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**E-learning and B-learning information literacy programs at science and technology universities in Estonia, Finland, Latvia and Poland.
A comparative study**

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E-LEARNING AND B-LEARNING INFORMATION LITERACY PROGRAMS AT THE SCIENCE AND TECHNOLOGY UNIVERSITIES IN ESTONIA, FINLAND, LATVIA AND POLAND. A COMPARATIVE STUDY.

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Abstract

The paper presents the results of the parallel research into e- and b-learning information literacy projects conducted at the science and technology universities in February and March 2011 in four countries.

Design/methodology/approach: a common survey was prepared to conduct a parallel research in Estonia, Finland, Latvia and Poland – the countries from Baltic Region. It focused on the following main areas of interest: information literacy e-learning projects and programs already introduced and planned for the future, platforms in use, target groups (e.g. academic staff, students), outcomes and measures. A common questionnaire with closed questions was applied, which has made it possible to tabulate data. Library induction and information literacy courses carried out in traditional face-to-face form constitute background for distance learning projects therefore information about e-learning has been supplemented with concise information about it. The results from all the countries have been collected and presented in a unified format so that they can be easily compared. In conclusion some value-adding activities that might be applied by libraries to introduce or enhance their e- and b-learning services have been proposed.

Findings of the survey show the state of art in e- and b-learning information literacy projects at the technical universities in countries considered. The results may be useful for libraries to assess their readiness to adjust to changing patterns of learning and teaching and therefore to enhance their services. The easily comparable data can also be used for further study.

Keywords: e-learning, b-learning, information literacy, library skills, information education, comparative study

1. Introduction – impact of e-learning on library and information services

“Online and physical learning spaces are affected by diverse contemporary phenomena such

as the extensive use of digital technologies, an emphasis on learner-centred study and the need for environmental sustainability” [JISC, Learning Environments]. New computer and information technologies influence learning and teaching patterns. The evolution of learning and teaching is reflected in the development of virtual learning environments. Universities create user-centred range of services including distance-learning programmes and facilities. E-learning is becoming an increasingly important approach to learner-centered education.

For many years now academic libraries have been providing their users with basic library skills instruction. Mission statements of many academic libraries include provision of integrated library and information services for their users. Libraries seek also to assist students in their self-education and overall personal development including information literacy (IL) and information and communication technology (ICT) upskilling. In this context provision of modern e-courses by academic libraries seems to be a natural way of fulfilling their mission. That is why library and information services are increasingly involved in e-learning at various levels, from library induction on-line courses, through more advanced IL courses to stand-alone information science modules embedded in university curricula. Academic libraries are also involved in the design of learning materials, e-tutoring and e-support.

It is worth pointing out that effectiveness of learning in traditional and virtual environment does not significantly affect library skills learning outcomes. Results of the research reported [Beile P., 2002] showed that regardless of the learning environment (classroom library instruction or web-based tutorials) outcomes among graduate students tested proved to be similar. Library skills were measured with library skills quizzes immediately before and after the instruction. The scores increased significantly after instruction, which leads to conclusion that instruction was useful and effective, but did not significantly vary across learning environments.

Similar results showed an experiment conducted at the Cleveland University in 2009 [Xu Y., 2010]. An IL and ethics module was delivered as a component of the electrical engineering course at the Cleveland State University. Students participating in face-to-face seminar and students in the online module were tested before and after the course. Both groups made significant progress. Again, the results of pretest and posttest scores were similar regardless of the environment, which means that the effectiveness of the online module was equivalent to that of the seminar. Therefore “some of the fears of replacing face-to-face interaction with a librarian seem unwarranted in terms of impact on academic performance” [Beile, P., 2005, p. 6].

Application of distance learning for user education in Estonian, Finnish, Latvian and Polish technical university libraries was investigated through a survey. Its results provide an overview of library distance learning landscape in considered countries. In three of them e-learning has been introduced to supplement or replace traditional instruction. In all the countries technical university libraries surveyed declare that they are going to develop e-learning courses for end-users within the next two years. Library instruction target groups are the same in all four countries, however the groups that libraries tend to pay special attention to differ from country to country.

Most of libraries receive at least organizational support from their university e-learning units. However, there are also examples of self-sufficiency of the libraries and one example where the central university e-learning unit is managed by the library (the Library of the Technical University of Lodz, Poland).

1.1 Terminology

At the very beginning of the research the authors recognized the need to clarify some crucial terms to avoid possible intercultural misunderstanding. For the purposes of this paper the following terminology has been applied:

Distance education – an organizational form of education in which instructional provisions, tutorial interactions, individual control of learning, as well as monitoring of practice take place via media which make the simultaneous personal presence of tutors and students avoidable [FRITSCH, H., 2004].

E-learning is learning facilitated and supported through the use of information and communication technologies (<http://www.jisc.ac.uk/whatwedo/themes/elearning.aspx>). E-learning courses can be carried with or without tutor's supervision.

B-learning (blended learning, mixed learning) course is a combined course comprising face-to-face and the internet-based sessions.

