Physicists, physicians, and geneticists all learn in laboratories, and why not archivists?

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ABSTRACT

This paper presents an idea of developing electronic and hybrid laboratories for archivists, not just to teach them but with the main goal to help them understand the most recent issues, such as electronic document management, business process modeling and digital preservation. The idea will be illustrated with the example of a proposed path for developing the Electronic Document Laboratory (EDL) at the History & International Relations Institute of Szczecin University (Poland).

The EDL project started in mid-2011 and intended to advance teaching and research in the field of electronic records management and archival science (especially in the fields of metadata descriptions, digital preservation and digital archives) for archival science students. It covered a lifecycle of an electronic or digitized document in the environment of public administration. Further extension to include private business and public administration was expected in the future.

Keywords Archival education • Digitization • Electronic records management • Business process modeling • Digital preservation

"(…) the more archivists know about technology, the better." (Pearce-Moses 2013b)

This paper presents an idea of developing electronic and hybrid laboratories for archivists to help them understand the newest issues, such as electronic document management, business process modeling and digital preservation. This idea will be illustrated with the example of a proposed path for developing the Electronic Document Laboratory (EDL) at the History & International Relations Institute of Szczecin University. This paper also covers some technological problems related to education.

The archives profession has been constantly transformed since the first computers were introduced in public agencies and archives. They changed their work and interactions within and between ecosystems. In archives, PCs were first used as electronic typewriters,

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then to create and store databases of analogue records descriptions and finally they became warehouses and online access points to born-digital and digitized records and their metadata. The case of administration was similar. The main difference in the profession caused by those changes is that archives have to be active co-partners for administration through the whole document lifecycle.[1] Contemporary archivists need three types of skills: managerial, technical and soft, to be able to fulfill their tasks and responsibilities to the community to which the records they preserve originally belong (Pearce-Moses and Davis 2008).

Technology changes the way human beings understand, learn and process information. It also facilitates students' involvement in the personalized and interacting learning experience. The incorporation of new technology in learning started in the 1970s, but recent decades brought important changes in the way of how people are being educated. Consequently, archival science can no longer be taught in a traditional way based on 19th century practice (Brown-Martin 2013). Moreover, observing how IT influences document lifecycle, archival science cannot be treated as a science with mainly analogue materials in consideration. This also concerns teaching. Not only because someone thinks it is important but for the reason that students want changes in the way they are taught. The title of this paper was a direct quote from a student who posed the question in my digitization class in the winter semester of academic year 2012/2013. Students are very much aware of technological developments in many areas of human existence.

In Poland archival science is generally regarded as a sub-discipline of history. In addition, only at two out of twenty[2] universities focusing in that area that it is being taught as an independent subject.[3] Furthermore, only one university offers PhD studies. It means that majority of future archivists study history as their major with archival science as a specialization. In his research, based on surveys conducted in academic year 2006/2007, Jacek Krochmal (2008) analyzed curricula offered to students at high education institutions. Generally they consist of "traditional" subjects such as: introduction to archival science, introduction to archives, public office systems, history of administrative systems, Latin paleography, archival methodology, gothic or Russian neographics, archival theory, publishing historical sources. They also include "new" subjects that appeared only in recent years: elements of archive law, IT for archivists, management of information and present-day documentation.

As an example it is worth analyzing a curriculum from the History & International Relations Institute of Szczecin University. The academic course consists of only 390 contact hours placed in the second and third year of the bachelor's program in history.[4] It means that archival science covers around 21% of the whole curriculum. In four semesters, students obtain theoretical knowledge and are obligated to take two four-week internships at state archives, current archives of public agencies, companies or cultural institutions.[5]

Generally the course is orientated at the profile of state archives, hence at managing analogue records, especially 20th century paper documentation. Classes on IT form only around 11% of all subjects.[6] Therefore, the current curriculum is organized very

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[1] In Poland there are no records/documents managers in the public sector, there are archivists responsible for historic documents and those, which are not any more in current use by the public agencies and have no archival value but have to be kept for certain time according to the archival law.

[2] Nicolaus Copernicus University in Toruń (Bachelor, Master and PhD studies) and Maria Curie-Skłodowska University in Lublin (Bachelor studies).

[3] Based on website examination of institutions teaching archival science known to the author as of 13 August 2013.

[4] Bachelor's degree in history covers 1865 contact hours in 6 semesters (three academic years).

