects are system dependent. Thus a scenario tells what happens to the streams in spaces and through the structures. When considered together, the scenarios describe the services, the activities and the tasks

representing digital library functions. DL workflows and data flows are examples of scenarios" ("Digital Library Curriculum Development Module: Conceptual Frameworks, Models, Theories, and Definitions," 2011).

Societies are sets of entities and relationships. Entities can be either human or hardware, software components for using or supporting digital library services. This is the highest level of concept of a digital library in the 5S model. It exists to serve the information needs of its societies and describes the contexts of its use ("Digital Library Curriculum Development Module: Conceptual Frameworks, Models, Theories, and Definitions," 2011).

Table 1. The 5S framework

Ss	Examples	Formalization
Streams	Text, video, audio, image	Sequence (list)
Structures	Collection, catalog, hypertext, document, metadata, taxonomy	Graph, Function, Relation
Spaces	Used in indexing, browsing, and searching services – as well as interfaces	Set (vector, topological, measurable, measure, probability spaces)
Scenarios	Searching, browsing, recommending	States, events, sequences (lists)
Societies	Service managers (software), Actors (learners, teachers, etc.)	Tuple (relating events and actions)

Table 2 about 5S model (Pomerantz et al., 2006)

This highly abstract model can be a bit more understandable if we can compare the 5 main elements described above with the aim of digital libraries ("Digital Library Curriculum Development Module: Conceptual Frameworks, Models, Theories, and Definitions," 2011):

• Societies define how a Digital Library helps in satisfying the information needs of its users.

• Scenarios provide support for the definition and design of different kinds of services.

• Structures support the organization of the information in usable and meaningful ways.

• Spaces deal with the presentation and access to information in usable and effective ways.

• Streams concern the communication and consumption of information by users.

Table 3. Modules according to the 5S model

Streams	1. Collection Development
	2. Digital objects/ Composites/Packages
Structures	3. Metadata, Cataloging, Author submission
	4. Architecture, Interoperability
Spaces	5. Data visualization
Scenarios	6. Services
Societies	7. Intellectual property rights management, Privacy, Protection
	8. Social issues / Future of DLs
	9. Archiving and Preservation

Table 3 about referring 5S model main elements to education module (Pomerantz et al., 2006)

3.3.3 Basic information about curriculum development

An illustration of the preliminary framework of the curriculum development can be found in the appendix. For programmes that emphasise digital library issues in their curricula two semesters length seemed to be appropriate by the project leaders in the US. Nevertheless a one-semester long specialisation can be also popular in the US. Single courses, modules might be implemented within courses in relation to the core topics (about databases, Human-Computer Interaction, Information Retrieval, multimedia etc.). The framework is really flexible on this way it is mainly intended to serve as a cookbook by a set of option to implement digital library education for the different institutions throughout the world by different kind of education forms. The mission of a particular school determines the emphasis based on different areas on digital library curriculum (Pomerantz et al., 2006).

The topics on the curriculum framework are focusing to three core areas:

1. Information models and systems
2. Database Systems
3. Data Modelling

Four elective areas are mainly related to LIS:

1. Information storage and retrieval
2. Hypertext and hypermedia
3. Multimedia information
4. Digital libraries

In the project the education materials were developed on three levels of granularity:

1. Lesson plans on specific topics set by the DI project framework that can be implemented as a part of a single class section or as an exercise in a class section
2. Educational topics that can be integrated into one or several class sessions
3. Course syllabi and textbook appropriate for one or two semester long digital library education courses.

The DL curriculum makes efforts based on the construction of different educational modules. The module developments of the project were implied the results of previous professional discussions and by the implementation of best practices in LIS field from different kind of courses and programmes on digital library related topics. The education modules are available on the project website ("Digital Libraries Curriculum Development," 2011). These are prepared to interested LIS and CS schools to implement them. Each module made up by several separable lessons and offers a great flexibility for implementation into separate courses. On the project website software package module descriptions also available related to the main areas of information retrieval and multimedia. This kind of complexity of practical and theoretical modules along with specific software package modules provides educators with a strong basis for locally-customized curricula in digital libraries (Pomerantz et al., 2006).

As some academic articles refers, the implementation of the results of the project appeared in connection to the digital library curriculum development in Borås (Maceviciute, 2011; Wilson et al., 2009) and perhaps made influence to the development of DILL curriculum and the digital library related elements of Master level curricula in Copenhagen as well.

3.4 LIS Education in a European perspective

3.4.1 The contextualization of LIS education in Europe- Strong national traditions, weak common ties

The first main attempt to make a comprehensive overview about the LIS education in Europe was inspired by EUCLID (European Association for Library and Information Science Education & Research) through international seminars in Parma and Thessaloniki in 2002 and in Potsdam 2003 (Kajberg & Lørring, 2005). By these conferences it had become clear that the structure and curricula of LIS education and the certain approaches about these topics in the different European countries differs so much from each other.

A suitable overview describes the situation in LIS collaboration, the position of EUCLID in this context, just before the large common European comprehensive project in LIS education field was initiated (Virkus & Tammaro, 2004). The different collaboration forms made positive

impacts in the really fragmented European LIS environment in various ways. These collaboration forms were represented by the exchange of staff and students. Furthermore another positive consequence of collaboration was the development of cooperation on research projects. Many of these projects offered support from the stronger to the weaker members of EUCLID. Annual Bobcatsss conferences have appeared as major tools to develop the cooperation among LIS students and professionals all over Europe. The NORSLIS network on research education in PhD level offered an early example to achieve synergic effects, effectiveness and efficiency in Northern Europe and in the Baltic States (Pharo, 2005; Virkus & Tammaro, 2004). The European context of LIS education started to be developed through these programmes and activities. The first attempt to realise a common context of European LIS education connected to the aim to set the collaboration forms into a new level started by a new European project from 2005.

The first comprehensive book that offers an overview about the complex European LIS education edited by Kajberg & Lørring, (2005). This book is a result of a pioneering collaboration project on LIS education field in Europe. The main project coordinator was the RSLIS in Copenhagen, and the Oslo University College had also taken apart of the planning process from Scandinavia. Ragnar Audunson from Oslo as the chair of EUCLID on that time played a central role on the project management. That primary role of these two institutions takes a further reason why this project is important in the context of my thesis. The first description of the European LIS perspective and the description of fragmented nature of LIS education had made by a strong Scandinavian collaboration.

The project initially based on hundreds of virtual discussions among about 150 European LIS education professionals during the spring and summer, 2005. It was followed by a joint discussion, working, and writing seminar on August 2005 in Copenhagen by 40 carefully selected LIS educator professionals from all over Europe. They worked in 12 groups that were organized around classical topics of LIS education. The reason to choose these kinds of subjects was the lack of transparency and equivalency of European national LIS education systems. The main themes represented the common approaches in order to break a way in the jungle through the different kind of national education traditions, programmes and curricula.

The result of the seminar is the book itself (Kajberg & Lørring, 2005), that offering the first comprehensive overview of the really divergent European LIS Education. A major purpose of (Kajberg & Lørring, 2005) was to initiate a kick-start for further discussions about European LIS education. The identification of similar or same curricula elements in programmes among

different LIS schools and the immediate face off with the real diversity by LIS education got to each institution an opportunity to further develop the quality of its programmes. The wish of enlarged, more dynamic collaboration among LIS Schools in Europe appeared as a main purpose of this pioneer collaborative project in European LIS Education.

The book (Kajberg & Lørring, 2005) has some main strengths. It represents a quite broad spectrum of views, perspectives and backgrounds representing the traditions and practice of many different European library systems. The results of the seminar that represented in the book has inspired many LIS education professionals in different LIS related disciplines to find ways for further collaboration with each other.

Initially LIS professionals by the first virtual discussions and by the results of preliminary conferences (that were mentioned at the beginning of this sub-chapter) could define 10 main topics representing LIS (two additional topics appear in the book as a preface about European LIS context and by a survey plan to get more info about the national LIS education systems in Europe). In the second step the founders of the project were starting to find more relevant experts in these topic fields from all over Europe. Some of these experts were asked to join to the seminar in Copenhagen. The final result that represented in the book is a description of a common approach in each main theme. The book describes the fact that professional experts could find the less common denominator through the national divergence of LIS education systems.

The topics are the following (Kajberg & Lørring, 2005):

1. Library and Information Science Curriculum in a European perspective
2. Digitization of Cultural Heritage
3. Information Literacy and Learning
4. Information Seeking and Information Retrieval
5. The Information Society: Barriers to the Free Access to Information
6. Knowledge Management / Information Management
7. Knowledge Organisation
8. The Library in the Multi-cultural Information Society
9. Information and Libraries in an Historical Perspective: From Library History to Library and Information History
10. Mediation of Culture in a European Context
11. Practice and Theory: Placement as part of the Curriculum
12. Library Management

The common project and its manifestation by this book could offer an improved basis to harmonize the different forms of curricula via developing strategies and activities to implement the Bologna criteria all over Europe. It could take a major impetus for collaboration in curricula development by realizing European dimensions in the LIS core areas (creating more flexible and equivalent curricula environments in Europe). By forming thematic networks in core topics described in that book, a new chance was offered among LIS schools in Europe for teaching and research. Another major expectation was to form a more harmonized European LIS education environment in order to the mobility of students and educators could be increased. By the aims of the project founders their work just meant to first step to consolidate EUCLID as a European collaboration forum for LIS education and research.

As a summary we could say that (Kajberg & Lørring, 2005) implied an active discussion in European LIS education field by made the first common steps in this broad context. The fragmented nature of LIS education and the relative strength of national and local traditions through the building of the different programmes are still dominating the discourse on this subject in Europe. The project could not achieve its major goal to get a major breakthrough by more coherence among the different programmes and national traditions on a European level.

However some international LIS education programmes were born at master level followed by that project, as it was a major impetus to form the DILL programme and the Swedish digital library programmes in Borås (Maceviciute, 2011).

The digital library education topics are not appearing in a clear well-defined method in the survey (Kajberg & Lørring, 2005) just in the context of traditional topics. By many national LIS education system in Europe the digital library education division does not have a strong individual profile. It is just appear in different contexts by a more hidden way (library management, digitization of cultural heritage are for example some main topics that covers digital library education issues in this framework). These challenges reflect to some issues in relation to some recent trends in the field of the European digital library education.

3.4.2 An Overview about digital library education in Europe

The first attempt to make an overview about the digital library education in Europe appeared by a Master thesis from the Digital Library Learning (DILL) programme (Shuva, 2011). The thesis offers a comprehensive literature review by few numbers of publications made before in digital education field in Europe. This review also represents important academic sources that have direct relevance with digital library education by skills, programmes, and curricula from a global perspective. Furthermore the thesis presents certain indicators about the evaluation of

digital library programmes. The main methodology framework of the thesis was survey research. 159 questionnaires were sent to LIS schools. The range of schools was defined from the professional directory of IFLA. 54 answers were received then from 27 European countries (Shuva, 2011). In the following I summarize some main topics of Shuva's thesis survey results that are relevant in the context of my thesis. LIS school means any kind of school, department, or other kind of unit providing LIS education in this context.

The answers to the questionnaire made by Shuva referring to the fact, that the majority of the institutions have already integrated digital library topics to their Bachelor and Master's programmes. In most cases there are no specialised digital library education programmes. Digital library education topics appear as a part of general LIS bachelor and master programmes. The definition of these different topics also represented by Shuva's thesis apart with the different ways in general definitions of digital librarianship and digital library education. Eight LIS schools each in Croatia, Italy, Norway, Sweden, two LIS schools in Spain and two in the UK are offering separate degree programmes on digital libraries (Shuva, 2011). Italy, Norway and Estonia managing an international programme together called Digital Library Learning (DILL). This programme compared with the Swedish digital library programmes from Borås as a part of the analysis in my thesis.

In this rapidly changing and growing discipline area there are no core books or journals that were recommended by the majority of the respondents. There are some dominating book authors in English but without any title that can be determined as a 'classical title' of the digital library discipline. In Eastern Europe the textbooks which have been written or translated into national languages are highly preferred. Most of the preferred journals by the respondents connected to digital librarianship topics are LIS journals. It is stated that by the respondents view digital librarianship is a part of Library and Information Science (Shuva, 2011).

A preference for practical aspects over theoretical one can also be observed related to the digital library education activities in Europe. A majority of the respondents preferred the practical technological subject areas as a part of Digital Library education such as 'Digital Library Architecture and Design', 'Information Retrieval', 'Digital Archiving', 'Electronic Collection and Resources Development', 'Digitization' (Shuva, 2011). By these results it is not surprising that 37 of 52 respondents (71%) agree that LIS curricula are moving towards Computer Science, 35 of 52 (67%) stating the direction of LIS curricula to be towards Management Science. The traditional directions are represented by Social Science with 24

respondents of 52 (46%). 14 respondents from 51 (27%) preferred cultural science as main direction (Shuva, 2011).

By defining the 'digital librarianship' 18 of 54 respondents state that it is 'librarianship in the digital age', only 2 respondents (4%) declare that it is a 'separate emerging discipline distinct from librarianship'. According to 34 respondents (64%) the definition is a mixture of both elements (Shuva, 2011). This kind of mixture reminds me to some statements about iSchool community: The iSchool branding aims represent the second option while actual curricula elements in iSchools are seems to be more LIS traditional, so a mixture is the reality on that case as well.

The main competitors of LIS schools in the digital library world according to 78% of the respondents (42 of 54) are Computer Science and Engineering (CSE) schools, 70% can find the main competitors by the Communication and Media Schools (40 of 53) and according to 55% (29 of 53) Management Science and Business Schools are main competitors in this field (Shuva, 2011).

A major element of Shuva's thesis in my view is the broad overview about different concepts of the digital library education by curriculum content and skills. The overview summarizes different perspectives mainly based on academic investigations in the US and in the UK; however a Hungarian case study also appear in this context. The overview focuses on the definition of digital library education as a discipline field. Digital librarian competences and skills that transferred by digital library education are also on the spot. Curricula frameworks represent the context of digital library education. Shuva's thesis questionnaire defines the concept of 'digital libraries' considered at first to 'library'(Shuva, 2011) .

A good number of respondents refer to the collection aspects of digital libraries. Some other definitions are focusing on information retrieval, searching, preservation, services, users and related aspects of digital libraries. The most popular topics of the respondents can be found in the appendix.

The traditional fragmentation in defining the core of general LIS education that appeared in (Kajberg & Lørring, 2005), represented on a same way by (Shuva, 2011) in the digital library education context. There is no core topic that everyone should be considered as 'Core Digital Library topics'. However the respondents could determine fifteen important subject topic areas that were considered important for Digital Library Education (see appendix). These topics are in strong correlation to the Digital Library Curriculum of Virginia Tech and the

University of North Carolina, Chapel Hill from the US (Shuva, 2011). It seems to me that at least the priority of some subject areas in digital library education can be determined on more or less consensual.

The influence of the iSchool movement performs in a limited way in Europe. The new emerging trendy names 'Information Science' Information Management' or 'Information systems' are still not really popular in European LIS schools. Surprisingly a slight majority of them have some unique names (44% of respondents), while the 'Library and Information Science' term appear on the name by 39% of respondents (Shuva, 2011). We can realize that not just the curricula of LIS schools in Europe are traditionally rather fragmented but fragmentation demonstrated also through the names of the schools and departments in LIS field as well.

Traditionally LIS schools were formed in the Arts and Humanities and Social Science faculties. This is still a major trend, in the thesis questionnaire only one school can be found under the Computer Science and Engineering faculty and none of them the Faculty of Science. However many of them (41%) have unique names as we could observe the same trends by the name of schools and departments (Shuva, 2011). These results corresponding well to the findings appear by (Kajberg & Lørring, 2005). The majority of the LIS schools are awarding degrees from bachelor trough master till doctoral level in Europe according to the respondents to the thesis questionnaire (with 32 from 54 respondents). I agree with Shuva that it is a very positive development and shows that schools in LIS field are highly involved in permanent research and development activities in a certain accredited level.