“**Technical university**” and “**university of technology**” are used in this paper interchangeably and are understood as a higher education institution (academic level) focused on research and teaching engineering and science.

Librarian – a member of a library staff

Library induction (library orientation) – a basic introduction to library resources, facilities and services, usually designed for first-year students.

Information literacy (IL) – “knowing when and why you need information, where to find it, and how to evaluate, use and communicate it in an ethical manner” [CLIP, 2004].

Embedding an e-course into academic curricula refers both to basic level competencies courses contained within curricula (as separate mandatory or optional courses, no matter if credit-bearing or not) and to advanced IL courses inserted into curricula as stand-alone courses or as part of subject disciplines).

All the figures presented in the paper have resulted from the authors' research described below.

1.2 Method

A parallel research was carried in March 2011 in four countries. 25 copies of a questionnaire (Appendix A) were sent to the libraries of technical universities: 1 questionnaire in Estonia, 1 in Latvia, 5 in Finland and 18 in Poland. Out of 25 libraries approached, 20 ones replied to the survey: 1 library in Estonia, 1 library in Latvia, 4 out of 5 libraries approached in Finland and 14 out of 18 libraries approached in Poland (Appendix B).

A questionnaire consisted of 22 questions divided into 5 paragraphs which referred to organization of e-courses, embedding the library e-courses into academic curricula and involvement of libraries in supporting distance learning at parent universities, plans for organizing e- or b-learning courses in the future and funds for educational activities of the library. Respondents were also asked to provide background information about traditional methods of teaching applied at their libraries. The authors hoped for finding interrelations between educational performance to date and e-learning development. However, as no apparent correlation has been observed, information about traditional teaching has not been included in the paper. It has been collected for reference in Appendix C.

2. Context of the research.

Estonia, Finland, Latvia and Poland are Baltic countries in Central and North-Eastern Europe. Finland is the EU-15 state, whereas Estonia, Latvia and Poland joined the EU in 2004.

Country	Population (2010 Est.)	Internet Users, Latest Data	Penetration (% Population)	User Growth (2000-2010)	% Users Europe
Estonia	1,291,170	969,700	75.1 %	164.5 %	0.2 %
Finland	5,255,695	4,480,900	85.3 %	132.5 %	0.9 %
Latvia	2,217,969	1,503,400	67.8 %	902.3 %	0.3 %
Poland	38,463,689	22,450,600	58.4 %	701.8 %	4.7 %

Tab.1. Internet usage in considered countries

Source: Internet World Stats. Retrieved May 16, 2011 from <http://www.internetworldstats.com/stats4.htm#europe>

2.1. Distance learning policy in considered countries – an overview of basic law regulations

2.1.1. Estonia

At the state level the “Strategy of the Estonian e-learning Development Centre 2007 – 2010“ has been signed. The strategy is based on the planning and realization of e-learning in Estonian higher and vocational education through two consortia administrated by the Estonian e-learning Development Centre: Estonian e-University and Estonian e- Vocational School.

Estonian e-University is a consortium of universities and applied universities which was created in 2003. The foundation and full members are: Estonian Ministry of Education and Research, Estonian Information Technology Foundation, Tallinn University of Technology (TUT) and other seven universities (The Estonian e-Learning Development Centre).

At the university level each university has its own strategy. At Tallin University of Technology (TUT) a “Strategy of the TUT e-learning 2006 – 2010“ has been adopted by the Council of TUT. Although the web-based training courses began in 1997 at TUT, active developments in this area started within the Estonian e-University projects REDEL and VÕTI in 2004. The activities have been continued within the e-learning BeST programme of European Social Foundation (since 2008).

In 2009 the Educational Technology Centre to the TUT Open University was created. It offers multimedia services.

2.1.2. Finland

The Ministry of Education and Culture is responsible for implementing the education policy adopted by Parliament and the Government. After national elections Finnish government adopts every four years an Education and Research Development Plan which is based on the education and science policy aims recorded in the Government Programme and the Government’s Strategy Document (http://www.kka.fi/files/994/Quality_manual.pdf). There are altogether 16 universities in Finland. Ten are multidisciplinary and six specialized universities. All universities operate under the Ministry of Education and Culture and they confer bachelor’s, master’s, licentiate and doctoral degrees (3 + 2 + 4 years). University level education in technology is organized at five universities: Aalto University, Lappeenranta University of Technology, Tampere University of Technology, University of Oulu and Åbo Akademi University.

2.1.3. Latvia

At the state level distance education is defined in the Law of Higher Education, and mentioned in Latvian national Strategy. However, there are no confirmed state strategy or other regulations concerning distance learning at state level.

At the university level there is a Distance Education Study Centre of Riga Technical University as the unit of the Faculty of Electronics and Telecommunications. The objective of the Centre is to organize and develop distance learning courses and studies in the distance learning medium. The Centre is equipped with up-to-date telecommunications (*ISDN* videoconferences) and multi-media. Faculty staff and students are involved in the development of multi-media study materials and virtual forums on the Internet. The six universities of Latvia have signed a coloboration agreement on e-learning development. At present Latvian universities have modern e-learning environments. Many of them have moved to Moodle in recent years. At Riga Technical University many study courses are elaborated in e – environment and after connecting the students database with the virtual learning environment the usage of e-learning increased rapidly.