[5] See: http://hist.us.szn.pl/images/stories/zasoby/PlanIH2010_2011.doc (Accessed: 15 August 2013)

[6] See: http://hist.us.szn.pl/images/stories/zasoby/PlanIH2010_2011.doc (Accessed: 15 August 2013)

traditionally and does not match the model of an archivist profile developed in 2010 by the Archival Education Section of the Association of Polish Archivists. The outline emphasized issues concerning information management and information technology. According to this, an academic course at bachelor's level (called 'basic' by the authors of the model) shall offer knowledge on: modern IT and communication technologies, websites and databases management and creation, document life cycle management and optimization methods, creation, description (especially on metadata standards), management, storage, preservation, online accessibility of electronic and digitized records in dedicated IT systems and digitization (Chorążyczewski and Kwiatkowska 2009). It shows that there is an urgent need to change the curriculum.

TABLE 1.
History and International Relations Institute, Szczecin
University Archival Science Curriculum[7]

	Subject	Semester	Contact Hours			
			Total	Lecture	Class	ECTS
1	Introduction to archival science	III	**15**	15	0	1
2	Introduction to archives	III	**30**	30	0	3
3	Public office systems in Poland	III	**45**	30	15	4
4	History of administrative system	III	**30**	30	0	3
5	Latin palaeography	IV V	**45**	0	45	5
6	**IT for archivists**	**IV V**	**45**	**0**	**45**	**5**
7	Archival methodology	IV	**60**	30	30	5
8	Gothic neographics	V VI	**45**	0	45	5
9	Documentation management	VI	**30**	30	0	3
10	Archival theory	VI	**15**	15	0	2
11	Elements of archive law	VI	**30**	30	0	3
12	Internships	IV-VI	**0**	0	0	4
	Total Hours		390	210	180	43

The idea to build a laboratory devoted to electronic document originated from a wish to somehow solve the above-mentioned educational problem and to create some basis for the future development of archival science specialization.

At the beginning of creating a new educational tool very important questions need to be answered: How do we want to teach students? What do we want to teach them, and what should be the outcome? Answers for such questions seem to be very simple, but in reality they need very serious consideration because they will form the foundation for the solution as well as rationale to get involved for possible sponsors, contributors or other

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[7] http://www.hist.us.szn.pl/images/stories/zasoby/IH2010_2011.xls

stakeholders (Pearce-Moses 2013a; Wiggins 2013; Digital Media and Learning Research Hub).

The first concept of the laboratory was defined very generally and based on the fundamental assumption that it has to cover the need for teaching about electronic document lifecycle at public agencies and state archives without giving any hard IT classes. The most important was that a future archivist could understand records management, metadata description and digital preservation and how it worked from the different points of view: computer science, archival science and administration. Second main concern was how to match the legal regulations for public administration and archives even if some changes occur in the future. This statement was very important for research and especially for teaching. Nowadays, there are six acts and fifteen regulations that determine the functioning of electronic administration[8] and its preservation in Poland. They deal with: administrative proceedings, electronic documents and their life cycle, requirements for IT systems, interoperability of public registers (e. g. Universal Electronic System for Registration of the Population), informatization of public administration, archival material, office instruction, data protection and secret data proceedings. They can be amended at any time.[9]

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[8] Electronic administration is a term describing public administration using information and communication technologies (e. g. electronic documents and signatures, IT systems to manage them) for everyday proceedings.