Shuva focused on also the availability of course offerings in English in Europe except Ireland and the UK. In master level only in 8 LIS schools are all the courses taught in English. Only 3 of LIS schools offer whole programmes in English in bachelor, master and doctoral level according to the answers of respondents. Unfortunately from the thesis the name of the 8 schools and the names of the programmes could not be retrieved. Just the country names are appearing as Estonia, Italy, Malta, Norway, Sweden and Turkey. Estonia, Italy and Norway are represented by the international Digital Library Learning (DILL) programme. From Sweden the English language programme in Borås is available. RSLIS did not answer to the questionnaire, their English language master programme does not appear in Shuva's statistics. The findings of Shuva without school and programme names are a bit confusing in this way (Shuva, 2011). Most of the LIS schools offer individual courses in English without direct connection to the bachelor or master programmes curricula (Shuva, 2011). Internationalization appears in a

really restricted manner in the schools answered to Shuva's questionnaire in my view. International education efforts mainly represented in the framework of Erasmus and other kind of exchange programmes by special courses, without any direct integration to the national LIS education programmes.

3.4.3 Some more debates focus on the European aspect of LIS

In the following, I will review some recent articles (inspired by the emerging discussions on European LIS education field) to get some more details about some challenges and development tendencies of European LIS education.

The first chapter of (Kajberg & Lørring, 2005) describes some major characteristics of European LIS education context well, even a bit more than 7 years after the publication date (December, 2005).

The most frequent LIS education form in Europe is its location in a university department or in a faculty as noted by both major sources appeared above (Kajberg & Lørring, 2005; Shuva, 2011). Sometimes as (Harbo, 1996) pointed out, the LIS departments co-exists with other forms of the on-the job-trainings (offered by national libraries, other libraries or institutions) mainly in Central and Eastern Europe. In Hungary for example the Hungarian Library Institute is a major actor in the field of the vocational further education for the library professionals (Hangodi, 2012).

Only rarely independent library school exists. The growing multidisciplinary approaches by research and education are urging the RSLIS in Denmark, which was the best example in this field to give up its independence. It has joined to the Copenhagen University like a school of Faculty of Humanities from the spring 2013 (Hasle, 2012). A convergence among different disciplines represented by partner departments, faculties, or other universities and colleges makes a major impact on the organisation of the LIS programmes.

The appearance of the Bologna process almost everywhere has meant a stricter government control over the universities and it is also stimulating the convergence with other disciplines or areas (Kajberg & Lørring, 2005). Some library departments, faculties that have alternative funding sources than by the government (like in the UK and in the Netherlands) are more labour market-oriented than most of the other education places that are merely academic-oriented. The stricter government control however in my view in some countries (such as in Hungary) also creates a large pressure to the universities to set their programmes to a more labour-market oriented way (at least by the declarations of the politicians…).

The internationalization of LIS education has become more and more important as is evident by the appearance of many kinds of international education programmes and other collaboration forms since the summary of the pioneer project by (Kajberg & Lørring, 2005) was published. The model of different kind of approaches related to the internationalization of LIS education by (Kajberg & Lørring, 2005; Tammaro, 2005, 2007) seems to be still valid.

1. The first approach sees the inclusion of the international dimension to LIS education. It has become a part of department/Faculty/university mission and a major aspect of national accreditation process as well. Enrolment of international students can compensate the budget shortcuts and the loss of national students in some cases.
2. The second approach directed to specific programmes and /or modules for the internationalization of LIS schools. The student/professor mobility, the building of thematic networks, collaborative research projects, and internationalised curriculum appeared also by (Kajberg et al., 2005) as a major outcome of international collaboration by LIS education institutions. A major aspect of this approach is the appearance of an International Master Programme in Digital Library Learning. This programme has been managed by a consortium of three institutions from three different countries. Some other programmes like in Sweden are also focus on mainly international students (Maceviciute, 2011).
3. The third approach means the aim of the Bologna process itself: The internationalization of (formerly national) procedures as recognition of academic qualifications and assurance quality procedures. The three-tier architecture of the Bologna system by common principles and criteria of quality makes available to establish the European Higher Education Area. We could experience it that the process has not been proceeding easily as it was expected on that period (Tammaro, 2005). On the other hand some common principles have been established on the recent years and the student mobility through growing equivalence of degrees have become much easier in Europe.

Focusing more directly to digital library education issues, Anna Maria Tammaro (Tammaro, 2011) offers some additional aspects about the reinforcement of education of new information professionals. She points out that the LIS institutions nowadays facing off a double challenge by forming their curricula: Take an international (perhaps global) dimension to the LIS curriculum while at the same time curriculum has to reflect to the local situated practice.

The appearance of the Computer Science discipline in LIS curricula evokes major questions that often refer to controversial issues: Should an IT expert be solely responsible for a digital library? Can a librarian with sufficient IT and Information Science skills also take this responsibility? Should a digital librarian be just a good technician with a low LIS professional level? A Digital Librarian perhaps should be a high level professional with leadership capacity with a sufficient knowledge of technology? Can this kind of high-level expertise be used to find the opportunities that technology can offer for creating new services and/or make better the existing ones? The various profiles of the different LIS programmes have to create an answer to these challenges about the equilibrium of the two disciplines (Tammaro, 2011).

In addition to Computer Science, the sociological, legal, economic and cognitive theories can also have a major effect to take LIS even more multidisciplinary as it has ever before. All disciplines focusing in some contexts on the information, on the way it is structured and organised. By this interchange the Information Science can spread to all the major disciplinary subjects (Tammaro, 2011). In this context the challenge of the iSchool movement can be defined as the appearance of transferability of library skills to other situations and information problems beyond the library sphere. According to (Tammaro, 2011) it means also a major break-up between the LIS education and the library profession in a traditional vocational education sense.

What is really important to notice with (Tammaro, 2011) that LIS as multi-focused, multidisciplinary discipline have to be predominantly user-centred. This user-focused scope must be represented by all of the multidisciplinary perspectives and specialisations LIS can offer beyond the core topics. The major core topic of the innovative LIS education can be the handling of all the cognitive and social aspects on how information and information systems being created, organised, managed, disseminated, filtered, routed, retrieved, accessed, used and evaluated. This education approach represents not only a technical aspect but a broader conceptual knowledge about various aspects of digital libraries as well (Tammaro, 2011).

Another article by Ragnar Audunson points out some additional important perspectives. LIS transformed from vocational education to a research-based academic discipline gradually. There are relatively big differences in Europe about how far and how fast the different countries have moved on the way towards academia (Audunson, 2005a).

Making a distinction is highly needed in LIS field between the profession-oriented and discipline-oriented approaches. Profession oriented-approach means developing an academic and research-based profession like medicine and law. Discipline-oriented approach implies

developing an academic discipline like sociology and history. In Finland for example three LIS departments (Oulu, Tampere, and Turku) have successfully developed LIS as an academic discipline. On the other hand RSLIS in Denmark and the LIS programme by HIOA in Norway is based on a more profession-orientated perspective in their programmes (Audunson, 2005a).

Another major perspective by (Audunson, 2005a) is about the level to which LIS education is integrated to the academic system. Degrees from Bachelor via Master till PhD represents a significant form of variety. In UK, Finland and Spain educational programmes have firmly embedded to the academic structure. The historical development of LIS education in Germany and in Scandinavia had been traditionally based on vocational colleges. The RSLIS in Denmark have become a full-fledged university; in Sweden and Norway the two former vocational schools also integrated themselves to the system of academic degrees. The difference of the traditions is however still affecting the design and curricula of the educational programmes. A major difference can be defined also inside Europe that in some countries a Master's programme in LIS have typically built on a degree from another discipline (like in the UK); while in some other countries Masters builds upon Bachelor on the same field and PHD presupposes MA in the field as a major role (Central European countries, Denmark, Norway).

(Georgy, 2011) focuses on the possible existence of a nation-wide and/or European-wide core-curriculum in the LIS education field. Core Curriculum means to offer a general overview of LIS and contains the level of minimum, the most important knowledge to apply on LIS field. There is a need to define the minimum time of core-subjects and study areas within a compulsory curriculum framework. This kind of core-system implies that the students have a uniform body of knowledge by different subjects by producing educated and responsible graduates in LIS. Georgy's findings points out that a nation-wide or international curriculum could not be appropriate for direct transfer into the participating LIS institutions. However a core curriculum development process can ensure wider cooperation and collaboration among the members of such a project. The possible results can be just creating an informal frame of reference including key competences. To form a common multidisciplinary framework sometimes is really difficult. For example in Germany LIS and Archival Science has developed traditionally totally independently from each other in different universities and schools. Archival Science cannot be integrated to LIS education in a full sense on this way. However a common national competence network have been initiated and built by the German National Library. This framework should create a structure to ensure finding appropriate answers for the challenges by long-term digital preservation and accessibility of digital resources. In this

way professional people from libraries, archives and museums apart with students can work together in a same practice-based research environment.

Georgy's article illustrates also the appearance of national differences among the professional practice and attitudes from different European countries by using definitions in different way. The cultural mediation (kulturformidling in Norwegian and in Danish) is a special Scandinavian term primarily devoted to the public libraries. Mediation is to mean "a great extent construed around that kind of activities, which the library performs in addition to the task of keeping media collection and making it available to the users" (Georgy, 2011). In this way it contains presentation of cultural events for possibly new user target groups, managing reading development projects. The main aim is to form the library as a central place of the local social, cultural, and political life. This kind of approach and the concept of cultural mediation were not familiar for the other European members outside Scandinavia at all by one of the preparatory meeting of the EUCLID project in 2005. The term "culture" and its country-specific characteristics to LIS education differs from country to country. Only by intensive communication of such meetings it was available to find a common language with basic definitions to talk about these issues. Followed by the foundation of a same interpretation context it is just possible to work on some basic competency framework and ways of collaboration in this important field of LIS.

A recent article by (Perez-Montoro & Tammaro, 2012) presents a short overview about the appearance of Bologna process in LIS field. They state that the main aim at first of the whole Bologna movement is to build up "zones of mutual trusts" enabling to students and staff to be more internationally knowledgeable and inter-culturally skilled. The European Qualification Framework apart with other standards is among the tools (ECTS, Diploma-supplement, Europass-CV, three-tier education structure, Dublin descriptors) that can help to build up these kinds of zones. Another major feature of the Bologna-process that it is output-driven. Europe is however just starting to move from input standards (course structure, content list, and contact hours) to an outcome-based approach based on curricula and continuous outcome assessment. "The use of learning outcomes is very closely linked to the adoption of a student-centred learning approach, with the role of the teacher moving towards being that of a facilitator/manager of the learning process" (Perez-Montoro & Tammaro, 2012). It is a major turn in many countries from the traditional frontal way of teaching, based on the ruling position of the educator. The real winners of the outcome based model of the Bologna process are the students as it promoting the learning and teaching quality of university courses. Internationalisation is emerging the cross-cultural competences of the students. Another

recent major aim of the output-driven Bologna process is to prepare graduates for the global job market and improve employability. Setting the proper international competences for this purpose is an important new element of curricula development. Life-long learning and non-traditional learning are also major tools in of the Bologna-process on that practice-centred outcome-based way. All the LIS education institutions must be aware of these consequences.

The initial project stated by (Kajberg & Lørring, 2005) could define a consensus about the core of the discipline: LIS is a science of organizing mediation, by using the term 'science' in a sense defined by Ranganathan. LIS prepares students for practical work and for teaching and research in libraries, in the book trade, in archives administration, in museums and in any other virtual or physical information collection or archive-based activity place (beyond cultural institutions and organisations as well) (Kajberg & Lørring, 2005).

As (Perez-Montoro & Tammaro, 2012) states a review needs to be focusing on some aspects of the dynamic change of the profession. While the basic professional definition from the previous paragraph is still valid, the dynamic change of the socio-technical environment takes a great challenge on the LIS education field by any sense. We have to focus on some issues in this context regarding to the divergent professional roles, new working environments and new societal demands.

The traditional national differences in this way still playing a major sense in the LIS education of Europe however the development of the above mentioned "zones of mutual trusts" at least can provide a common framework and can help to build standard connections (bridges) among the different national systems.

3.5 Summary

As a summary of this chapter we can notice that the Bologna process through the three-tier education system created a common base of reference of reforming LIS education in the European countries. The general EUCLID projects from 2005 started to set a common interpretation framework of LIS areas and competences. It has created a solid base to joint cooperation activities and reforming the local institutional and national LIS by international impressions. The project has also amalgamated an ongoing professional discussion and the management of many projects due to international collaboration LIS education field.

The Master Thesis of Shuva made the first attempt to contextualize some major evaluation aspects of European digital library education, and offers a general overview by the opinions of LIS education professionals from this field. It is a kind of continuation of the previous EUCLID project focused on this more specific area. The thesis is also considering a recent fact that new international study programmes have appeared in addition to the traditional Erasmus student and educator exchange programmes. In a way these programmes have approved either by a national accreditation scheme (in case of Sweden or Denmark) or by a joint curriculum in a completely new European framework accredited by the EU on the DILL case.

In another way it is possible to create collaboration forms by some joint modules with student mobility. RSLIS Copenhagen, and Humboldt University Berlin offers some modules to each other Master students setting these foreign modules into their own local curricula as well (Saabye, 2011).

Thirdly some international programmes has started in English as the language of instruction targeting international students either in physical or distance education forms, such as in Copenhagen and Borås (Royal School of Library and Information Science, 2011; Swedish School of Library and Information Science, 2010)(Swedish School of Library and Information Science, 2010)(Swedish School of Library and Information Science, 2010)(Swedish School of Library and Information Science, 2010)(Swedish School of Library and Information Science, 2010)(Swedish School of Library and Information Science, 2010)(Swedish School of Library and Information Science, 2010)(Swedish School of Library and Information Science, 2010)(Swedish School of Library and Information Science, 2010)(Swedish School of Library and Information Science, 2010)(Swedish School of Library and Information Science, 2010)(Swedish School of Library and Information Science, 2010). We can notice that the national and local specifications of European LIS education forms still like dominant. While on the other hand more and more common activities forming a new wider international perspective of LIS education creating informal norms and frameworks for common collaboration.

The Digital Library Curriculum project from the US offers a really important theoretical model in order to develop digital library education. The model determines the main areas of digital library education. It also points out to some major set of areas that can be relevant to form digital library curricula by different school profiles in CS and LIS. Furthermore it offers a practical set of module and course element in some fields of digital library education. The

whole set of these elements appear like a cookbook that can be used anywhere and offers a major help to form local digital library education curricula frameworks.

4 Library and Information Science Education in Sweden, Norway and Denmark in general and on Master's level

4.1 Introduction

In this chapter I will mainly focus on the recent education issues. I will make a basic overview based on the relevant publications about the institutional and programme development of LIS education in the three Scandinavian countries. This chapter is in one hand is a literature review on the other hand by some parts offering a direct connection to the empirical comparative analysis. That is why it is appearing as an independent chapter and not as a part of the literature review.

The main problem we can find by reviewing the current debates about education issues in LIS field from Norway, Sweden, and Denmark is a lack of resources. In historical context, related to the period before the rapid evolution of LIS as a professional discipline in parallel with the IT-revolution (Pors & Harbo, 1998) offers a detailed comprehensive overview about the education of librarianship in the Nordic countries. It is also highlighting some current challenges on the last comparative chapter written by Pors that were intended as a collection of future prospects of LIS on that time. However that book does not make much sense if we would like to take a look to the current situation.