2.1.4. Poland

At the state level the provisions of the law regulation are consistent with the rules included in the Magna Charta of European Universities and with the requirements of the Bologna process. E-learning policy at higher education level is regulated by the Act of 27 July 2005 *Law on Higher Education* with further amendments [Law on Higher Education, 2005]. and the Regulation of the Minister of Science and Higher Education of 25 September 2007 [Rozporządzenie Ministra, 2007] with further amendments concerning requirements to be fulfilled in order to deliver higher education courses using distance education methods and techniques. According to the regulation, higher education institutions are entitled to provide distance learning courses for both full-time and extra-mural students. Except for practical training and laboratories, up to 60% of standard didactic hours for each course may be provided with distance-learning methods and techniques.

At the university level e-learning policies, organizational and operational arrangements depend on authorities of individual universities. They must be consistent with the state regulations and have their source in understanding the needs and rights of academic societies they serve.

In Poland there are 461 higher education institutions, including 18 public technical universities and 6 non-public technical ones. They operate on the basis of the Law on Higher Education of 2005. Out of nearly 2 million students in Poland, over 129 000 ones study at technical higher education institutions.

3. Results of the research

Results of the research have been divided into 5 groups which reflect topics of questions asked in the survey. If a library had not provided any e-course to the date of the survey, it proceeded in the questionnaire straight to the group of questions concerning plans of this library for the future provision of distance education.

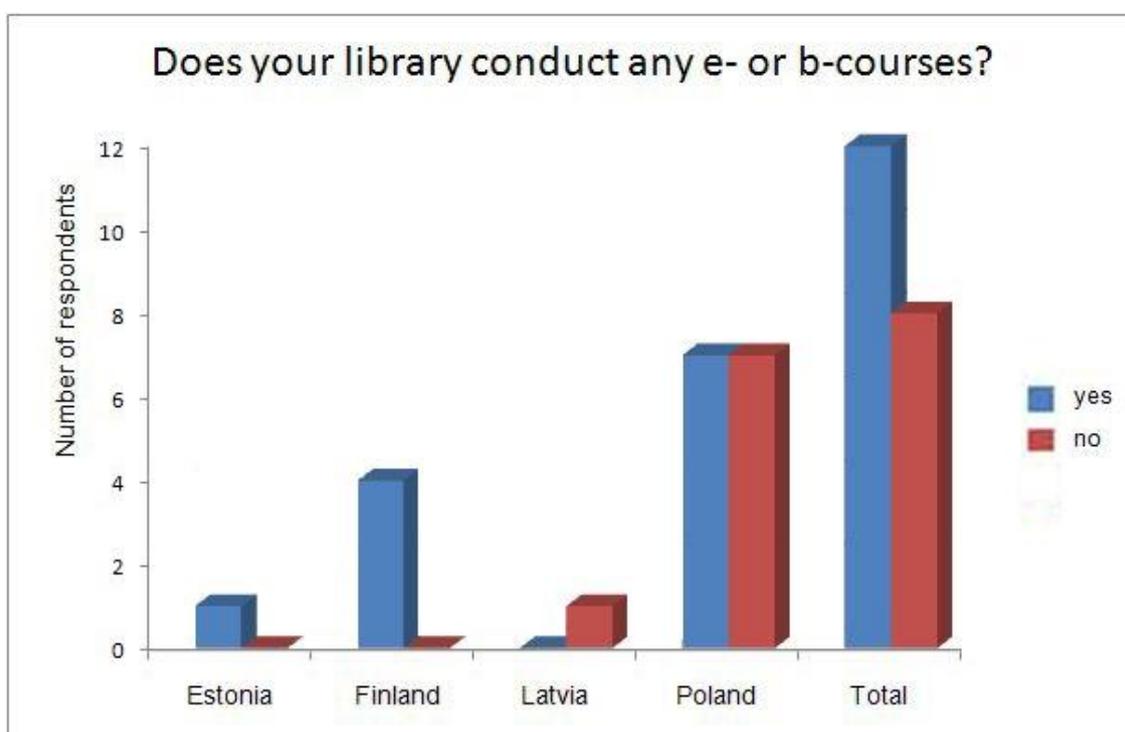


Fig.1. Libraries which have declared provision of e- or b-courses

Out of 20 technical libraries surveyed only 12 have declared provision of e-courses to date. They were all the libraries in Finland, half of libraries in Poland and the only technical library in Estonia. The library in Latvia does not conduct any e-course at the moment. However, some elements of e-course have been applied to a subject course which has been realized for several years at one of the academic departments. Riga Technical University plans to introduce e-courses in near future. Therefore, in the next chapter the libraries from only four countries have been considered.