[9] Full list of legal regulations:
1. Ustawa z dnia 14 czerwca 1960 r. Kodeks postępowania administracyjnego
   - Rozporządzenie Ministra Spraw Wewnętrznych i Administracji z dnia 27 listopada 2006 r. w sprawie sporządzania i doręczania pism w formie dokumentów elektronicznych
2. Ustawa z dnia 17 lutego 2005 r. o informatyzacji działalności podmiotów realizujących zadania publiczne
   - Rozporządzenie Rady Ministrów z dnia 12 kwietnia 2012 r. w sprawie Krajowych Ram Interoperacyjności, minimalnych wymagań dla rejestrów publicznych i wymiany informacji w postaci elektronicznej oraz minimalnych wymagań dla systemów teleinformatycznych
       o Rozporządzenie Prezesa Rady Ministrów z dnia 29 września 2005 r. w sprawie warunków organizacyjno-technicznych doręczania dokumentów elektronicznych podmiotom publicznym
       o Rozporządzenie Ministra Nauki i Informatyzacji z dnia 19 października 2005 r. w sprawie testów akceptacyjnych oraz badania oprogramowania interfejsowego i weryfikacji tego badania
3. Ustawa z dnia 18 września 2001 r. o podpisie elektronicznym
   - Rozporządzenie Rady Ministrów z dnia 7 sierpnia 2002 r. w sprawie określenia warunków technicznych i organizacyjnych dla kwalifikowanych podmiotów świadczących usługi certyfikacyjne, polityk certyfikacji dla kwalifikowanych certyfikatów wydawanych przez te podmioty oraz warunków technicznych dla bezpiecznych urządzeń służących do składania i weryfikacji podpisu elektronicznego.
4. Ustawa z dnia 14 lipca 1983 r. o narodowym zasobie archiwalnym i archiwach
   - Rozporządzenie Ministra Spraw Wewnętrznych i Administracji z dnia 30 października 2006 r. w sprawie niezbędnych elementów struktury dokumentów elektronicznych
   - Rozporządzenie Ministra Spraw Wewnętrznych i Administracji z dnia 30 października 2006 r. w sprawie szczegółowego sposobu postępowania z dokumentami elektronicznymi
   - Rozporządzenie Ministra Spraw Wewnętrznych i Administracji z dnia 2 listopada 2006 r. w sprawie wymagań technicznych formatów zapisu i informatycznych nośników danych, na których utrwalono materiały archiwalne przekazywane do archiwów państwowych
   - Rozporządzenie Ministra Spraw Wewnętrznych i Administracji z dnia 18 stycznia 2007 r. w sprawie Biuletynu Informacji Publicznej
   - Rozporządzenie Prezesa Rady Ministrów w sprawie instrukcji kancelaryjnej, jednolitych rzeczowych wykazów akt oraz instrukcji w sprawie organizacji i zakresu działania archiwów zakładowych z dnia 18 stycznia 2011 r.
5. Ustawa z dnia 29 sierpnia 1997 r. o ochronie danych osobowych
   - Rozporządzenie Ministra Spraw Wewnętrznych i Administracji z dnia 29 kwietnia 2004 r. w sprawie dokumentacji przetwarzania danych osobowych oraz warunków technicznych i organizacyjnych, jakim powinny odpowiadać urządzenia i systemy informatyczne służące do przetwarzania danych osobowych
   - Rozporządzenie Ministra Spraw Wewnętrznych i Administracji z dnia 11 grudnia 2008 r. w sprawie wzoru zgłoszenia zbioru danych do rejestracji Generalnemu Inspektorowi Ochrony Danych Osobowych

The laboratory shall give an opportunity to understand, explore and experience what an electronic administration is and how it works. It was planned to simulate the lifecycle of electronic documents based on a model electronic public agency office[10] by including several modules covering the whole process from record creation to transfer to archives. Other goals included making students more fluent in digital problems (generally in archival science) and protecting them from exclusion from the archive labor market and information society giving them theory and practice helping to understand meaning of information era and transparent as well as open government. It was also foreseen for further education of archivists or public agencies' employees in accordance with the concept of long life learning.

The idea was to teach about solutions used in institutions such as public administration and archives. The first model of the Electronic Document Laboratory comprises the following modules: electronic inbox[11] with predefined forms dedicated to different services offered by an agency[12], document management software (DMS),[13] current and state electronic archives. The first module is designed as public administration online contact point for citizens, where they can start administrative proceedings such as an application for a building permit.[14] The second is a platform to pick up correspondences from the electronic inbox and it is responsible for management of all documents created by citizens and clerks and all additional data collected during administrative work by an agency. It is connected with a current archives, which manages records no longer in use before they will be delivered to electronic State Archives as a SIP (Submission Information Package) (Consultative Committee for Space Data Systems 2012). The latter preserves materials for the long-term and is the final stage in a document lifecycle.[15]

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6. Ustawa z dnia 5 sierpnia 2010 o ochronie informacji niejawnych
- Rozporządzenie Rady Ministrów z dnia 25 sierpnia 2005 r. w sprawie podstawowych wymagań bezpieczeństwa teleinformatycznego
- Rozporządzenie Prezesa Rady Ministrów w sprawie instrukcji kancelaryjnej, jednolitych rzeczowych wykazów akt oraz instrukcji w sprawie organizacji i zakresu działania archiwów zakładowych z dnia 18 stycznia 2011 r.
- Rozporządzenie Rady Ministrów z dnia 7 grudnia 2011 r. w sprawie organizacji i funkcjonowania kancelarii tajnych oraz sposobu i trybu przetwarzania informacji niejawnych

[10] Electronic office is a term describing an office where information technology is used for everyday proceedings. Sometimes this term is used as a synonym for electronic administration or in a narrow meaning as an online service allowing citizens to contact a public agency.