We cannot find a large number of publications that instead of the historical context focusing on a recent transformation process by describing the current LIS and digital library education system together with its professional and social background.

Some important articles can be found from the Scandinavian Library Quarterly (formerly Scandinavian Public Library Quarterly), and in some peer-reviewed international professional journals mainly about the LIS education in the Oslo University College and Applied Sciences and about theoretical issues about LIS education development by Ragnar Audunson and his colleagues (R. Audunson, 2005 a; Ragnar Audunson & Gjestrum, 2012; Ragnar Audunson, 2005 b, 2007, 2008).

The comparison of the new digital library based master programs in Borås and Oslo from a management perspective by (Maceviciute, 2011) and the introduction of the Swedish programs by (Wilson et al., 2009) offers a significant theoretical and empirical perspective to

the core topic of my thesis. However no such publications can be found about the RSLIS from Copenhagen.

The development process of LIS Research education in PhD field summarized by (Pharo, 2005) introduces the cooperative evolution of this LIS education field in the whole Nordic-Baltic region by the NORSLIS network.

An important contribution about the social aspect of institutionalization of LIS research in the Nordic countries is available by (Åström, 2008). This article offers a short overview about the institutional development of LIS education in the 3 Scandinavian countries in parallel with (Audunson, 2005b).

In a course level of digital library education field two articles are relevant from Borås, Sweden. (Dahlström & Doracic, 2009) is summarizing the aim, nature, and results of some courses in the field of cultural heritage digitization in collaboration with some major national digitizing agents. (Francke & Dahlström, 2010) set some examples from the Digital Services Master's Programme (DiSe) in Borås, how they have tried to integrate three levels of education scale: macro (institutional), meso (national) and micro (global). DiSe integrates global phenomena and theories that mainly linked to the digital environments with local practices. This practice has a manifestation through working with existing services, organizations, and resources. The description of the interplay of different factors: global and local; theoretical and practical is one of the major outcomes of the publication. Another focus of the article is finding educational models which help students to make connections between the local and the global level.

4.2 The organizational development of LIS education in Denmark, Norway, and Sweden

The majority of the training institutions belong to University (or University College). The first institutions were founded as vocational colleges. Then from the 1990's new departments have appeared in various institutional and disciplinary contexts related to LIS field. Generally these are small units employ a few researchers and PhD students by manage programmes in bachelor and master levels. These institutions mainly specialise themselves for a small aspect within the broad LIS discipline through the research education in Master and PhD levels (Åström, 2008; Audunson, 2005b). Only the three most traditional institutions by former national monopoly in Borås, Copenhagen and Oslo offer a comprehensive style of LIS

education by represents all the major aspects in LIS field. In the following take a short overview about the major characteristics of the three LIS education place.

RSLIS nowadays in Copenhagen is very large and complex full-fledged university school. SSLIS in Borås also complex and integrated into the academic LIS discipline. HIOA Department of Archivistics, Library and Information Science in Oslo also can be defined as large LIS education school based on international standards. These departments or schools are the most representative on LIS field in the region. Each of them was originally founded as vocational schools and had a national monopoly on library education field. These were colleges and not integrated into the system of academic degrees. All of them had a strong vocational tradition. Each institution trained librarians and the curricula contained all the subjects and fields these institutions found to be necessary for them. It means classification, cataloguing and retrieval, library management and the mediation of culture and literature. The strong weight of literary and cultural subjects made a special character to Scandinavian LIS education (Audunson, 2005a, 2005b; Pors & Harbo, 1998). These kinds of traditions represent some influence on the design of the recent educational programmes as well, in different institutional ways.

RSLIS and Danish Public Libraries were subjected to the Department of Cultural Affairs. It made RSLIS not just independent from the rest of the universities and university colleges but from the rest of Danish Academia as well. The strong vocational tradition by the library school governed by the Ministry of Cultural affairs apart with the public libraries appeared in a clear form (Åström, 2008). On the other hand from the late 1980's the research activities have become more relevant in the institutional programmes. A relevant portion of the annual institutional budget allocated to fund research and development activities (Pors & Harbo, 1998). From the late 1990's a university status has been granted with the right of running PhD education as well (Åström, 2008). The professional identity of the institution has rapidly changed over the recent years. It is appearing by building up strong research and education collaboration forms with other institutions from the education sector. This progress has led to the merger of the school with the University of Copenhagen. The RSLIS now exists as an independent school (institute) as a part of the Faculty of Humanities in a multidisciplinary environment build on to amalgamate all the synergies with the Social Science, Humanities and IT-based faculty partners within the same institutional framework (Christensen, 2012, 2013). The focus of education is on the different aspects of information. It has no longer a clear vocational intention just to educate librarians for libraries.

In Sweden SSLIS in Borås and the LIS department (by various names) in Norway, in Oslo also located as a part of a university college. Originally both of them were independent vocational schools. In Sweden originally the LIS research had devoted to the Gothenburg University from the late 1980's with a chair of professor and PhD programme (Pors & Harbo, 1998). In 1999 the centre had established to the SSLIS and relocated from the Faculty of Humanities to the Faculty of Social Sciences of Gothenburg University. The shared unit with SSLIS in Borås was formalized an independent academic research unit. Unlike in Copenhagen they do not have separate departments for relevant research areas. Non institutionalized small units have represented the different disciplinary fields of LIS education and research (Åström, 2008; Audunson, 2005b). Nowadays SSLIS as a faculty of the University College in Borås has an own national accreditation by PhD studies and research without any formal links to the Gothenburg University. It has developed into a large complex research and education centre. SSLIS as a school (faculty) can be compared with RSLIS in Copenhagen on its large scale by 1051 students and 70 academic employees (SSLIS, 2013a). A kind of specialty of their programmes on the Master level is that these are being offered as distance education. For international students a digital library oriented MA programme (Digital Library and Information Services) in English has established on a distance mode (Maceviciute, 2011; Wilson et al., 2009). For Swedish students a similar programme is available but with a bit different and localized orientation taught in Swedish: Digital services- Culture Information &Communication (Maceviciute, 2011; Swedish School of Library and Information Science, 2012; Wilson et al., 2009). Furthermore in Swedish a general LIS Master's programme also being offered by a main emphasis on Information Technology and its human context (SSLIS, 2013b).

In Oslo the LIS education organized in a department (together with archival studies) within the faculty of Social Science and not on a faculty level as in Borås (Audunson & Gjestrum, 2012). However both education units have existed as a part of a university college. In Oslo the independent PhD education programme also appeared in the agenda as in Borås. From 2013 in the LIS and Archive department an own nationally accredited doctoral programme has started.

Only in Denmark RSLIS had kept the national monopoly of LIS education in the three countries till the recent times and still holding it on PhD level. The Faculty of Humanities in the University of Southern Denmark on its campus in Kolding have just introduced a new bachelor programme in LIS field (Library Science and Cultural Communication) so the former monopoly of RSLIS has broken in LIS field. University of Southern Denmark also provides Master programmes called 'web communication' and 'culture and mediation' that have strong

connections with LIS disciplines as well and offering direct access to them from LIS BA programme. RSLIS itself has a branch in Aalborg offering undergraduate (BA) education in Danish on LIS field, by a strong collaboration with the Aalborg University.

The Danish institutional name has changed from Danmarks Biblioteksskole (DB) - Library School of Denmark to Informationvidenskabelig Academy (IVA) - Academy of Information Science. However its official English name still holds the 'library' term as Royal School of Library and Information Science. The march towards Academia put the traditional practice-oriented model under a huge pressure (Audunson, 2005b; Hjørland, 2013).

That kind of pressure is also a major element of the merge of RSLIS with the University of Copenhagen (Hasle, 2012; RSLIS, 2013a). It has lost its pre-dominant vocational profile through the last years and has become an interdisciplinary university focusing on the different aspects of Library and Information Science. RSLIS has a certain combination of Information Science profile that consists of information searching and retrieval, information analysis, information design factors. The other major education and research profile represents cultural mediation (RSLIS, 2013a). The expectations for the fusion is that RSLIS can make a significant contribution to the development of the modern Humanities. Formulating a new common science paradigm with Humanities by getting elements from informatics, information analysis, digital media research, LIS science and education offers wider perspectives related to the traditional disciplines like History, Literature, Language, Media, Culture research etc. (RSLIS, 2013a).

By running an international LIS MA programme in English and a LIS MA programme in Danish, new International English and Danish Master complimentary curricula scheme has been introduced on Master level over the past 2-3 years. The main difference is the number of the elective and optional courses offered in Danish and English. One reason of that is some courses in Danish based on localized practice-based projects or localized course content. Danish and international students can apply directly to the re-designed MA programmes followed by their BA studies (RSLIS, 2013b). The modules and courses in the programme offered by the various aspects of LIS discipline from society, management, knowledge organization and IT related subjects as well. Followed by their admittance all the international students by certain Danish language competences can participate on some elective courses offered by the Danish MA programme as well (Royal School of Library and Information Science, 2011)!

The students have a relatively wider freedom to choose among subjects by these different perspectives as in Borås or in Oslo (Maceviciute, 2011; Royal School of Library and Information

Science, 2011). The details will be discussed later by the empirical comparative analysis of the master programmes by the three schools.

The school had grown really large till 2005 with more than 80 members of academic staff and 1000 students according to (Audunson, 2005). At that time it was the biggest library school in the world perhaps beyond China. Nowadays, according to the official data of the school homepage (RSLIS, 2013b) around 750 students and 45 members of academic staff are being affiliated to the school. However, according to the latest official press release about the fusion with the University of Copenhagen,(RSLIS, 2013a) RSLIS has 900 students and 85 members of academic staff. In the last three years 253 new students admitted in 2012. According to official data around 70% of the graduated students can find job in the public sector (mainly in libraries, and in the education and health sectors) and around 30% of them in the private sphere (RSLIS, 2013a).

In Sweden and in Norway the former national monopoly has disappeared. Borås and Oslo still held the whole profile of LIS. The other education institutions in both countries are focusing to some special aspects on LIS field in a special profession-orientated sense. Mainly most have BA and MA programmes, some of them running PhD education as well in their special field. We can find LIS departments in traditional universities like in Lund or Uppsala in Sweden. Lund emphasise the extensive use of problem based learning as pedagogical strategy. The department in Uppsala focuses on archives, libraries and museums. In these traditional universities LIS is appearing as a unit by Faculty of Humanities. Umea has a strong internationally well-known tradition by bibliometric and scientometric research as a part of department of sociology. Linköping has had a technological profile. Växjö had developed a profile focusing on the pedagogical element of librarianship but the university terminated this master programme. The view is complex by affiliation of faculties and by specialization fields as well. As RSLIS in Denmark the SSLIS and the LIS related other departments in Sweden no longer define themselves that they are educating librarians in a traditional vocational sense. However they are offering a solid range of courses by their curricula that seems necessary to function as a librarian (Audunson, 2005b).

In Norway the formerly independent library school in Oslo had merged into the Oslo University College in 1994(Pors & Harbo, 1998). The Oslo-based LIS education monopoly has broken since 1995. In NTNU (The National University of Technology and Science), Trondheim a Master and a PhD programme has established in information resources management with a strong weight

on digital libraries. In Tromsö the whole range of BA-MA and PhD level of education has built up by a programme of documentation science (Audunson, 2005b).

The current LIS and Archival Science department in Oslo University College of Applied Sciences (HIOA) like SSLIS in Sweden or RSLIS in Denmark still have a strong profile by defining LIS as a professional discipline. HIOA unlike RSLIS still declare openly that they are educating librarians (by first priority) and teaching library and information science (Audunson, 2005b). Certainly it is clear, (as Ragnar Audunson answered to a question followed by his opening speech in the BOBCATSSS 2013 conference in Ankara) that at least around half of the students can find jobs beyond the library sector through certain information-related interdisciplinary competences followed by the graduation. It is appearing like a secondary but well-recognized benefit of the education programmes in Oslo. The programmes are really interdisciplinary in BA and MA levels as well. The Oslo education effort is based on a professional view by offering interdisciplinary competences for a 'complete' librarian by knowledge organization and retrieval, the social roles of the profession and culture-related subjects (Audunson & Gjestrum, 2012).

The long and narrow, sparsely populated general geographical conditions of the country are really special. Many libraries have only one librarians and a broad set of skills needed on this way by an educated librarian on different environments. By the view of Oslo professionals LIS is an interdisciplinary profession similarly to medicine. It cannot be reduced to the individual disciplines that make up this professional unity (Audunson & Gjestrum, 2012). The BA degree provides the students with knowledge and skills in a basic level, while MA degree is more advanced including specialisation.

The shortage of librarians by sufficient management skills has imposed the start of a new MA programme in Library Management. Management related subjects offered by LIS and Archives department together with some Administration and Management based subjects from the Department of Public Administration and social subjects from other departments of the Faculty of Social Science. Apply to this programme unlike to the ordinary LIS MA programme I possible with relevant working experience by other BA degree than LIS as well.

Originally the vocational library school in Norway had limited research capabilities. From the 1990's the Library school then the Library and Journalism Department in Oslo University College at first had to find cooperative solutions to offer PhD degree with other universities, then from 2005 it could offer an own degree by so-called specialisation studies (including Library and Information Science). From 2013 the LIS and Archival Science Department in HIOA

starts an own PhD programme on LIS field by all the 3 core professional areas: Knowledge Organization (also by a special emphasis to Archives), Library and Society, Cultural mediation. The department is functioning as a part of the Social Science Faculty.

By internationalization field, HIOA is the main coordinator of a special Erasmus Mundus Master Programme in collaboration with Parma University and Tallinn University. The language of instruction is English. It has offered by a joint curriculum by the three institutions. This master programme has managed by host professors from each country and a high number of guest lecturers also being involved from all around the globe. Together with the international focus of the programme it also represents the national and local academic methods and practices by each institution and country (Gardašević, 2010; Maceviciute, 2011).

The development of PhD level education in the Nordic and Baltic countries has developed in a common framework called NORSLIS. The individual countries represent a really small size of research environments by limited human capabilities and resources. It has worth to combine the efforts on the different disciplines related to the LIS field and create a common framework by courses and research projects (Pharo, 2005). The cooperation can form a common research environment in all over the region. This common regional framework can appear on a really successful way by various research activities in European and global fields.

5 Comparative analysis of master level digital library education in Borås, Oslo and Copenhagen

5.1 Introduction

Compare of the master programmes from the three schools can be done in a really complex way. Below I would like to take this complexity to a bit more simple form and highlight some aspects of comparison included in this chapter.

5.1.1 Interdisciplinary programme profiles and the influence of iSchool community

By the analysis at first I will investigate some input and output factors based on the interdisciplinary profile of the different programmes and the appearance of the influence by the iSchool community in this sense.

5.1.2 Programme delivery ways

The delivery mode of the programmes has multiple forms on master level. Some programmes are being offered exclusively in distance mode (in Borås), on-site mode (in Copenhagen) and in a mixed way in Oslo. A certain aspect of comparison by the analysis is describing the effects of course delivery mode to curricula. This aspect is appearing in the context of the analysis of programme design, profile and structure

5.1.3 Programme profiles, designs

A basic major challenge is about the profiles of the programmes. Some of them are exclusively digital education programmes and this fact appears from their names (DILL in Oslo, Tallinn, Parma; DLIS and DiSe in Borås). Other programmes defining themselves as Library and Information Science (LIS) master programmes. The focus and main subject of these two types of programmes highly differ from each other and it makes them less comparable at first glance.

At first the major characteristics of digital library master programmes (international master programme of DILL, DLIS and DiSe from Borås) are described and compared with each other. The comparison involve several aspects and mainly based on the comparative framework by (Maceviciute, 2011; Wilson et al., 2009).