3.1. E- and b-courses provided by libraries

E- or b-learning courses have been organized in libraries surveyed since mid nineties. Most experienced are Finnish libraries. Aalto University started providing e-courses in 1994, followed by the Tampere University of Technology (1996). The Estonian Library of Tallinn University of Technology has been conducting e-courses since 2000, the first Polish library induction e-course was organized in 2008 at Poznań University of Technology and the first Polish b-learning course embedded in students' curriculum as an individual optional module for 1 ECTS was introduced in 2009 at Cracow University of Technology.

Most popular e-learning platform is Moodle 1.95 – 2.0 which is used in all three countries. However, Finnish libraries have reported the use of other platforms, e.g. Discendum Optima, Ning, or Blackboard. One Polish library uses wbtserver.

Moodle is a Course Management System (CMS), also known as a Learning Management System (LMS) or a Virtual Learning Environment (VLE). It is a free web application that educators can use to create online learning sites (<http://moodle.org/>). Discendum Optima is a SaaS (Software as a Service) with flexible architecture an interface easy to be used. (http://www.discendum.com/english/tuotteet_eng/index.html). Ning is a platform for creating social websites. (<http://about.ning.com/product/>) and Noppa is the study and teaching portal. It is a tool for both students and lecturers of Aalto University and Lappeenranta University of Technology for everyday course work and communication. “Noppa is composed of course home pages that include e.g. course overviews, dates of lectures and exercises, course materials, information about assignments and exams, news and results.” (<https://noppa.lut.fi/noppa/app>). Blackboard in turn is an on-line platform tool. (<http://www.blackboard.com/>). Finally, one Polish library uses wbtserver. WBTServer is an LMS platform. It is a tool to create advanced eLearning courses (<http://www.4system.com/index.html>).

Content of the courses is prepared by librarians themselves. At one Polish library librarians are supported by external specialists. In each country (but not each library) multimedia for the courses prepare librarians together with other (often external) specialists.

E-learning library induction courses are usually prepared by 1-4 librarians. B-learning courses in turn are prepared by 1-10 teaching librarians (1-3 in Poland, 4-5 in Finland, 10 in Estonia).

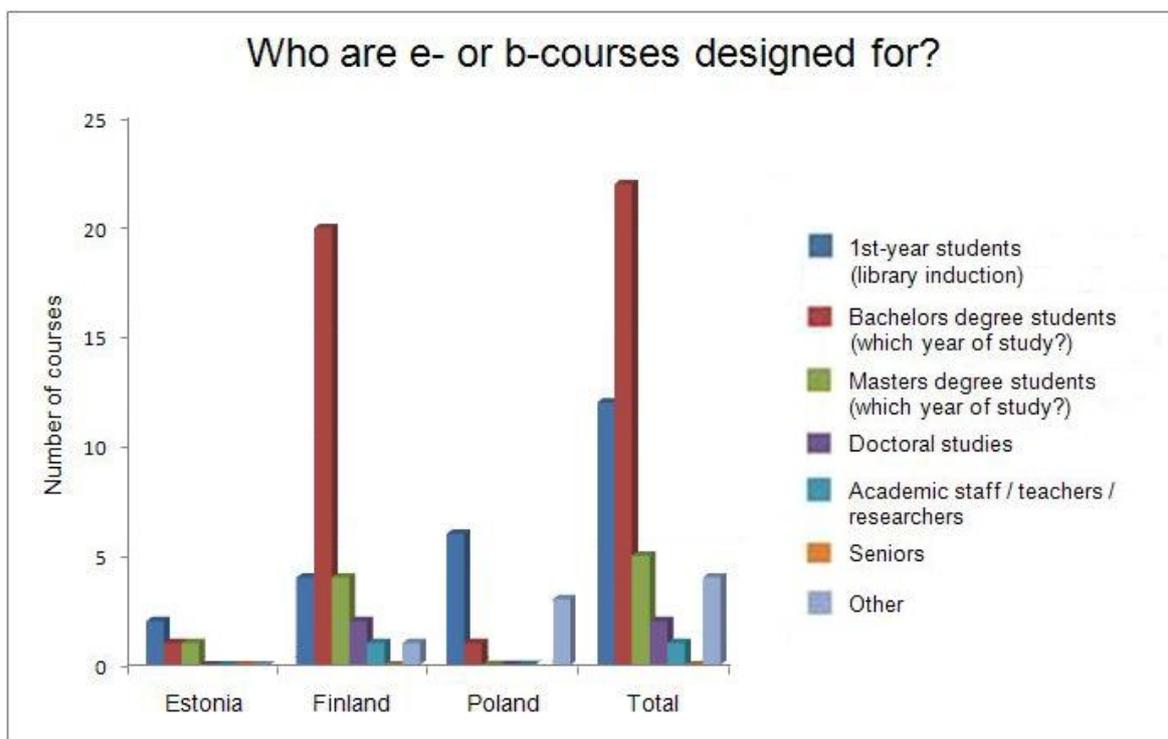


Fig. 2. Provision of library e- or b- courses for various target groups

Most of the libraries have declared library induction to be delivered as an e-learning course. However, significant difference between Finland and other countries can be observed as far as target groups for library e-learning courses are concerned. In Finland librarians seem to focus on e-courses for bachelor’s degree students, whereas in Estonia and Poland librarians tend to focus on newcomers. No library surveyed at any country organizes e- or b-learning courses for seniors.