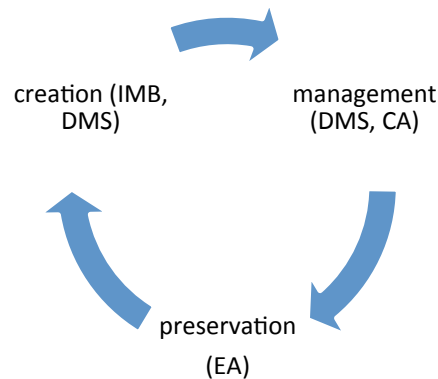[11] An electronic inbox is a mean of electronic communication with a public agency by global teleinformation network. Elektroniczna Skrzynka Podawcza: http://www.cpi.gov.pl/elektroniczna_skrzynka_podawcza,51.html, 31 July 2014.

[12] Electronic inboxes of public offices are accessible on the Electronic Platform of Public Administration Services (ePUAP). Electronic Platform of Public Administration Services is a virtual interface targeted at all public institutions to provide information about all services for citizens in one place, some of them can be conducted online (the amount is constantly growing). More can be found here: http://epuap.gov.pl/wps/portal/!ut/p/a1/jZBPb4JAEMU_Db2VHRZKsYlpqH8S8GDSKsW5mKUsuMn KbpZVYj99wZMxrXZub_J7M2-GIMkJNuwoamaFapgcNIZbb0QDj35AGmXTN0iy1ftqMc8oUK8HNpfAchY8DUBKo-eQwtL_nx_-qBju-T8J3kQm4TVwFTGgd4DhhjNwI2RKsJaqOD9sEzeFH9UEDa-44cY9mL69s1a_OOAA1wem3VodXS0d6HTrgFbGsl7M6BZLZr55IxievoTq-KvkSTn2vdFDpUxc7scVky3_bctOtZbkl9OJ3q9zEMkjFqfuB5DN3i8!/dl5/d5/L2dJQSEvUUt3QS80SmlFL 1o2XzE5MjQxMlMwSk9FNDUwSVZZUSjI4NzYyMFMx/?lang=en, 31 July 2014.

[13] A document management system (DMS) is an electronic system to create, manage, store, and archive records for a certain period of time according to the archival law.

[14] Building permit form can be accessed here: http://epuap.gov.pl/wps/portal/!ut/p/a1/04_Sj9CPykssy0xPLMnMz0vMAfGjzOINLY1MDI2CDbwswly cDDzDQoJCvN3CjAyMDPULsh0VAa_Q2Tw!/, 31 July 2014.

[15] For more detailed description on all modules of the Electronic Document Laboratory see: Anna Sobczak 2012, "The Climate of Changes in Educating Archivists – Electronic Document Laboratory," http://ica2012.ica.org/files/pdf/Full%20papers%20upload/ica12Final00118.pdf (Accessed: 21 September 2014).

creation (IMB, DMS)

management (DMS, CA)

preservation (EA)

FIGURE 1.
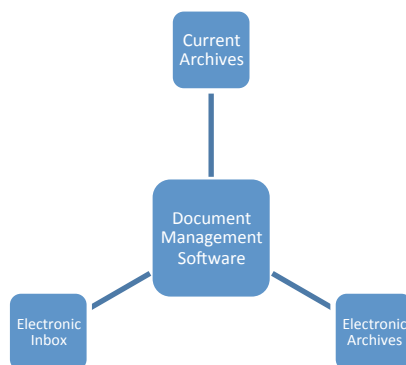**Model of the Electronic Document Laboratory**