In the following I focus on the appearance of digital library related issues of the general LIS master programmes by the three schools. The results of a European comparison about European digital library education (Shuva, 2011) points to the fact that dominantly in Europe the digital library education issues appear in the context of general LIS programmes. In the case of the three schools there is a possibility to determine the position and strength of digital library elements by tracks, courses, and modules in general LIS programme curricula. Programme profile issues are also appearing as major comparison elements by the analysis.

5.1.4 Programme concepts, structures

When we try to determine the major ideas behind the main programme goals and concept designs, some main objectives must be recognized. In case of digital library education master programmes (DILL, DLIS, DiSe), the basic conceptions of each programme is really similar to each other by a combination of content, people and system contexts. It is described below by a comparative analysis of digital library programmes. In Oslo (by the DILL programme) and in Borås two complementary models used for the conceptualization of digital library education programmes (Maceviciute, 2011). A major challenge of the analysis is to determine the possibility to put the digital library elements of LIS master programmes into the framework by

Maceviciute's model. By analysing the programme and course descriptions a major model can be described in this sense.

LIS master programmes appear through the analysis in the three institutions by their own local context. However it seems to be possible to find some framework that makes the digital library programmes comparable somehow by their module structure (Maceviciute, 2011). By including the digital library elements of the LIS Master programmes a wider perspective also seems to be made. Curricula in Oslo, Copenhagen and Borås in comparison are based on a similar core by a strong tradition of LIS education with focusing four main aspects. These aspects have strong interrelation with each other. The modules, tracks, courses representing these major issues on different contexts. These issues are also referring to each other in a programme level:

1. Information retrieval system and services,
2. Cultural mediation (focusing on the ways of offerings of cultural services from user oriented perspective. Contains also the user-centred evaluation ways and methods)
3. Digital media and content studies (regarding all the issues of the typology of digital media, major technical and legal issues about access)
4. Social context of digital libraries (including topics about digital library policy issues, user studies and all management-based subjects)

These frameworks handle also the services, the content, and the social relevance on a common scope. The details will be described in a comparative analysis of the master programmes in this main chapter.

5.2 Major input and output programme criteria based on interdisciplinary profiles of digital library and LIS Master programmes. Influence of the iSchool community

A basic main effect for the curricula planning is related to the iSchool community. Copenhagen already a member, Borås declared its willingness to be a member and Oslo has some plans for a membership. The design of the programmes can be analysed based in a term of reflection to the common iSchool brand. It means that iSchools focus on the different definitions and academic context forms of information as a general phenomenon. Through their curricula iSchools combine these definitions and contexts in a complex way. These schools are offering courses to future information specialists on an interdisciplinary sense. In the analysis chapter at first a basic comparative investigation will be introduced directed to the appearance of

these interdisciplinary issues. The main objects of this first analysis will be the input and output aims and criteria of the different programmes in the three library schools.

The target groups of the prospective and actual students in master level represent various disciplinary backgrounds. It means numerous ways of study and work experiences or a total absence of any job experience at all. On the output side, by the programme goals it is clear (by a clear declaration or as a hidden fact) that in all three places the master programmes are not just educating people to the specific vocational needs of LIS or a wider cultural heritage sector. Several kind of academic and market job related to information handling and information-based services are also possible output options. It is completely in accordance with the main policy goals of iSchools have.

These aims that mentioned in the previous paragraph appear in a really explicit way in Copenhagen. From September, 2013 followed by the fusion to the Copenhagen University, RSLIS as an institute within the Faculty of Arts will offer master programmes in English and in Danish by new general regulations. The new programme statutes include the list of Danish universities and BA programmes with direct inputs, from several LIS related disciplinary areas to the Danish and international LIS master programmes. In the output side the programme structure include the different kind of specialisation opportunities within the main tracks. It represents an opportunity to educate students on a comprehensive, multidisciplinary way (Science, 2013; University of Copenhagen, Faculty of Humanities, 2013).

Through the opinion of Professor Ragnar Audunson it is clear that the major aim of DILL is also to recruit students by various disciplinary background and professional practice. A major output of the programme is to fulfil various requirements in a wide range of research fields and employment sectors. The case is mainly the same by the DLIS programme in Borås.

The DiSe programme however being offered with a close collaboration with major stakeholders of the Swedish cultural heritage sector (Francke & Dahlström, 2010; Wilson et al., 2009). In this way this programme is more specialised to the local cultural heritage sector than LIS programmes in Copenhagen or DILL and DLIS digital library education programmes. DiSe recruits students mainly from Swedish cultural heritage sector. It offers development of further skills and competences to them related to their actual job position. Get an updated practical experience by students in their actual workplace (or make long internship periods offered by programme partner firms and institutions) is a major element of the programme.

The LIS Master programme in Borås offers different courses for the people with or without LIS background. The programme clearly serves the employment needs of the library and cultural heritage sector. In addition it offers the opportunity to join by students without LIS background from neighbouring disciplinary areas (Swedish School of Library and Information Science, 2013). Libraries, the whole cultural heritage sector and other stakeholders can also benefit from the employment of graduates that skilled by more disciplines.

In Oslo the Library and Archive department is a partner in the DILL programme. As I described above this programme represents a really interdisciplinary way by input and output options as well. The national LIS master programme however still serves mainly the needs of the Norwegian LIS and cultural heritage sector by a strong cooperation with the related partners. Professor Ragnar Audunson referred to a very basic fact in a keynote speech on the BOBCATSSS 2013 conference in Ankara. A huge number of graduates find jobs in the private sector. The institutional goals for targeting education into certain directions do not mean that we still discuss about a simply vocational education programme as it happened in the past. To educate people towards different directions than work in the cultural heritage sector is not an explicit goal but a definite hidden result of the programme. In this way it corresponds to the output options offered by LIS master programmes in the other two cities.

The wide cooperation with a huge number of public and private stakeholders is a strong element of the iSchool brand. The above mentioned examples represent the importance of that kind of partnership in all the three cities. In Copenhagen the free modules offering opportunities mainly in the Danish LIS programmes to introduce joint modules with external partners. The need of collaboration also appears on the internationalisation strategy in connection with the iSchool community membership (Royal School of Library and Information Science, 2012; University of Copenhagen, Faculty of Humanities, 2013). In Borås one of the main argument appears related to this issue in order for joining to the iSchool community (Borenstein, 2013).

As a summary of this first comparison it appear that all the digital library and LIS master programmes in the three cities are interdisciplinary, multi-focused. These still serve the needs primarily of LIS and the broader Cultural Heritage sector but educating people for researching and working by in other areas as well. The digital library education elements are well-integrated into the curricula. The goals and curricula design of all the programmes offers the possibility to get degree by relevant theoretical and practical knowledge towards digital libraries in all programmes in system, service, and user-related contexts as well. In the next

chapter some examples will show the appearance of different course elements in the above mentioned contexts in the specific digital library programmes. I will also compare the categorization of main course elements with the digital library segments of general LIS programme curricula.

5.3 Describe and compare the major profile design and course elements of digital library programmes in Borås and in the DILL programme

This chapter is describing and comparing the conceptual models, course offerings of digital library programmes in Borås with the DILL programme mainly based on the conception made by Elena Maceviciute. The chapter make a short description of the beginnings of digital library education then represent different perspectives for a comparative analysis. Followed by that chapter with a focus on digital library education programmes the context of comparison will broaden to the digital library education elements of the general LIS master programmes.

5.3.1 The beginnings of digital library education

According to Maceviciute the initial situation for digital library education was the following in general: Digital libraries appeared rapidly without any prior announcement. Librarians started to work with digital library services, and using community networking (web 2.0) tools before the LIS education started to react on it (Maceviciute, 2011). The future has arrived and requires more and more competences that were anticipated before. This was the initial point to start making new kind of programmes in digital library field. It is a really similar basic scenario that was described by American scholars that built up the Digital Library Curriculum Project by University of North Carolina, Chapel Hill and Virginia Tech (Pomerantz et al., 2006).

Various aspects of digital library topics proliferate in LIS and computer science programmes. Master programmes directed only towards digital libraries on the other hand are really rare. However we can find three examples in our target institutions for the analysis. Maceviciute compare three digital library programmes from a management perspective with each other: DILL, DLIS and DiSe (Maceviciute, 2011). Two of them (DLIS, DiSe) offered in Borås. One of them offered via an international consortium through the coordination of Oslo University College together with University of Parma and Tallinn University. These institutions offer a joint degree by the framework of Erasmus Mundus till 2013, and then it will be continued beyond this support scheme. All the programmes are quite young. The oldest one, the Digital Library Learning (DILL) programme has started from 2007, while the two Swedish programme from 2008 and 2009. All the three programmes on the other hand had started to be planned

around 2003-2004. The challenges of the Bologna process and the aim to educate librarians for the future were the first main basic points as I referred already to it earlier in the literature review.

5.3.2 Two basic models for structuring digital library programmes

The DELOS conceptual model of digital libraries applied to structure the DILL programme. It is very similar to Tom Wilson's model that was used in Borås. Both of them focus on the digital content (with copyright issues), the people (librarians and users), organization (management) and digital library system issues by an information technology sense. In Wilson's model organization appear as an independent element (See the image below). In DELOS model the management issues of an information system also represented. Content and people dimensions at the same time also have interrelated effects with management. Wilson's model has applied by two programmes with different focus. DLIS programme with main focus on the global scope. Simultaneously in DiSe as we could see earlier, the interplay of global and local scopes takes a major importance (Francke & Dahlström, 2010).

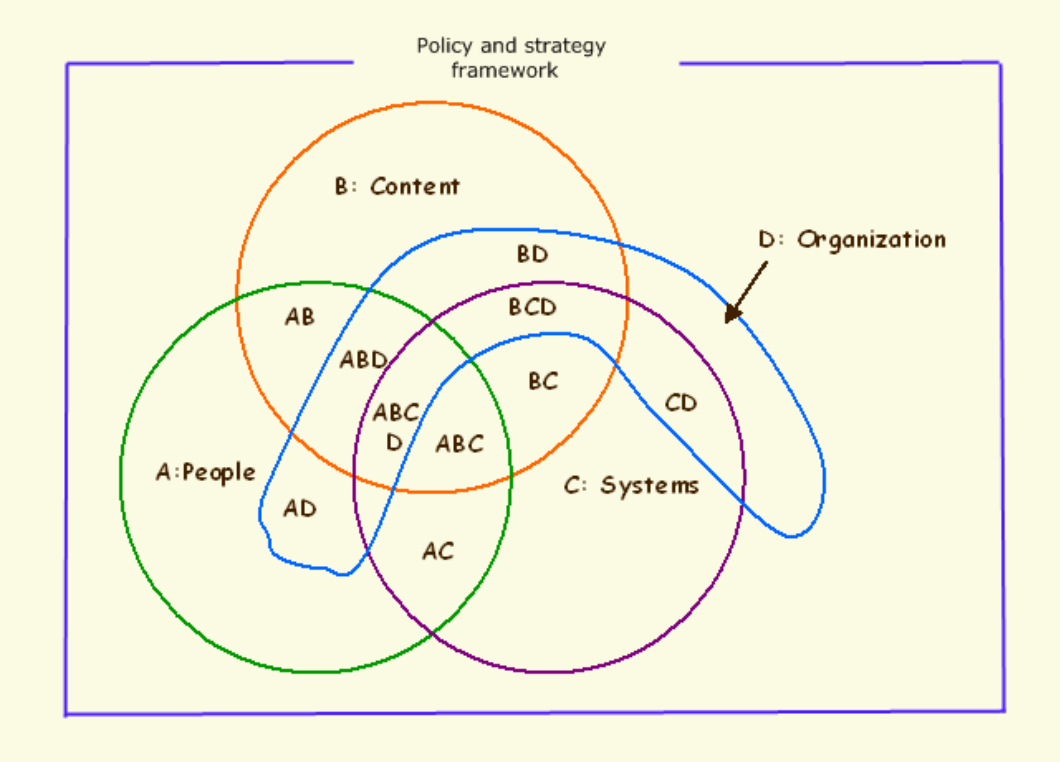


Table 5

A: People; B: Content; C: Systems; D: Organisations

Source: (Wilson, 2001) cited by (Maceviciute, 2011; Wilson et al., 2009)

"Wilson's Venn diagram (Wilson, 2001) of the scope of librarianship (see Figure 1) was used as a guiding concept for the DLIS programme. Given the target market of practicing librarians, the

focus of its curriculum planning was on the management of digital libraries as organizations. Consequently, the irregular area labelled D in diagram constitutes the core, since it identifies the organizational framework within which people are both served and (in the case of staff) managed, where content is organized, digitized and made available for use, and where systems are developed and employed to manage the digitized information resources" (Wilson et al., 2009)

5.3.3 Basic description of DiSe programme from Borås as a collaboration model in the cultural sector

The students of the local Swedish digital library Master programme called 'Digital Services-Culture, Information &Communication' (DiSe) are mainly professional librarians (as in the international digital library programme) but a few students have come from other areas, such as archives (Francke & Dahlström, 2010). SSLIS has worked in close collaboration with libraries and companies in the library sector by local and national level as well. The planning of goals and design of the programme are mainly altered by major professional partners from the library sphere (Wilson et al., 2009). This kind of fruitful collaboration model focus to offer relevant education programme for the whole Swedish cultural heritage sphere led to a generous support by the Swedish Knowledge Foundation (Maceviciute, 2011). It was a major help through the start of the programme. It had planned from 2004 till 2009 (the date of the official start). The Swedish National Library and Gothenburg City Library took part in the curriculum development to ensure that students not just get theoretical knowledge but practical skills as well (by the needs of the local Swedish professional environment).

A number of digital services (like e-publishing, digitization, social media and virtual reference services) both form the core learning objects and are integrated as pedagogical tools. These are also subjected to critical enquiry by the students. The authors (Francke & Dahlström, 2010) point out the need of combining standards and audiences in a global scale with productions, decisions and audiences on local scale. The basic aim is that the students in one hand work with global technologies (publishing open access journals through widespread journal management systems). On the other hand they are digitizing local cultural heritage using standardized open source tools such as XML (Extended Markup Language) and TEI (Text Encoding Initiative). They can learn on this way how to reflect local practices in order to be sustainable by providing services for the local community needs. They serve local needs by global tools have developed mainly in a global information environment.

The close collaboration among the partners is not really typical in the humanities and social science fields in Sweden. The programme partly based on previous courses. A case study can be found about the cultural heritage digitization course by (Dahlström & Doracic, 2009). Furthermore many of the courses have developed as new by close collaboration with the partners. Concrete examples are being offered in (Francke & Dahlström, 2010) to illustrate the integration of global, national and local levels by broad partnership forms. Students can perform their projects through the course called 'Digitizing and Encoding Cultural heritage material' as a part of an existing larger project in their workplace or via one of the SSLIS partners (like the National Library of Sweden). General principles and models can be combined by local home institution practices through demonstrating local needs and challenges. The projects are including all the major steps of the digitization phase (selection, editing, digitization resources, legal background, metadata enriching process, and publishing). Each step can be discussed strategically and analytically as well with the students. A long term goal to get partnership with museums and archives as well as local and national agents from the enterprise sector representing the commercial digitization sector.

5.3.4 International collaboration, institutional strategies, external environmental effects by programme planning

Each programme has developed in accordance to the aims of general university strategies by the parent institutions. Especially in case of the DILL partner in Tallinn the internationalisation aims are really strong in university level, in order to create an environment that emulate international intellectual environment at home for the Estonian students. International funds, such as Erasmus Mundus could serve well to fit to these objectives. The internationalisation has a really strong effect by the other two partners as well. In Borås the institutional orientation towards professional practice and an aim to become a university of professions were the major initial strategic objectives rather than the internationalization goals. The development of the two Swedish programmes appeared in the context of the re-structuring the whole Swedish higher education system to meet Bologna requirements.(Maceviciute, 2011)

5.3.5 Targeting of the programmes

DILL originally according to the requirements of the Erasmus Mundus programme was targeted to non-European students to satisfy their needs for research and leadership in modern librarianship. The consortium has built up the DILL curriculum related to the previous education experiences in the different institutions. (Maceviciute, 2011) Later the appearance

of the European students, as Erasmus Mundus have become available to them also, caused some change by the recruiting ways of the programme.