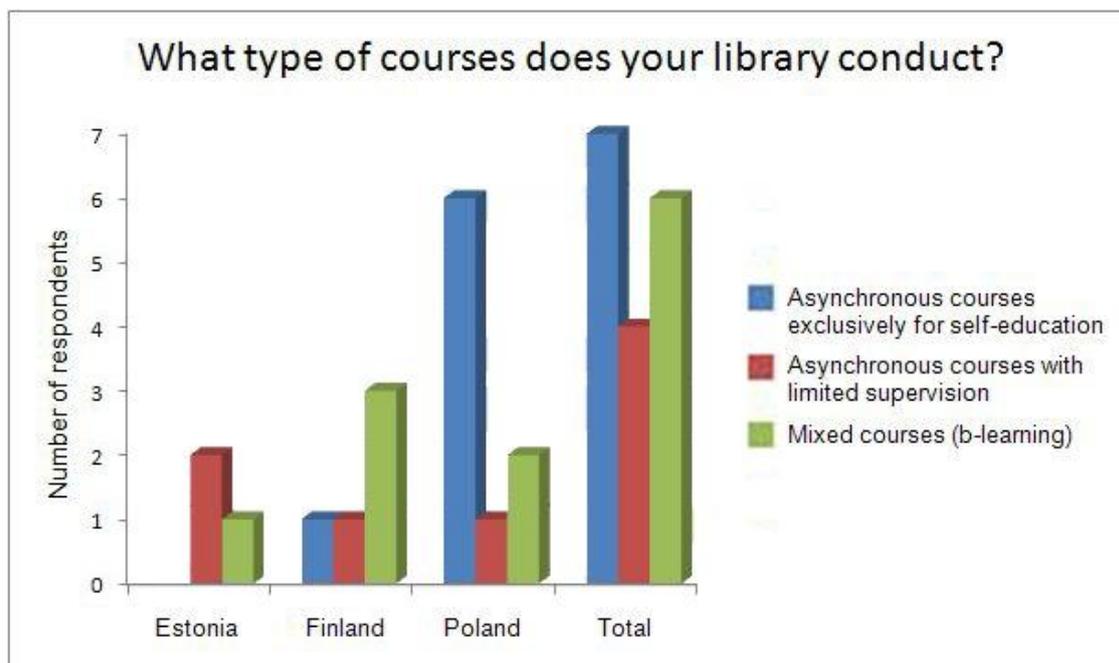


Fig. 3. Types of distance learning courses provided by libraries

Asynchronous courses exclusively for self-education i.e. without any supervision or assistance of librarians are most popular in Poland (6 libraries). In Finland only one library out of four conducts such a course. The library in Estonia prefers asynchronous courses with limited supervision (for master's and bachelor's degree students) but it provides also a mixed course for first-year students. Mixed courses are most popular in Finland. In Poland only two libraries have declared provision of such courses.

Number of hours that students are expected to devote for completing the course depends on the type of the course and varies from 1-5 hours for library induction to 88 for Information Literacy courses for master's or bachelor's degree courses.

How many hours are students expected to spend on each course?	Estonia	Finland	Poland
First-year students (library induction)	5	2-6	1-2
Bachelor's studies	88	5-20	15
Master's studies	88	20-52	
Academic staff / teachers / researchers		6-79	
Seniors	0	0	0
Other		12	5

Tab. 2. Number of hours that students are expected to devote for completing individual courses. Source: Results of the authors' research

Average numbers of participants of e-courses per year vary from 20-30 master's degree students in Estonia, through 1720 bachelor's degree students in Finland, to around 2600 first-year students at the Poznań University of Technology, Poland. None of the respondents reported number of academic staff – teachers or researchers – who have completed e-courses organized by the library.

3.2. Learning outcomes

Answers to the question about the assessment of learning outcomes require further discussion. Over 50% of respondents use course assessment surveys in the end of the course. However, it is not clear what the surveys refer to i.e. if they really measure knowledge gained by course participants or if they refer to organizational issues and overall perception of the course. In that context the authors have focused on the analysis of other measures declared to have been used. They are represented on the right side of the graph in fig. 4. An interesting one is comparison of the results of the same test delivered before and after the course. In e-learning environment it is an easy task which may prove advantageous both for the course creators and users. High scores of many participants at the beginning of the course may imply the need to bring up the course to a higher level. Participants in turn like to start the course with the test to see if they really need to take the course and to preliminarily check the time they would really have to spend on it.