At first there was an idea to buy proprietary software and hardware (computers, servers, etc.). The Department of Humanities, to which the History & International Relations Institute is under, applied for a grant to the Ministry of Science and Higher Education. Meanwhile, a pilot phase of the Laboratory was introduced in the summer semester 2011/2012 in cooperation with an IT company from Szczecin. In this period a basic laboratory was established. It consisted of a module of document management software in an exemplary public agency connected to the Electronic Platform of Public Administration Services[16] and to an electronic inbox developed by the IT company[17] and two more separate software applications were in use: a SIP viewer[18] and a prototype of Archives of Electronic Documents[19] of the Polish State Archives. Students attending IT classes for archivists had an opportunity to get a glimpse of a public administration employees' job when dealing with an individual case. They very easily mastered how to use software and idea of the document lifecycle. However, after the test phase was over, the project encountered problems with receiving a grant and was therefore discontinued. Only some of its elements delivered by the public services were used during classes in the next years. This stalemate was a first step towards modifying the concept of the laboratory.

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[16] For the pilot phase of the EDL there was a basic form in the test platform of ePUAP allowing students to create an electronic document to start a case by the exemplary institution. The test form is available here (to see and fill in the form an account is needed): http://test.epuap.gov.pl/wps/portal/E2_OpisUslugi?searchEngine=true&opisId=3260&kartaId=6770&pE2 SHHlWords=humanistyczny+wydzia%C5%82.

[17] This service of an electronic inbox is similar to the service provided by ePUAP because it allows citizens to contact an agency, except that it is a service only of a one institution not of all which are in Poland such as ePUAP.

[18] The software to view SIP is called Submission Information Package Virtualization it allows to view and read a content of SIP (documents with metadata files describing them and cases to which belong) in a visual form easy to interpret and understand by a human. The software is available here: http://mac.bip.gov.pl/wizualizacja-paczki-archiwalnej/wizualizacja-paczki-archiwalnej.html. Exemplary SIP here: http://epl.icm.edu.pl/download.php?id=263&sid=43b66c4094b55e396d79f6e77e2f8604.

[19] This prototype is available here: http://ade.ap.gov.pl/. For the pilot phase only the manual of the platform was used to explain the process of SIP transfer to electronic archives. Manual: "Archiwum dokumentów elektronicznych. Dokumentacja użytkownika. Wersja 0.3", www.ade.ap.gov.pl/ade.pdf.

FIGURE 2.
Simplistic Document Life Cycle Modules of Electronic Document Laboratory

After two years some new ideas came from different specialists. Simultaneously similar projects worldwide and a rush development of electronic administration in Poland (as well as open source software) began and the new concept started to develop. Now, it is even possible to create an improved project covering more issues without spending a penny on software but just on some hardware infrastructure. For the first part of this statement to come into effect the cooperation with some institutions, such as for example Head of the Polish State Archives which owns a variety of self- or co-developed software, must be established. Just a good insight into the open source movement concerning digital archiving as well as cooperation with IT staff of the department is needed to achieve the second assumption. There could even be no additional costs related to university employees' salaries because the work on the project could be a part of their regular duties. So this concept would be based on cooperation between public bodies, which could be confederated in the future. This would make the EDL a unique solution in Poland, thanks to the fact that it covers whole life cycle of a document and financial business model.

Owning such a laboratory would provide an opportunity to create a completely new curriculum with classes on electronic document management, digital archives, etc., which would emphasize digital instead of traditional aspects of archivists' profession. For the time being the project has not started in its newest form.

Summarizing, it is hard to predict what changes and developments in education and public administration will be triggered by future technological improvements. It remains to be seen how both ecosystems have improved and absorbed IT very rapidly. Such projects as the Electronic Document Laboratory will have to develop continuously and probably it will never be possible to say: "It is finished!" because something new can occur the following day. *"However, [educational] institutions must continue to enhance what they offer and respond effectively to the diverse needs of their students."* ("Students raise concerns over quality of university courses").

ABOUT THE AUTHOR

Dr. **Anna Sobczak** wrote a PhD thesis on digitization and the use of IT in national archives in Germany. She had internships at a few archives in Poland and in Germany (e.g., Federal Archives of Germany) and libraries in the United Kingdom and Germany (e.g., State Library of Berlin). She presented several papers and posters at conferences on

history and archival science in Poland and in Switzerland, Germany, Australia, and Sweden. She took part in archival projects in Germany (e.g., "Joseph-Teusch-Werk"). She published dozen articles and reports relating to archival science and history in Polish, German and English (e.g., in: "Archiwista Polski," "Archeion," "Problemy archiwistyki," "Przegląd Zachodni," and "Archivar"). She teaches digitization and ERM.

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