In Sweden, the also internationally based DLIS programme have positioned to a different audience. At first they have wanted to attract library professionals and specialists in different institutions to update their competences to develop digital information services and managing digital resources. According to the aim of getting world-wide audience and getting existing professionals for further education, the language of the programme has set to English and education type to distance mode (Maceviciute, 2011; Wilson et al., 2009).

5.3.6 Course delivery issues

A major difference appears by the delivery of the programme among the Swedish programmes and DILL. DILL is a full time programme and delivered to campuses. However due to the loss of Erasmus Mundus funding scheme it will be offered also in distance mode from 2013 autumn like the Swedish programmes.

The only delivery mode of all master programmes (including DLIS, DiSe, and general LIS master programme) in Borås is distance education. It means that currently by LIS education on Master level full-time campus delivery mode in Borås not exists. As Elena Maceviciute described to the author by an interview through the future plans, the re-appearance of on-campus education is a definite goal in Borås. It may be that in the near future the digital library specific programmes (DILL and the programmes in Borås) will offer both on-campus and distance education options as course delivery. The delivery modes definitely depend on the different needs and financial conditions of students and also on the financial and management conditions of the library schools.

The main tool of education in Borås is the E-learning interface called Ping-Pong. An internal course site is available for each module. Most of the modules cover a whole term devoted to a certain topic. Especially in the DLIS programme, the modules are quite large, exhaustive and diversified. Some wider topics can be only covered by several modules. The modules in DiSe are generally smaller. DiSe have organized by 2-3 short (1-2 days long) meeting in a term. The international DLIS programme organizes one longer (around 1 week) residential period.(Maceviciute, 2011)

In the DILL case the students resides in the different campuses. They study and move together from country to country and it takes stronger group cohesion as by distance mode education. In each campus there is an opportunity to attend on language courses for free (in local and

other foreign languages). Some additional courses also can be taken from the portfolio of each university. The e-learning support of DILL is a bit more complicated than in Borås. Originally the IVA e-learning system from Tallinn was used all over the programme in each place. However on the other hand both Tallinn and Parma introduced a new Moodle platform, Oslo introduced also a new e-learning system and those have used on the recent years. The cohesiveness of the e-support of the programme as a whole in this way is a real challenge through these conditions. The appearance of distance delivery mode may be force the implementation of a single platform again (as Tallinn offered a common interface in the first years of the programme by IVA).

Mainly the specific authors, a core set of journals and a selection of books can define the core of literature than a specific set of academic articles. The literature and course content has constantly renewed. Students have become active information seekers and sharing their findings with their classmates beyond the core literature offered by the professors. By the distance education programmes from Borås, e-mails, blogs, the e-learning platform and the meetings on the residential periods help to develop the group cohesion. One residential period is obligatory per year, but mainly the European students are participating on the periods offered in each semester(Maceviciute, 2011).

In case of the distance education master programmes in Borås (especially by the case of DLIS) a very high dropout rate followed by the beginning semesters of the programme. This is a major challenge. A kind of solution can be to admit more students and deal with the expectation of the high dropout rate. Another solution can be to allow a bit more flexibility on university side to accumulate students by different intakes to each course. The high demand towards the programme and severe competition for admittance is offering a chance to recruit highly motivated and very good students. Another aspect of this challenge as the majority of the participants in DLIS programme are EU citizens and the education is free of charge for them. Financial pressure for admittance is not relevant related to these significant numbers of students.

Student satisfaction with the content of the programmes is generally high in each programme case. The modules are relevant and logically built on previous expertise, experiences (Maceviciute, 2011). However the conditions are different. In case of Swedish programs a challenge appear related to student satisfaction issues by distance mode of delivery. Students on the other hand in these programmes are mainly practitioners from libraries or other information institutions with proper undergraduate LIS background. DILL students are however

represents a more heterogeneous background. Some of them without any previous LIS experiences but certain competences on other culture heritage or IT fields. The on-campus delivery mode is definitely an advantage. However designing the modules related to the different level of existing professional knowledge and heterogeneous professional experiences by the students is a real challenge in DILL case. In summary the high level of student satisfaction in connection to the challenges described above is a really significant result in case of each digital library master programme.

The students of the two Swedish programmes were really satisfied with the technical-based modules and found them most useful for their future career (Maceviciute, 2011). In DILL case Maceviciute's statement (based on an evaluation of DILL programme that she had involved with) was that most of the students are research oriented and applying to PhD followed by graduation (Maceviciute, 2011). By the recent years followed by the publication of her article it seems to be that the scope has become more complex. Many DILL graduates start to work in the public sphere or in private companies; however it must be admitted that the research orientation is still significant.

5.3.7 Modular structure of the digital library programmes

All the three digital library master programmes have a modular structure. There are four building blocks that can be easily recognisable by each of them: Users and use of digital information; technological issues related to the creation, maintenance and access to digital collections; research related and theoretical modules and organizational management issues (Maceviciute, 2011).

For the international DLIS programme in Borås the modules and unit structure has improved by the recommendations of the European LIS curriculum project. Followed by that some US experiences from University of North Carolina at Chapel Hill and Virginia Tech were also taken into account. The professional demands of the Swedish labour market for information professionals made an impact to the curriculum of both digital library master programmes (DLIS and DiSe). The requirement of coordination and sharing of modules between the two programmes in Borås is quite an obvious goal. In the DILL case permanent meetings ensures the module coordination. An agreement about learning objectives and outcomes accepted by all partners refers to the core objections of programme design and curricula (Maceviciute, 2011).

Most of the modules in all digital library master programmes look like relatively strict by the first sight. A certain number of modules appear in a relatively rigid structure. There is no option to choose among alternative modules by DILL and DLIS.

The students can choose their internship place and topic by DILL and the topic of practice-based project of DLIS. In the DLIS curricula internship is not taking place. It is a distance education programme. Related to the terms of course delivery it is really difficult to organize internship, furthermore most of the distance students already have some background on working digital library-related jobs simultaneously with their studies. This connection is even clearer in the case of the Swedish DiSe programme. In case of DiSe many kind of curricular activities depends on the employer background by the student and/or on the connection with the external partners of the programme. Students can spend the whole spectrum of practical activities in their workplace but they have an option to take a part of these practical tasks with an external employer partner of the programme.

The content of limited amount of modules on the digital library programmes seems to be really complex. By take a look to the course descriptions and contents appear on the e-learning interfaces we can describe the high variety of main themes within the really broad modules. Most modules contain a huge number of topics, different kind of theoretical and practical considerations. The content of modules is on a permanent dynamic change reflects to the rapid development of the related professional disciplines and to the expectations by the students. The content of these elements can be modified in flexible ways based on the cooperation of students and professors. The choice of students among different topics and activities appears inside the modules on a relevant scale!

When we compare the content of some modules in a retrospective way on a 3-4 year term it can be easily realized that around 60-70% of the content appearing as new in general behind the same module titles. I chose the option of that retrospective comparison as an example by the case of the Digital Documents module in DILL and Digital Library Management module in DLIS.

The digital documents module (currently called digital knowledge organization, it is a shared module with the Norwegian LIS master programme) originally based on the topic map conception then switched focus to the RDF/semantic model in parallel with the developments of semantic web standards. Comparing the written exam topics is simple, since the start of the module exam materials are available online in a retrospective way on the public website of the

module. According to these materials the dynamic change of course content and requirements is quite obvious (Pharo, 2013).

In the Digital Library Management Module by the Ping-Pong e-learning interface from Borås just some 3-4 segments only that seems to be constant elements as recorded video lectures since the beginning of the programme (Maceviciute, 2013). All the other elements are under permanent revision year by year on a dynamic way.

In case of DILL students they complete modules in three different cities in each different kind of institutional environment. In Borås all the programmes are offered by a distance mode in a single environment. This kind of module design (by strict module structure but by flexibly formed content) reflects well to the general policy of each digital library master programmes regardless of the study environment or delivery mode.

5.3.8 Programme planning, the origin of similarities among digital library master programmes

The origin of similarities among the programmes could be derived from the common understanding of the requirements and shared attitudes directed to digital librarianship in Europe. Some similar aspects of European LIS education traditions especially regarded to the Nordic-Baltic LIS education sphere are significant in this matter (Maceviciute, 2011). By the European Digital Curriculum project all the main people from the programme teams worked together closely and they have established long-term professional education and research relationship with each other. Tom Wilson (a leading person by forming curricula in Borås) in every year takes guest lecture in Tallinn for DILL students. Alen Doracic and Mats Dahlström from Borås were involved as guest lecturers to the Parma semester of DILL in 2011 as well. The cohesion among the teaching staff by each programme is really strong. Both of the Swedish programmes work together, share teaching resources and have involved in each other government structures. In the DILL case, permanent meetings and close e-collaboration ensures the same level of high collaboration efficiency.

Before launching the programmes, the management of each programme conducted a job market analysis. The through looking of practical requirements by the labour sphere is also a major common point of all programmes (Maceviciute, 2011).

5.3.9 Differences among digital library master programmes

The differences among the three programmes appear also in a really clear way. DILL has stated by Maceviciute as a more research oriented and less practice based programme as the other

two in Sweden (Maceviciute, 2011). By an interview with her she described that during the evaluation of the DILL programme she found really interesting that most of DILL graduates on that time (around 2010-2011) applied for PhD education in order to build up a research carrier. As I referred above on the recent years the trends by career of graduates by DILL and the programmes in Borås are converging to each other as more and more DILL graduates find practical jobs in public and market spheres.

The DILL programme contains definitely more theoretical elements especially in Management field according to Maceviciute. Swedish programmes are more practice-based. Following that matter she described me in an interview that they cannot afford to themselves such level of concentrations of management modules as it appears in DILL because of the institutional and student expectations.

Many times it is really difficult to make distinctions about theoretical and practical elements within a module. The modules in each digital library master programmes cover quite broad areas. The content of the modules is on a permanent dynamic changing that influenced by the student expectations and by views of the professors related to the development of the targeted disciplines. In the management modules in Tallinn much kind of practical topics, activities are appearing. I can take some examples like the Virtual Entrepreneurship Seminar along with French students and many kind of practical activities by each major topic of the two management-based modules for example towards Digital Learning Objects and Digital Ecosystems.

Maceviciute also states that the Swedish programmes are more devoted to technological issues than DILL (Maceviciute, 2011). All of the programmes certainly introducing digital library technologies and focusing information retrieval in a significant way and not just the two Swedish programmes. Some topics related to digital library tools and technologies appear in a different context in DILL than in Borås as a part of management modules in Tallinn or related to the Parma modules.

DLIS is unique compared to DILL in a way that it interprets information retrieval theoretical foundations by its mathematical elements in a really detailed way by a two-part module. During the IR courses by DLIS, case studies and several practical exercises appear ensuring the balance between theoretical and practical elements (Eklund & DaránYi, 2011). By comparing module descriptions the truth of Maceviciute's statement seems to be true: there is more emphasis on some practical elements as databases, programming and digitisation by the Swedish programmes than in case of DILL. DLIS incorporates smaller practical projects into

each module (Maceviciute, 2011). The appearances of small practical projects also appear by all the main modules of DILL.

DiSe is the most localized and most practice orientated by its curriculum as I mentioned earlier. By the two Swedish programmes an extensive examination project is available as an option to the traditional Master thesis. By DILL only the traditional thesis option has offered (however thesis can be based on a documentation of IT project-based activities by documenting the aims, the process and the outcomes)

5.3.10 Comparing module structure among digital library education master programmes

Table 5

Modules in the three programmes by (Maceviciute, 2011) with a small error modification compared to the original by the author. Note 1 on colour coding: yellow – theory and research, lilac – use and users, light blue – technology related, dark blue – project, red – management. Note 2: 'Digital documents' is appearing by Maceviciute as yellow seems to me more light blue on DILL however I did not change the colour of it from the original. Note 3: I put in 'internship' to DILL as 7th element in my opinion it is missing accidentally from the original because the original number of Master Thesis is also 8

Table 5: Types of modules of digital library education programmes

DLIS	DiSe	DILL
1. Digital library management (15 ECTS)	1. Digital media in the culture and information sectors (7,5 ECTS)	1. Research methods and theory of science (15 ECTS)
2. Users and information behaviour in digital environments (15 ECTS)	2. Technology of digital libraries (7,5 ECTS)	2. Digital document (15 ECTS)
3. Information retrieval for digital libraries -1 and II (15 ECTS)	3. Users and information behaviour in digital environments (15 ECTS)	3. Information and knowledge management (15 ECTS)
4. Technology of digital libraries – I and II (15 ECTS)	4. Project management (7,5 ECTS)	4. Human resource management (15 ECTS)
5. Digitising cultural heritage material (15 ECTS)	5. Elective courses (22,5 ECTS)	5. Access to digital libraries (15 ECTS)
6. Digital library research methods (15 ECTS)	6. R & D methods within digital services (15 ECTS)	6. Users and usage of digital libraries: Quantitative and qualitative evaluation (15 ECTS)
7. Master thesis (30 ECTS)	7. Workplace-related project (15 ECTS)	7. Internship (a part of 15 ECTS credit value by module number 6)
	8. Master thesis (30 ECTS)	8. Master thesis (30 ECTS)

Underlying foundations of the modules:

- DLIS focuses on the education of the managers and senior specialists of organizations (physical or virtual) organizing digital collections and providing digital services
- DILL directs main attention to the leaders of innovation and change in libraries with specific focus on developing research abilities,
- DiSe concentrates on providing competence for local institutions for digital media and digital collections management.

(Maceviciute, 2011)

The difference among programme goals is obvious.

DLIS based on the organization and management of digital libraries, DiSe providing digital library and collection management competences mainly for experts in local institutions. Both of them really profession based programmes providing skills and competences basically for a broad range of currently existing job positions in accordance by the expectations of the main types of employers in digital library field. Most of the students are active professionals that can apply their skills and competences in practice through their employment positions.

Simultaneously DILL is less practice based towards digital library profession. This is a discipline-based programme from digital library education point of view. Focus of DILL on innovation and change in digital libraries (and in other digital information service providers) through a strategic level with a strong emphasis on research.

This kind of major difference of programme design models is elaborated further in a chapter of discussion later.

5.3.11 Summary of digital library programme comparison

In this chapter of the comparative analysis digital library master programmes from Borås and DILL programme were analysed and compared with each other.

The following aspects and topics were used by the analysis:

- A short overview about the beginnings of digital library education programme development

- Brief description of two basic conceptual models for structuring digital library programmes
- A Basic summary about DiSe programme from Borås as a digital library programme that appears as a collaboration model in the cultural heritage sector
- International collaboration, institutional strategies, external environmental effects by programme planning
- Targeting of the programmes
- Brief summary of descriptive and comparative elements in some issues related to course delivery forms
- Basic description and comparison of modular structure of digital library master programmes
- Programme planning issues, some major points directed to the origin of similarities among digital library master programmes
- Brief description on some aspects of differences among digital library master programmes
- Comparing module structure among digital library education master programmes based on the model by Elena Maceviciute

As a summary it can be stated that the three digital library programmes have some common theoretical basics founded on also the joint professional view by the leading professors. The target groups and aims of the programmes somewhat different. DiSe programme in Borås has formed to local needs by a local scope. The other two international programmes have global view by international programmes and by English as a language of instruction. The delivery of the programmes differs so much by the case of DILL and the programmes in Borås. However DILL from 2013 will be also offered in a distance mode as an alternative option. The Swedish programmes are more technology-oriented and more practice-based than DILL. On the other hand all the three programmes offer an insight to each major aspect of digital librarianship by human, organisational, information system and information content characteristics as well.