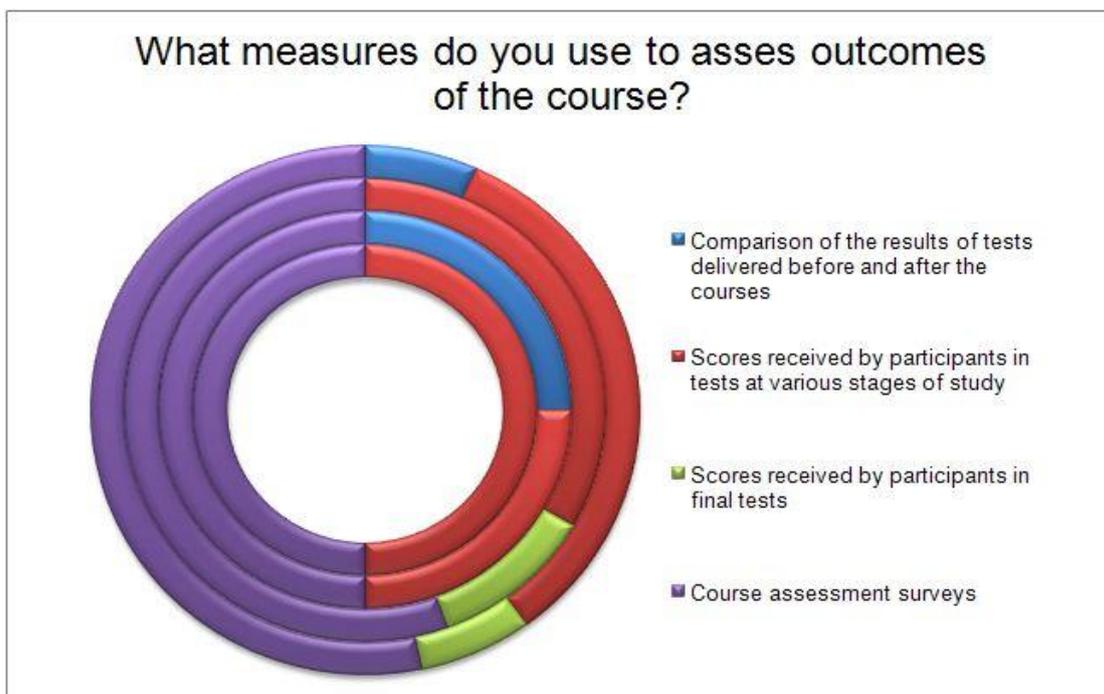


Fig. 4. Learning outcomes. Most internal circle presents measures used in Estonia. Further circles in outward direction refer to Finland and Poland. The very external one shows measures declared to be used by the libraries in total.

Assessment of learning outcomes may be formative or summative. Formative outcomes through some feedback help students to compare their results with ones expected to be achieved. They are often used at various stages of study. Summative outcomes produce a grade e.g. as a result of solving a test, usually in the end of the course.

3.3. Cooperation with parent university units

At most universities there are separate units responsible for the provision of e-learning courses. Usually they serve the whole university despite the fact that sometimes they are located within the structure of one specific faculty. However, this information refers only to those universities whose library declared to have provided e-courses. Out of libraries which have not organized e-courses only one Polish library indicated that in 2010 a new unit for e-learning had been established. On the other hand, the question about the existence of specialized e-learning units at the university was located in the end of the first part of the survey and might have been overseen by those libraries, which had not provided any e-courses.

In Estonia librarians conduct library induction courses individually, whereas advanced courses in cooperation with faculties. In Finland some courses are conducted exclusively by librarians and other in cooperation with faculties, depending on the university. Finally, in Poland two libraries declared that they get significant support from the e-learning unit in creation and supervision of e-courses. Majority of Polish libraries both prepare and conduct e-courses

themselves. At one Polish technical university an e-learning unit is located within the structure of the library. Therefore the library coordinates all the conceptual and technical issues concerning distance education of its parent institution.

The best way to deliver courses prepared by librarians effectively and efficiently is to integrate them with academic curricula. Library courses may be embedded into academic curricula as separate obligatory or optional modules. They may also constitute an integral part of any subject course. In that case they usually take into account subject specific context.

Embedding courses into curricula automatically makes them obligatory for groups of students. They are assessed and evaluated as part of students assignments. It is important, because if IL courses are not obligatory and assessed they are much less likely to be used. Such solutions encourage also partnership of academic and library staff. The survey has shown that such solutions are quite common in Finland and Estonia. In Latvia it refers to a traditional course prepared several years ago for chemistry department within a Dedicate Project with gradually implemented elements of e-course. In Poland IL courses integrated into curricula are either part of other courses or are taught as a separate course.

Finally, library courses, both library induction and more advanced IL courses, may supplement overall academic offer without any requirements to be used. Unfortunately, it seems to be most often case especially in Poland which have been proved by the results of the survey concerning credit points for completion of IL course.

Only one library (Cracow University of Technology) has declared IL course to be conducted at one university department as a separate optional module for one credit point. In Estonia in turn students get credit points for attending any library courses: one for the induction course, four for bachelor's and master's degree courses. In Finland all the libraries conduct library courses for one to three credit points.