5.4 Comparing digital library programmes and LIS master programmes from a common perspective

5.4.1 Introduction

In this chapter the context of the analysis is expanded including the digital library elements of LIS master programmes as well from the three library schools. I describe their major points by digital library education and compare them with digital library education programmes.

In the beginning the basic module and course structure by digital library elements of LIS master programmes are described. The analysis focuses on the description and comparison of various positions of digital library topics in LIS master curricula in Oslo and in Copenhagen.

The special case of the Borås LIS master programme also pronounced. This programme has a less persistent structure than the other two LIS MA programmes in Oslo and Copenhagen. It appears as a part of the analysis but it is not a subject of comparison of the common framework among digital elements of LIS master programmes and digital library master programmes.

Finally I compare the types of modules by the LIS Master programmes from Copenhagen and Oslo with the digital library programmes form Borås and by DILL. I will try to put the different programmes and module elements to a common context.

5.4.2 Basic module and course structure by the LIS Master programmes in Oslo and Copenhagen

In Copenhagen (and by the Norwegian LIS master programme in Oslo) in contrast of the digital library specific programmes the module structure of the LIS master programmes are a bit less rigid then by the case of digital library specific programmes. The master programmes in Copenhagen being offered in Danish and in English have the same main basic structure. These are delivered only full-time in the campus. The students can make their main choice on module level, by choosing among specialisation tracks by elective modules and free modules. Many of the modules according to their topic can be compared with modules from digital library specific programmes (DILL, DLIS, and DiSe).

Currently there are no obligatory modules offered in master level curricula of RSLIS in Copenhagen except the thesis. The students have to choose one constituent modules per semester. These modules appear as a part of specialisation tracks in the first three semesters (represented as core modules in these specialisation fields). One optional (free) module also has to be chosen per semester. A major type of optional modules can be an internship (Royal School of Library and Information Science, 2011). The last semester takes place exclusively to master thesis in all the master programmes in all three cities.

From September 2013 the system however will be changed significantly. The first theoretical module will be obligatory for all students by all tracks (the subject and position of this module is the same by Norwegian LIS master programme and DILL). The number of specialisation tracks will be reduced to three and re-designed by their scope. All the constituent elective

modules (called elective module type 1 in the new system) will be offered both in Danish and English. In the second semester one constituent and 2 free module (called elective modules type 2) can be chosen. In the third semester there will be an option to choose among an internship module (elective module type 3) or two free modules (elective module number 2). In this way the internship has a double value by credits in comparison with the recent curricula. The new system will be less complex and can be managed better by students according to the expectations than the current one. It also brings together further the international and the Danish master programmes. The obligatory and constituent modules will be offered in a same way in both programmes. The local modules in Danish can appear as free modules (election type number 2) or practice oriented internship module (election type number 3) (University of Copenhagen, Faculty of Humanities, 2013).

In Oslo by the LIS master programme for all master students the obligatory modules are the introductory theoretical module in first semester, the practice-based project work module in third semester and the master thesis in fourth semester. Three specialisation tracks are in curriculum. Each specialisation track has certain elective modules. In the first semester students have to choose one, in the second semester two, and in the third again one (the number of elective modules depends on the number of obligatory modules). Part-time (distance) students get the opportunity to complete the programme within 4 years by a special plan.

5.4.3 The position of digital library related topics in the LIS Master programmes through various curricula structures

In the following I would like to describe how the digital library related elements are appearing in the module and course structure of the different LIS Master programmes in Borås, Copenhagen and Oslo.

5.4.3.1 All the major issues in one specialisation track: The case of Oslo

In Oslo by the LIS master programme most of the digital library issues appear within one specialisation track. This specialisation track called Knowledge Organization and Retrieval. Retrieval systems and techniques discussed on a theoretical ground and by practical experiences by the first module. This track shares a module with the DILL programme called Digital Knowledge Organisation (formerly named Digital Documents). The third module focuses on library specific standards, protocols related to the World Wide Web by the Web technologies module. Technical Interoperability issues appear in this module regarding to the Archive, Library and Museum sectors. It describes also the technological, political and practical

aspects of Open Access publishing. The fourth module is Digital Libraries in practice. Students get the opportunity to put their theoretical and practical knowledge gained from all the other modules of this track to the framework of a practice related project work (HIOA, 2012).

Management topics in Oslo are highly prioritized and appearing in a specialized new Master programme. A management subject is a part of the library and society track that can be chosen as an option by the students of other tracks as well. As this programme focusing on Cultural Management without any direct relevance to digital library education issues, I will not mention further details about it in this context.

5.4.3.2 Digital library education elements in multiple tracks and modules all over the programme: The case of Copenhagen

In general the digital library issues just concentrated into one track by the LIS master programme in Oslo. Generally in Copenhagen it is quite the opposite: digital library education elements are appearing by some contexts of different specialisation tracks. The base of description is the quite recent curriculum structure followed by the fusion of RSLIS into University of Copenhagen. This structure will be valid from September, 2013.

The Information Organising Architecture and Users track contains constituent modules about two main areas in Information Organising Processes, and System Evaluation and User Studies, by the same framework. These modules appear together with a third one about interactive dissemination and spaces. That third module is focusing on information dissemination both on digital and physical environments and also on the interplay of different locales.

Another track in Copenhagen is focusing to an aspect of digital librarianship in the context of Culture, Media and Digitality. The first module is focusing on various digital and physical ways of information dissemination in cultural institutions. The second is about innovative communication of culture, the third is about Knowledge Media and Digitality (different kind of media types, digitization, and digital dissemination ways of information). This kind of dissemination issue appears in the context of Knowledge Organisation and Retrieval track in Oslo LIS master programme.

The third track by Knowledge Production and Processes covers management-related issues and offer a module by scholarly communication that also has a certain digital library aspect. This issue is also subjected in the context of Knowledge Organisation and Retrieval in Oslo.

5.4.3.3 Same issues in different contexts in the LIS Master programmes by Oslo and Copenhagen in comparison to digital library master programmes

In case of some modules on the optional tracks by LIS Master programmes in Copenhagen and Oslo their counterparts can be easily determined in DILL and in DLIS digital library master programmes (two examples: a main, obligatory module about theoretical background of LIS, and an elective module about digital knowledge organisation).

Other areas like online publishing appear in different contexts in curricula. Scholarly publication has an own module in Copenhagen in a track called Knowledge Production and Processes. By Oslo LIS master programme this subject represented mainly in the web technologies module and in some sense in the Knowledge Organisation module and as a subject of practical project work.

The scholarly publishing topic in Oslo appears in the context of Knowledge organisation and Retrieval track. While these issues take a central role on a track focused on Knowledge production and processes in Copenhagen. In Borås the DiSe and the general LIS Master programme has a joint course on this subject.

5.4.3.4 LIS master programme in Borås: a special case and limited future on its current form

The LIS master programme in Borås consist two types of courses: obligatory and elective. This programme offered in part-time and distance mode as like all master programmes by SSLIS in Borås (Swedish School of Library and Information Science, 2012). The programme is only available in Swedish. It does not have as such clear professional profile then the DiSe programme. The programme is under permanent re-modifications. From 2014 a fusion is planned with the DiSe programme.

The school often makes large scale re-modifications on the curricula by the actual needs of students. Students are mainly professional librarians, or people that work in library by different disciplinary background and need professional LIS qualification also. The target group has a major overlap with the DiSe programme. The two programmes have already share modules with each other. By the plans of the school the two programmes will be emerged from 2014 on the basis of DiSe. I will just offer a basic description about this programme. Its structure offers a third kind of alternative by the representation of digital library issues in contrast with LIS master programmes in Oslo and Copenhagen or to the digital library specific programmes in Borås. The programme will be abandoned soon and the library school did not position it on as relevant way with a clear profile as it has made with the other two digital

library specific programmes. The attention now is mainly focusing on the implementation of the fusion and not to a future development of this programme.

The courses keep a four year long period. By relevant number of optional courses and permanently revised course structure it seems to be that this programme is the most practice-based among all that I have compared. The permanent modifications reflect perhaps the actual expectations of employers and their employees appearing as students.

The main aim of the programme is to get relevant knowledge to the students by developing information services and get them skills on the advanced way of information search and retrieval. This kind of knowledge is intended to be used in libraries by various profiles and in knowledge intensive organisations in accordance to the study plan (Swedish School of Library and Information Science, 2012). The programme focuses on the skills and competences that related to the organisation of information and information services for different user groups in various environments. The graduates must also be able to lead projects by information services in a strategic position in research and development field. The set of aims is really similar to the programme in Oslo. In both places library professionals or prospective librarians are the major target groups of the programmes. Both programmes mainly offer a certain set of skills and competences that can be used in various types of libraries. The basic theoretical course, the practice oriented project work and the master thesis appear in a similar way on curricula.

There are some core subjects as a necessary minimum on Master level in practical and theoretical field. These are occupation-based, project work (7,5 credit), information access (7,5 Credit), research methods (15 Credit) and Master thesis (30 credit). There is an alternative choice related to compulsory courses for those who already have a bachelor degree in LIS and those who have not. In this way in practice there are two different course tracks (but not defined as tracks) within the obligatory main module.

The first course for the people without Bachelor LIS degree is an introductory course to LIS called Library, Information and Culture. The second course is Introduction to Knowledge Organization. The third is called XML and controlled vocabularies. There are three courses that are obligatory for both groups with or without LIS Bachelor degree: Users and information practices in digital environment; Interaction design: Usability and interaction in digital environments; Developing and Leading culture and information-based activities. Each of courses earns 7.5 credits together 45 credit points.

The other option is for the people who already got bachelor LIS degree contains the following courses: Digital media in the culture and information sector; Classification and Information Extraction; Scholarly Publication.

Through the elective courses (2 must be chosen each of them by 7.5 credits) it seems to me that those serve the direct needs of certain vocational groups. (For example from 2013 a certain a specialisation track will start by mainly IT-related optional modules according to the needs of the recent or perspective system-librarians).

Some main core courses appear in some similar ways than in case of general LIS programmes in Oslo and Copenhagen. These are like courses on information retrieval (IR) (including introduction to IR, classification topic and XML), digital media issues, scientific publication, usability and interaction in digital environments, management issues. However there are no tracks available in the curriculum in order to organize the individual courses in certain directions. The courses have grouped only to obligatory and non-obligatory main sections. The whole programme is really digital library-focused but less-structured than the other two LIS master programmes in Copenhagen and Oslo. The loss of structure makes it difficult for me to involve this programme in any kind of comparative frameworks with the other two LIS master programmes and digital library master programmes.

Some topics appear in case of Oslo LIS master programme related to library policies, literature sociology do not make so much sense in the curriculum of LIS master programme in Borås. The focus in Borås is more on information seeking and retrieval, digital media, user studies, cultural mediation and organization management issues. This programme covers the most important topics that can be found by all the other programmes either in Borås or in the other two library schools related to people, system, organization and content related divisions (by following Tom Wilson's model described earlier).

The permanently changing structure with the constant appearance of new courses makes the LIS master programme in Borås less comparable with other programmes that have more standard programme design and curricula (including DLIS and DiSe the two digital library master programmes in Borås). The dynamic offerings of topics and content elements appear in a direct way on a course/module level and not in the background of a solid module structure as it is the case by the digital library specific master programmes and other general LIS master programmes.

A new joint programme followed by the merge with DiSe in the future could offer many specialisation options as the recent LIS Master Programme, and open to other culture heritage sectors as DiSe. DiSe and general LIS master programmes are also distance-based. The target groups are really complementary with each other. A single programme in the future with a more permanent basic structure with a relevant choice of tracks and specialisations could serve the needs of future information professionals in a successful way.

5.4.4 Comparing types of modules including digital library programmes in Borås, DILL, and digital library related modules of LIS master programmes from Copenhagen and Oslo

Table 7

Major topic types appearing on the curricula by different digital library related modules from the LIS Master programmes in Oslo and Copenhagen compared with digital library programmes.

Note on colour coding: yellow – theory and research, lilac – use and users, light blue – technology related, dark blue – project, red – management. Original: (Maceviciute, 2011) by the digital library programmes and extended with the LIS master programmes by the author of that thesis. This table is an extension of the previous one that contained only the digital library programmes. It shows that the digital library related modules from the Master programmes in Oslo and Copenhagen can be inserted to the same context as well.

DLIS

1. Digital library management (15 ECTS)
2. Users and information behaviour in digital environments (15 ECTS)
3. Information retrieval for digital libraries -1 and II (15 ECTS)
4. Technology of digital libraries – I and II (15 ECTS)
5. Digitising cultural heritage material (15 ECTS)
6. Digital library research methods (15 ECTS)
7. Master thesis (30 ECTS)

DiSe

1. Digital media in the culture and information sectors (7,5 ECTS)
2. Technology of digital libraries (7,5 ECTS)
3. Users and information behaviour in digital environments (15 ECTS)
4. Project management (7,5 ECTS)
5. Elective courses (22,5 ECTS)
6. R & D methods within digital services (15 ECTS)
7. Workplace-related project (15 ECTS)
8. Master thesis (30 ECTS)

DILL

1. Research methods and theory of science (15 ECTS)
2. Digital documents (Digital Knowledge Organization) (15 ECTS)
3. Information and knowledge management (15 ECTS)
4. Human resource management (15 ECTS)
5. Access to digital libraries (15 ECTS)
6. Users and usage of digital libraries: Quantitative and qualitative evaluation (15 ECTS)
7. Internship (a part of 15 ECTS by number 6)
8. Master thesis (30 ECTS)

LIS Master HIOA, Oslo:	**LIS Master Copenhagen**
First and last module is in common in all tracks. Modules 2-5 are in Knowledge Organization and Retrieval track Module 6 is on Library and Society track	1. Information and Culture Studies Theories and Traditions (15 ECTS)
1. Research methods and theory of science (15 ECTS)	2. Interactive dissemination spaces (15 ECTS)
2. Retrieval systems and techniques (15 ECTS)	3. Information organising processes (15 ECTS)
3. Digital documents (Digital Knowledge Organization) (15 ECTS)- Shared with DILL	4.. Innovative communication of culture (15 ECTS)
4. Web technologies (15 ECTS)	5.System Evaluation and User Studies (15 ECTS)
5. Digital libraries in practice	6. Knowledge Media and digitality (15 ECTS)
6. Information organization and knowledge management (15 ECTS)	7. Knowledge and information in organizations (15 ECTS)
7. Master thesis (30 ECTS)	8. Scholarly communication(15 ECTS)
	9. Master Thesis

Table 6: Major types of digital library related module topics of digital library education programmes and of LIS master programmes in Oslo and Copenhagen

By the table it seems to be that the categorization of module-types that Maceviciute built up to compare digital library education programmes in master level can be applied well also to the digital library related modules of the LIS Master programmes from Copenhagen and Oslo.

In the following I would like to highlight some facts on comparison based on table 6.

The Master programme in Oslo is really information organisation and retrieval focused in a digital library related sense. Some topics (such as scholarly communication) has an own module in Copenhagen appear in an information retrieval context in Oslo. The whole programme has a proper balance among three tracks: Information organisation and retrieval, library and society, and cultural dissemination. The module category in table 6 called user studies in Oslo context mainly appear in the track called cultural dissemination. However those modules do not have direct relevance with digital libraries that is why not appear in this table. There is one management-based subject in Oslo that appears from the library and society track.

In the Copenhagen case all tracks include modules about digital library issues. This table contains two obligatory modules that common in all tracks: no. 1 and 9 (theoretical module and master thesis). All the other modules are constituent modules of the different tracks. Beyond these, elective modules also represented in the curricula (these are non-permanent and take high variety so not appear in table 6).