Generally, Polish libraries offer mostly open self-paced on-line tutorials usually with very limited assessment. They are most often general and refer to overall information about library resources and services. A few examples of courses with direct relation to specific disciplines (most often chemistry) or focused on a selected set of documents or services have been mentioned.

A good Polish example of a library induction e-course is the very first such a course provided by the library of Poznan University of Technology. It offers informative lessons, presentations, examples, several tests at various levels of study and final assessment test to be completed in the end of the course.

Are the courses included in academic curricula?	Estonia	Finland	Poland	Remarks
yes, as separate courses				
obligatory	x	X	x	Finland – three universities Poland – three universities, courses obligatory for certain users
optional	x	X	x	Finland: - three universities Poland – one university
yes, as part of courses				
obligatory	x	X		Finland: - three universities
optional		X		Finland: - two universities
No				Poland
Do students get credits for completing courses in IL? If yes – how many?	1 to 4	1 to 3	1	Estonia: library induction – 1, bachelor's degree course – 4, master's degree course – 4, Finland (all four universities) – 1-3

				Poland bachelor's studies course – 1
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Tab. 3. Inclusion of library courses into academic curricula and credits received by students for completing the courses.

Last but not least, the real partnership of academics and librarians testifies their cooperation in the development and enhancement of education processes. Estonian and Finnish librarians declared to have cooperated closely with academics on new curricula including modern information resources and technologies. In Poland, apart from unique libraries, most declared lack of any liaisons with academics in the process of e-learning organization or new courses design. Moreover, resistance from faculties against library courses e-learning initiatives can be often observed, especially as far as integration with academic curricula is concerned.