Specialisation A about Information Architecture and User studies contains three modules: no. 2; 3;5. These are subjected to two main areas: 1. Information organisation and retrieval 2. System organisation and user studies

Specialisation B called Culture, Media and Digitality and contains two specific digital library related modules no. 4 and 6 by digital media studies and communication of culture.

Specialisation C is about knowledge production and processes. It contains two digital library specific modules directed to knowledge management and scholarly communication.

The theoretical module and the Master Thesis module seem to be a constant element in all programmes. User and service evaluation topics also appear on the table in each programme except Oslo LIS master programme. In this case a specific track is focusing on the dissemination of culture in a wider LIS, library policy, library sociology based (not digital library-centred) context. On the other hand library and society track contains a management related subject that fits well to the presentation of some modules by other programmes. For students a good choice can be made to choose it as an optional module in addition to the obligatory modules in the Knowledge Organization and Retrieval track.

The curricula of DILL and the new curricula of LIS master programme in Copenhagen shares some common points by a relatively low weight of technology related modules in core curricula. These issues in Copenhagen appear more on the optional module level. Both

programmes seem to represent a more discipline-oriented design by the compulsory modules then the other three programmes that mainly based on the profession-oriented approach. That kind of design by DILL seems to be clear by the descriptions of Maceviciute to the table 5, which only compares the digital library programmes. This issue will appear in more detail in the final discussion chapter.

Another interesting issue is the appearance of internship (or other practice oriented modules) in curricula. By DILL internship is an integral compulsory segment of the User and Usage module. By LIS master programme in Oslo this subject appears like a compulsory element in a practice-oriented project module. In Copenhagen the internship is an optional module. In Borås the DiSe programme based on a close collaboration with institutions from the Cultural Heritage sector with many practice –based elements in programme curriculum. The international DLIS programme has based on distance delivery mode by students from all over the world. This objection offers no possibility to include a practice oriented internship module to curriculum. However by the two digital library master programmes in Borås there is an option to take a practice oriented mid-scale project instead of writing a traditional Master thesis.

Management related modules seems to be by first sight have an extremely heavy weight on the DILL programme compared with all the others. Knowledge management focused modules appear in all programmes except DiSe. By Dill a Human Resource Management module offered in addition to Information and Knowledge Management. By DiSe programme a project management module is representing the management scale of the programme and really fits to the general professional practice-oriented programme design.

By taking an in-depth look to the content of management modules of DILL the perspective seems to a bit more complex. Some kind of topics not related to the core of management issues in these large modules and represented in a different environment by other programmes. Some examples like digital library ecosystems (a really IT-related topic), some issues on e-learning and scholarly communication, and a topic about digital repositories. These issues represented in independent module in Copenhagen by scholarly communication or as a segment of a communication-related module.

In all programmes some modules focus on the typology of digital media, digital documents. By DILL and the Oslo LIS master programmes these issues appear in a knowledge organization context. The DLIS programme by a relevant module is focus on digitizing culture heritage material. Information retrieval to digital libraries as a two-part module has a really relevant

weight also on this programme. In Copenhagen the Knowledge Media and Digitality module is focusing on typology and services related to different kind of digital document types. The case is the same through the module of Digital Media in Culture and Information Sector by DLIS programme.

5.4.5 Comparison Summary

This chapter widened the horizon of digital library master programmes by introducing the digital library elements of LIS master programmes. It also offered an introduction to the contextualization of these elements in programme curricula. At the end both types of programmes were put into a common analytical framework.

The main chapter subjects were the following:

- Description and comparison of basic module and course structure by LIS Master programmes in Oslo and Copenhagen
- A descriptive and comparative narrative based on the appearance of digital library related topics in LIS Master programmes through various curricula structures
- A complex comparison through an extended common framework based on subject types of modules and contextualization of modules related to digital library programmes and LIS master programmes in Oslo and Copenhagen

As a summary of the findings based on table 6 it can be stated that similar types of modules represented by the colour codes can be categorized in a common context regardless their relation to digital library or LIS Master programmes. The contextualization of the modules in their native programme environment is mainly influenced by the different kind of programme designs.

5.5 Summary of the analysis

Overall we can summarize this chapter that based on descriptive comparison in a way that the similarities and differences among different curricula forms are not depending mainly on the programme type (digital library programmes or LIS master programmes). As we could see from

the literature review the general appearance of digital library education in Europe can be placed into the framework of LIS master programmes. These programmes generally have practice based design (Shuva, 2011). The existence of digital library programmes offered me the opportunity to compare the differences of the appearance of digital library education issues by different frameworks. In both LIS master programmes and digital library programmes the students can take an insight to digital library issues based on similar content topics by similar depth. The contextualization of these content elements is related to the individual programme priorities. In this way the different types of programmes can be treated by a common framework of certain content topic types of modules.

The general influence of the European Curriculum Project, the iSchool community and the Digital Library Curriculum Project are really significant to the development of each programmes.

The LIS master programmes in Copenhagen and the DILL programme are less practice-oriented and discipline based. The LIS master programme in Oslo and all master programmes directed to digital library field in Borås are more practice-oriented together with a profession-based main design. This design rather fits to the European trends described by (Shuva, 2011).

Curricula in Copenhagen and in DILL are representing new ways for me by some innovative elements. These programmes are less devoted to specific professional requirements and take more emphasis on digital library innovation and research through a multidisciplinary range. This kind of scope by the library school in Copenhagen is in complete accordance by the general aims of the iSchool community. The programmes are not devoted to directly to the library profession anymore and representing a wider scope than before by the recruiting of students from different disciplinary areas.

This case is exactly the same with the DILL programme that focuses on professional innovation in digital library field with relevance to the whole information sector and offer strong interdisciplinary skills and competences as well.

The new curriculum system in Copenhagen offers a degree output to students with general interdisciplinary skills and competences with a high level of specialisation. The main aim is to grant the use of degree in the whole information sector not just in library or cultural heritage field.

The LIS Master programmes in Oslo and Copenhagen represent to me a really broad scope of education and research design. In Oslo three major tracks appear both in the Master and PhD

programmes by Knowledge Organisation and Retrieval, Library and Society, Literature and Users (HIOA, 2012). Digital library education mainly represented as a segment of the Knowledge Organisation and Retrieval track. In Copenhagen case however digital library related modules integrated into all tracks of the curricula by different contextualization forms.

In Copenhagen the two major directions of education and research are information science and cultural mediation. There is a special focus on information architecture, system design, user studies by Information Science. The cultural mediation research and education direction focuses on the creation and mediation of knowledge (University of Copenhagen, Faculty of Humanities, 2013).

The cultural mediation education and research field has really strong foundation also in Oslo. Via the new PhD programme the research and education scope to Information Science (especially in the discipline of Knowledge Organization and Retrieval) expected to be developed in a dynamic way in the near future. Since the main research and education dimensions of master and PhD education levels are closely correspond to each other, the development of research and education through the PhD level must have a positive effect to the research scope of the LIS master education as well in HIOA in digital library field.

Through the setting of the main professional consideration elements in LIS master programmes in Copenhagen the main focus is on the interaction among people IT, information and culture (Science, 2013). This kind of definition can be really relevant related to the other LIS Master programmes and the digital library programmes by DILL and in Borås as well. A complementary idea appear by the model of Tom Wilson with describing people, systems, organisations and content as the main aspects of digital library education. Basic ideas are similar; the realization of them is certainly different through the different scopes of programmes and schools.

6 Discussion related to research questions and analysis

6.1 Major preferences in curricula

From the analysis it seems to be that a specific aspect of the Scandinavian way of digital library education appears by a strong focus on mediation of culture. That covers also a strong user studies aspect by different disciplinary views related to digital libraries. A special focus on cultural interaction, the interplay among digital (or offline) environments and user behaviour is also really relevant in this context. Information architecture and system design issues mainly

appear from a human interaction-based and not from a technological perspective. The different subjects directed to management and information retrieval can add also more and more details to the dynamic view of cultural services and interaction in digital environments.

The theoretical and practical programme goals and content in the background sets the priorities to the branding and PR efforts. The digital library education programmes are mainly representing a broad interdisciplinary approach from different perspectives. A constant pressure can be determined in general to the programme makers by professional stakeholders and students however just focusing primarily to serve certain practical needs (mainly devoted to IT-based perspectives).

Since digital librarianship by its infrastructure and tools is in a permanent dynamic development, students have divergent working experiences and practical needs. It is really difficult to set a certain core of digital library education issues in curricula. There is a major debate on the academic discourse whether the goal is to train digital library technicians by the actually relevant practical competences or offering a more general knowledge by a wider focus that can be used in specific professional contexts in different ways (Tammaro & Myburgh, 2012) . The features of practical or theoretical content itself take a high importance. Simultaneously the balance among theoretical and practical elements on course, module, and track and programme level seems to be a really relevant issue in this context.

6.2 Descriptive summary of discussions related to the research questions

6.2.1 Major topics, conceptions, models and their representations in curricula

In order to describe the major topics in various curricula frameworks by finding answers to the first two research questions I had to find a common platform that could fit to all programmes. Maceviciute's comparative article offered me a model that she used with the purpose of compare the digital library education programmes (Maceviciute, 2011). She also cited major theoretical models that were used to describe the core considerations of digital library programmes in Borås and in DILL.

In my view the comparative model that Maceviciute used could be successfully applied to LIS master programmes as well. The main different topic types (theory and research, use and users, technology related topics, practice-based project work, management) covering all the most important aspects of digital library curricula in all programmes. The model is relevant regardless we talk about digital library programmes or digital library education elements in LIS

master programmes. A holistic view of these issues in programme level appears through strategic documents, programme descriptions and some academic publications in an explicit way in all the three schools. The actual weight and representation of these topics makes the major difference among the structure and design of different programmes.

In case of Copenhagen the students can make a relatively wider choice among optional modules then in the other places. The constitutional module structure represents a balance among the main topic types (components).

The DILL programme also represents a balance among the different topic types. Together with the LIS master programmes in Copenhagen these are less technology and profession oriented then the digital library and LIS master programmes in Borås.

In Oslo the students could choose among different tracks by the Master programme. Digital library issues mainly appear in one track (Knowledge organization and Retrieval). However students can extend their horizon towards user studies, cultural mediation, management, and cultural policy fields via choose topics from other tracks as well.

In Borås the programmes are the most technology oriented and educate students with certain skills and competences to work in digital libraries and related job positions through a good practical experience. DiSe programme directly functions in collaboration with the student's local Swedish workplaces. It represents a direct connection among master level higher education and professional practice. DiSe will be soon amalgamated by the LIS Master programme that also offering special course tracks for example for the needs of system librarians in public or academic libraries. The main profile of the new integrated programme will be not fundamentally changed according to the plans and expectations.

Through my thesis I could realize that the basic considerations via the planning of the programmes are really similar. At the same time the practical implementation forms, the weight of the different course elements differ a lot. The main difference among the different programmes not appears among the LIS master and digital library programme types but by the representation of the different topic elements by the programmes. That is why I found the extension of Maceviciute's model really useful to describe a common context of all programmes regardless of their main types.

6.2.2 Profession-based versus Discipline-based programmes Theory and practice

A major element of the main difference among the different programmes appears through the discipline and profession-oriented programme design options. It can be important to realize

the position of the three Scandinavian library schools in that hot academic debate. The digital library programmes in Scandinavia based on the education and research traditions of the three library schools are based on more a human-oriented then technology-oriented base. The major difference among the digital library education related master programmes of the three library schools appears to me on some strategic issues on the background of the programme design. These issues directly connected to the main debate between discipline and profession-orientated programme preferences.

The theoretical and practical issues appear together in most modules in a really dynamic way by each programme in the three library schools. In each module or in each topic inside a module the students can get a good overview by the major practical and theoretical considerations as well. The representation of discipline-based and profession-based orientation is not relevant related to the weight of practice-based and theoretical elements in a program. The main difference appears in another way through these considerations.

The master programmes of RSLIS in Copenhagen and the DILL programme represents a strong discipline-based profile. The aim of these programmes is to get people by different disciplinary background and offer them subjects in curricula without major tights to any specific profession. Certainly these programmes highly devoted to professions in the cultural heritage sectors but the practical and theoretical elements of the modules not focusing on the current specific needs of the different professions. The graduates can choose to apply their knowledge through their theoretical and practical skills and competences in various professional environments in the information sector or make a research career.

The digital library programmes in Borås and the LIS master programmes in Oslo and Borås represent a profession-based orientation. The dialogue process among the schools and cultural heritage institutions represents more direct effect to curricula as it appears through the course design of discipline-orientation programmes. Certainly these programmes are not some forms of simple vocational education in a term it existed as the one and only education option in the past. The profession-orientated master programmes are full-scale master programmes with a set of theoretical and practical elements of each module by the same way as the discipline-oriented programmes. Curricula by profession-based programmes focus on the recent employment skills and competences of the cultural heritage sector. Employment practice-based curricula forms offer a really good chance to find numerous jobs related to digital libraries and other segments of the cultural heritage sector.

These profession-based programmes also offer the sufficient level of theoretical knowledge in order to join PhD programmes and develop a research career but this education aim is not on their main focus!

HIOA in Oslo manage a discipline-based programme with its partners by DILL; it offers simultaneously a profession-based Norwegian master programme; starts a PhD programme where the definition of research areas following the main tracks of the profession-based LIS master programme. The basic aims and curricula of the two master programmes are totally different and it determines the different kind of profiles as well. Norwegian LIS master programme is reflecting mainly to the requirements of the Norwegian cultural heritage sector. According to Ragnar Audunson (by his keynote speech in Bobcatsss 2013 conference in Ankara) around a half of the students can find jobs in this sphere followed by the graduation (many of them taking the master programme as further education form by the support of their workplace). The new PhD programme also offering options for research career and many graduated people could find jobs in the private information sector.

DiSe programme in Borås as I described in the analysis had developed in close cooperation with partners from the cultural heritage sector by a new cooperation model. In this way it is absolutely representing a profession-oriented approach.

DLIS programme mainly recruits people by relevant working experience. Many of them are employed and want to update their skills in competences in digital library field by expectations of their employers in the cultural heritage sector. A broad range of subjects focus on IT and digitization represent closer ties towards recent practical forms of digital library work.

The difference among discipline and profession orientated programmes mainly appears on the unlike preferences by the programme structure and design. The major considerations of programme models are grounded on a really similar core. Curricula views, priorities and practical programme goals differ.

6.2.3 International and national programmes

All the three library schools from this thesis offer programmes by national and international focus on their master level portfolio. The interplay among the domestic and international programmes is essential by all 3 cases. There is no academic efficiency need and no financial and workforce capacity to build up programmes that are totally independent from each other with strong independent profiles. The international and national programmes have different focus but integrated well at the same time by the library schools.

The main difference of course is the language of instruction (English by the international programmes versus national Scandinavian languages). The generally high level of English language proficiency by Scandinavian students can easily bypass this challenge in each school. The modules can be shared with international programmes being instructed in English. For the national programme students it makes no difficulties. This is a specific Scandinavian advantage and represents a very positive effect for designing the programmes and handling the synergies in an efficient way.

In Borås and in Copenhagen all programmes offered in their single library school environment. The main difference among the programmes, when we are compare the two schools is the course delivery way. I will elaborate this issue further in the next sub-chapter by the discussion.

In Copenhagen the international and Danish master programmes completely based on the same curricula platform by the latest curricula model. The only difference is the language of instruction. In this case some constituent modules have both Danish and international (English) version, while some of them being instructed in English on a shared basis. The range of optional modules is broader in Danish than in English. However all the Danish optional programme modules are available for those international students that have a certain level of Danish proficiency. The international collaboration part-time education and summer university education forms (with German, American and Chinese partners) are also available for the Danish and international students as well by the same conditions.

In Borås many modules shared among the international DLIS and the Swedish DiSe programmes. The design and the target groups of the programmes are different. It is clear to me at the same time by the interview I made with the programme coordinators Helena Francke and Elena Maceviciute that using the synergies in an effective way takes a primary importance. The difference among the two programmes just appears in a sufficient level that the different profile indicates. In all the other cases the definite goal is to offer shared courses by distance education delivery way in English for the Swedish students as well. I have to admit also that the DiSe programme by the same objections currently sharing modules with the LIS master programme as well in Swedish (it is even easier by the two domestic distance education programmes). In the near future these two Swedish programmes will be integrated together. Since the new programme will appear in a single, well-integrated professional framework it should be easier to synchronize with the international DLIS programme.

By internationalisation sense the library school in Oslo is a special case. The LIS master programme and DILL programme shares a module. DILL however operated by an international consortium. Its direction, modules, and structure totally differs from the LIS master programme in Oslo. These programmes have developed by different frameworks, for different target groups by really different needs and in a really different geographical scope. By a shared module instead it is possible to find certain collaboration among the two really different programme forms.

The appearance of entirely international programmes, such as Digital Library Learning (DILL) or national programmes with international focus like the DLIS programme in Borås or international LIS Master Programme in Copenhagen, take a chance to brake-up with the national boundaries.

In DILL-case the Erasmus-Mundus programme by its European-level accreditation scheme offering the possibility to be independent from the national educational traditions. In Borås and in Copenhagen the Swedish and Danish national accreditation schemes grants a high quality education level to international students (Maceviciute, 2011; Royal School of Library and Information Science, 2011).

Exclusively international courses as DILL, DLIS and international LIS master in Copenhagen clearly follow the intentions of Bologna directives in order to develop professional competences via an international scope, improve careers in a global scale. Set student-friendly models led by teachers as facilitators by many kind of group work; establish virtual collaboration activities with guest professors and students from all around the globe; international programmes with these features totally differ from traditional national education programmes.

Orienting the students towards numerous career paths is a great advantage. Students can face off the challenges of the really dynamic interdisciplinary, international view of LIS without any major national traditional bonds. However on the other hand the students by living and studying in 3 countries in DILL-case and via take non-obligatory courses from the hosts institutions programme portfolio can explore and compare the different national higher educational systems as well (Gardašević, 2010; Maceviciute, 2011).

6.2.4 Course delivery forms

An important aspect I was focusing on the analysis by the research questions was the difference of the course delivery ways. In Copenhagen and in Oslo the master level education

is mainly based on the campus delivery form. However in Oslo the part-time and distance education forms are also really important in order to serve the further education of library practitioners and other employees from the cultural heritage sector.

In Borås the whole master level education system is based on the distance education form. It takes some extra difficulties for the professors and lecturers. The high dropout rate (mainly during the first period of the programme) for example is a big challenge. The programme length is much longer with distance education than with on-campus mode and fewer modules can be offered per semester corresponding to the student's time framework for studying. In contrast with on-campus education it takes so much energy to develop all the courses and materials online through the Ping-Pong e-learning interface then keep the permanent contact with the students during the courses.

The Swedish library school has an intention to re-introduce on-campus programme delivery forms again as the coordinators made me clear during the interview with them. However it is really difficult to maintain it. By the Swedish programmes most of the students are employees and could not allow an on-site full-time campus-based programme for themselves. By the international digital library master education the problem is the high level of costs for a living and studying in Sweden for a 2 years period without any kind of major scholarship fund.

In Denmark despite the high living costs the on-campus master programme exists without any distance education alternative but the Swedish programme coordinators are a bit sceptical in that sense. These kinds of challenges make really difficult the realization of running on-site programmes in Borås. The programme coordinators however constantly try to find out some ways to make real this option also.

In the future the challenge by the lack of general scholarship funds and the appearance of distance education form will appear as an extra challenge in the case of DILL programme as well. DILL through Erasmus Mundus programme has no longer funded by the EU. From 2013 autumn the programme will be offered in both on-campus and distance education modes. The challenges with distance education in Borås will mostly appear in this case as well plus an additional challenge is about the prospect of programme delivery by the same duration and structure in distance education way as it currently exists by on-campus mode.

6.3 Summary of the discussion

The discussion mainly reflected on the research questions and to some general issues that appeared through the analysis.

The first chapter discussed some issues about major preferences by curricula by the three library schools. I tried to describe that on which sense we can talk about a special Scandinavian way on digital library education related to these three traditional library schools Borås, Copenhagen and Oslo.

The second chapter focused on some issues related to the research questions. The first discussion overview based on the major topics, conceptions, models and their representation in curricula. The basic considerations directed to all programmes seem to be really similar. The major difference appear on the implementation of the basic ideas and via the programme design.

Two major types of programme designs were discussed by discipline and profession-based directions. The choice over the two major design models mainly depends on the strategy of the host institutions, departments and the expectations of professors and students.

In the following a major Scandinavian advantage of the digital library education was discussed by the easy option of implement and share modules among international and national programmes due to the high level of English proficiency of the students. The national and international programmes are on a common platform or exist in a joint framework in each institution. This chapter also contextualized internationalization in a wider sense in accordance of pedagogical aims and EU strategic goals.

The last topic that was introduced by the discussion is about the course delivery forms. In Borås the re-introduction of on-campus education on Master level makes the most relevant challenge in this sense. In case of DILL the situation is the opposite. By the loss of Erasmus Mundus fund the distance education option has to be introduced. In Oslo the LIS master programme represents a long tradition by both delivery ways. While in Copenhagen the focus is on the on-campus delivery way of LIS master programmes.

7 Thesis Summary

The main subject of this master thesis was digital library education on master level in a specific case of Scandinavia through a qualitative comparative case study. This case study based on the three most traditional library schools from the region in Borås, Copenhagen and Oslo. These schools represent the most comprehensive education offerings and research capabilities in digital library field in Denmark, Norway and Sweden. Digital library education according to the

major European trends have represented by LIS master programmes by all three library schools. Two of these institutions offer also specific digital library programmes on master level. International Master in Digital Library Learning is an international programme by the coordination of the library school in Oslo with two other partners from Parma and Tallinn. SSLIS in Borås offers DLIS; it is also an international digital library master programme. A Swedish digital library programme (DiSe) by serving the local needs of the cultural heritage sector offered by the same library school.

The comparative analysis put into a broader context with a literature review and with an introductory chapter about Scandinavian LIS education. The literature review represented some models that were really relevant on the evolution phase of digital library master programmes. These models characterise a European perspective of digital library education. Furthermore the review is also focusing on the most important model in theory and practice of digital library education from the USA.

In the analysis I could use some models to find the major core ideas behind the curriculum planning. Furthermore Elena Maceviciute's model from 2011 that compared the main module types and topics of the digital library master programmes from Borås with DILL programme has extended to the digital library related modules of LIS master programmes in Copenhagen and in Oslo.

A main finding of the thesis is that the basic foundations of the different programmes generally based on really similar considerations, regardless their typology by programme type (digital library programmes or LIS master programmes) or by programme design (discipline based or profession based programme design). The main focus from a Copenhagen view is on the interaction among People IT, Information and Culture. Tom Wilson's model in Borås describes it by another model through a common framework of major divisions by people, systems, organisations and content.

The mediation of culture takes a major importance all over the Scandinavian region regardless we talk about traditional or digital libraries. It means that the major focus is in Scandinavia by digital library education based on a human cultural interaction perspective in a digital environment.

The major goal is to educate people that are not simply IT-technicians but have comprehensive skills and competences in all the major dimensions of digital librarianship. IT-related issues generally not appear in the same central position in Copenhagen and Oslo as the general

European digital library education trends described by Shuva (Shuva, 2011) or the structure of the Digital Library Curriculum from the US (Pomerantz et al., 2006) refer to this fact. The subjected master programmes in Borås at the same time are following the major European trends in this context.

The implementation way of each programme is different. Curricula and programme design based on practical goals and priorities appear on a large scale. Simultaneously however a set of module types could be determined to build up a common framework for all programmes with different designs by (Maceviciute, 2011). This framework represents the following areas: theory and research; use and users of digital libraries; technology related issues; practice based project activities; management issues.

Each modules related to digital library education could fit into this framework by each master programme I worked with in the comparative analysis (except the LIS Master programme in Borås that could not be compared in a module level with other programmes). It means that the model of Maceviciute refers to the whole range of digital library education in Master level by these three library schools and not just to the digital library programmes she targeted in comparison.

In my view this is a major important finding of this thesis: it is possible to find a single interpretation framework on digital library education through the categorization of different programme content elements (modules) regardless that those belong to digital library programmes or digital library education segments of LIS master programmes. This framework is focusing on the subject and content of the modules; their contextualization via their native programmes is just on the background. The different elements can be comparable with each other by their main topic types regardless their belongings to the different programmes.

Appendix

Appendix 1
Current members of iCaucus (in alphabetic order by categories)

US and Canada members

Carnegie Mellon University: School of Information Systems and Management-Heinz College
Drexel University: College of Information Science and Technology
Florida State University: College of Communication and Information, School of Library and Information Studies
Georgia Institute of Technology: College of Computing
Indiana University: School of Informatics and Computing (SoIC)
Indiana University: School of Library and Information Science (SLIS)
Rutgers, The State University of New Jersey: School of Communication and Information
Syracuse University: School of Information Studies
Pennsylvania State University: College of Information Sciences and Technology
University of British Columbia: School of Library-Archival & Information Studies
University of California, Berkeley: School of Information
University of California, Irvine: The Donald Bren School of Information and Computer Sciences
University of California, Los Angeles: Graduate School of Education and Information Studies
University of Illinois: Graduate School of Library and Information Science (GSLIS)
University of Kentucky: College of Communications & Information Studies
University of Maryland: College of Information Studies
University of Maryland, Baltimore County (UMBC): Department of Information Systems
University of Michigan: School of Information
University of North Carolina: School of Information and Library Science
University of North Texas: College of Information
University of Pittsburgh: School of Information Sciences
University of Texas, Austin: School of Information
University of Toronto: Faculty of Information
University of Washington: Information School
University of Wisconsin, Milwaukee: School of Information Studies

European members

Humboldt-Universität zu Berlin: Berlin School of Library and Information Science
Det Informationvidenskabelige Akademi: Royal School of Library and Information Science, Copenhagen
University College Dublin: School of Information and Library Studies
University College London: Department of Information Studies
University of Amsterdam: Graduate School of Humanities (Archives and Information Studies)
University of Glasgow: Humanities Advanced Technology and Information Institute
University of Sheffield: Information School
University of Tampere: School of Information Sciences

Other members

Nanjing University: Department of Information Management
Singapore Management University: School of Information Systems
Tsukuba University: Graduate School of Library-Information and Media Studies
University of Melbourne: Melbourne School of Information
University of South Australia: School of Computer and Information Science
Wuhan University: School of Information Management

Table 11 Major Topics of DL Course in European LIS Schools

Major Contents	Value
Definition, History and Development of DL	15
Access, & Usage of DL	14
DL Software	14
Digitization and Preservation	7
Metadata	7
Development and Management of DL	7
DL Collection Building and Management	4
DL Usability and Interface	4
Copyright and Intellectual Property Right	3

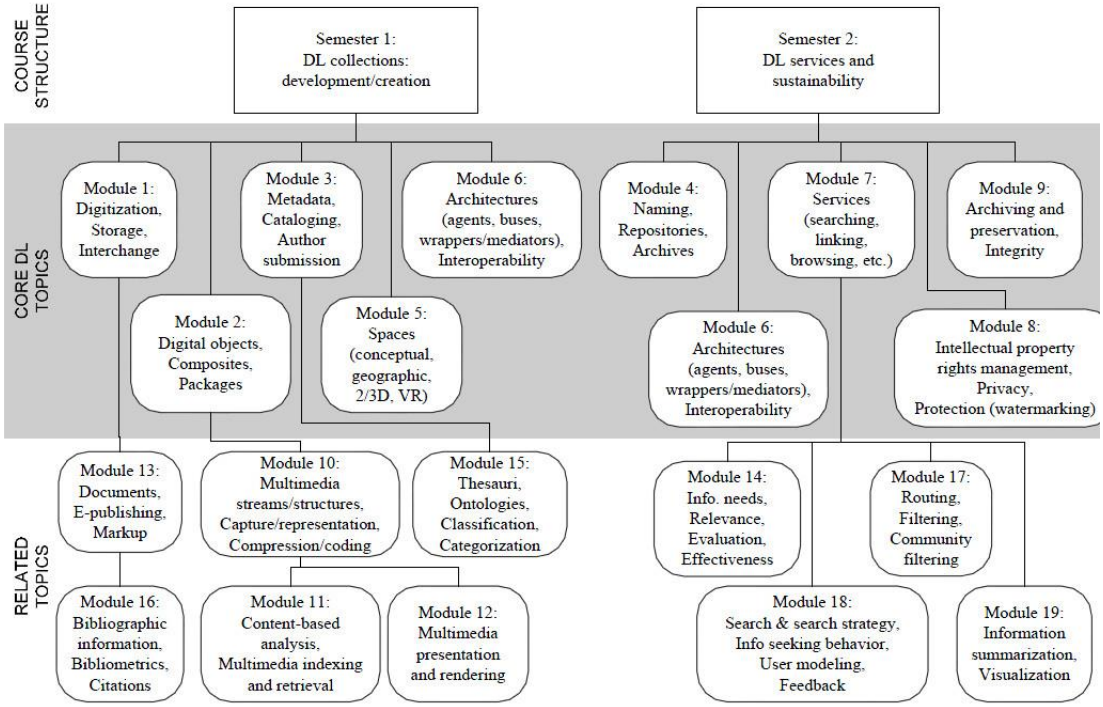
Design and Evaluation of DL	3
Information Architecture	3
Role of DL in Society	3
DL Standard	3
Content Management	2
Digital Archives	2
Digital Information Service	2
DL technologies	2
Information and Knowledge Management	2
Information Retrieval	2
Information Technology in Libraries	2
Management of Digital Cultural Heritage	2
Practical DL System Development and Project base work	2
DL Hardware	2
User Studies	2
Virtual Research Environment	2
Web Design and Technology	2
Data Curation	1
Digital Documents	1
Economics of DL	1
Human Information Behaviour	1
Human Resources Management in DL	1
Information Ethics and Law	1
Information Society	1
Institutional Repositories	1
Interactive Media Use and Users	1
Knowledge Creation and Communication	1
Online Services Use and Evaluation	1
Organisational Issues of DL	1
Visual Resources Management	1

Appendix 2: Major topics of DL course in European LIS schools

Appendix 3: Twenty subject areas ranked in fifteen for DL education (Shuva, 2011)

Table 14 Twenty Subject Areas Ranked in Fifteen for DL Education

Name of the Subject	Rank
Digital Library Architecture and Design	1
Information Retrieval	1
Digital Archiving	2
Electronic Collection and Resources Development	2
Copyright and Intellectual Property Right	3
Digitization	3
Information Seeking Behaviour	4
Mediation of Content from the Digital Libraries to Users	5
User Studies	6
Metadata Studies	7
Database Management System	8
Automated Indexing and Abstracting	9
Information and Knowledge Management	9
Cataloguing and Classification	10
Basic Hardware and Software Course	11
Learning about Digital Library Software e.g. Dspace, Greenstone, Fedora etc.	12
Research Methodologies in LIS	13
Internet Studies	13
Reference Services	14
Marketing of Information Products and Services	15



Appendix 4: Curriculum framework on digital library education by North Carolina, Chapel Hill and Virgin Tech (Pomerantz et al., 2006)

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