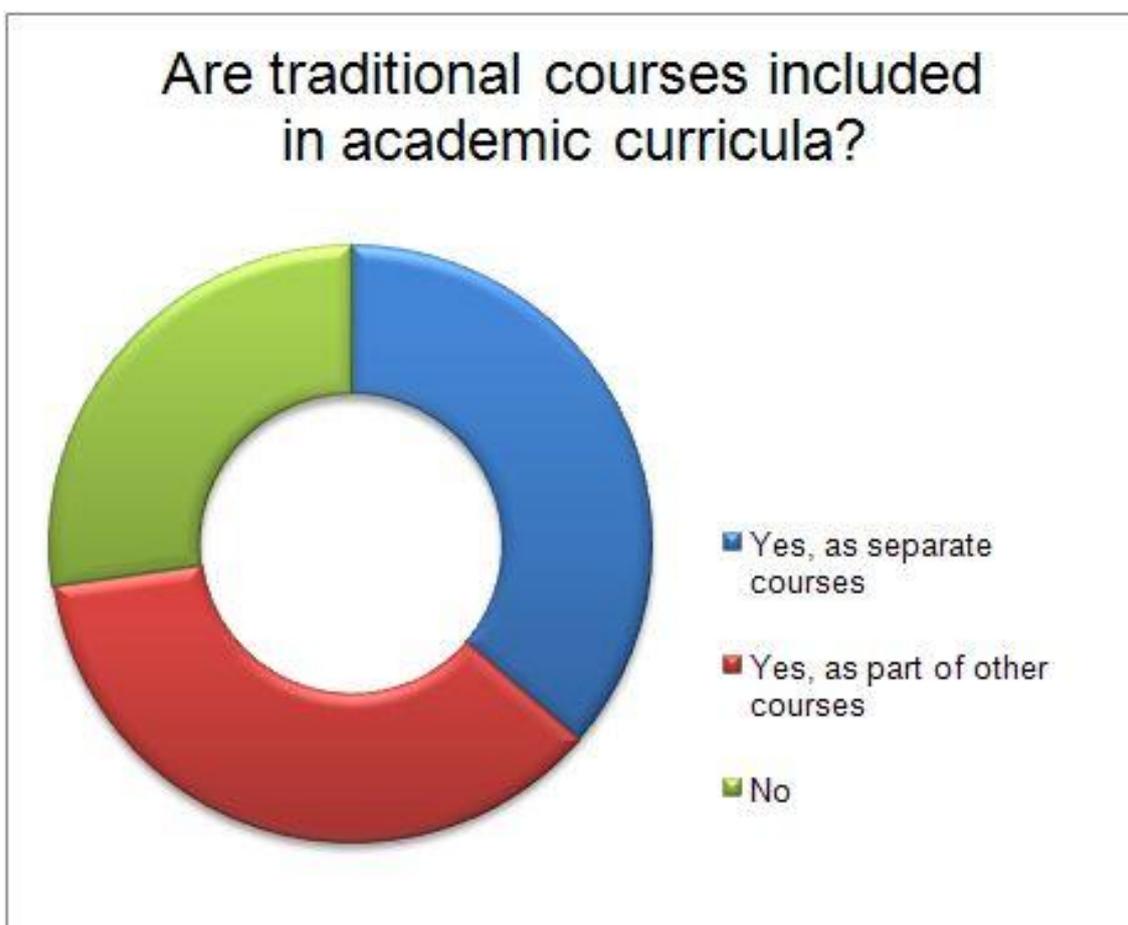


Fig.5. The inclusion of traditional courses into academic curricula

Embedding library e-courses into academic curricula depends on several issues, starting with an overall information literacy policy on the national level, through the IL guidelines or recommendation adopted at universities, to local background and university managers' perception of the role of IL in general and the partnership of academics with the library staff in the education processes in particular. Inclusion (or not inclusion) of traditional courses into curricula at individual universities seems to have affected importance and perception of IL e-courses within academic societies. Academic libraries in all four countries have been involved in library and information education for a long (and comparable) time. However, it is noticeable that educational activities in Estonian and Finnish libraries were better integrated into overall academic activities than in Latvia and Poland. It seems that that fact has affected further solutions concerning embedding e-courses into curricula. At the moment most of library e-courses in Estonia and Finland are highly valued at universities, which is reflected in the existing credit points system. Similar courses in Poland are in general non-credited, optional, supplementary service provided by libraries. It reflects to some extent relatively low status of

librarians in academic society caused also by underestimation of information literacy skills and knowledge.

3.4. Plans for the future

Most of libraries in all the four countries plan to develop e-courses in near future i.e. within two years. Only one respondent did not know about future plans yet, however this librarian wrote that they were aware of such a necessity (“we don’t know when, but we know we need it”). As far as future e-learning activities of libraries which already provide e-courses are concerned, they declare to enhance the existing ones, develop new ones or have them translated into English.

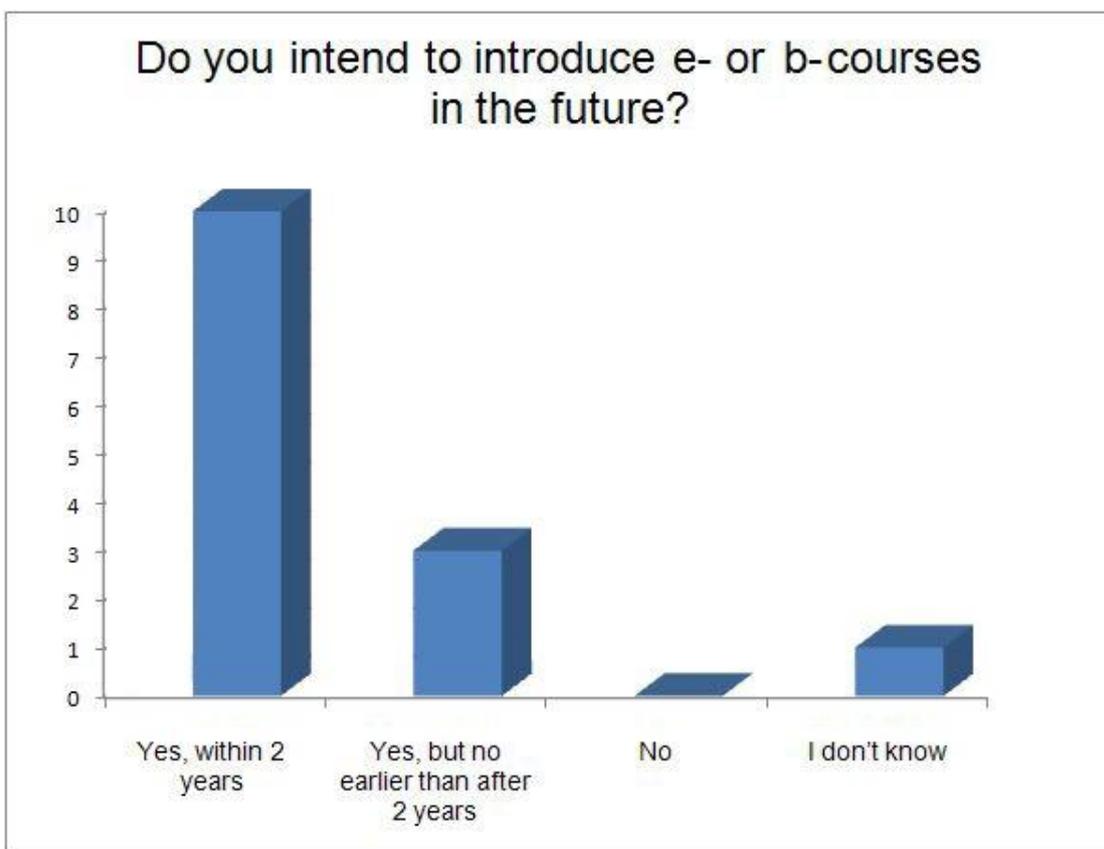


Fig. 6. Respondents' plans for the future concerning introduction or development of distance-learning courses.

Most of Polish technical academic libraries plan to deliver library courses for various groups of users within two years. No significant preferences can be observed as far as type of such courses is concerned. Six libraries plan to introduce asynchronous courses with limited supervision, six ones prefer courses without any supervision or assistance, five libraries would like to introduce b-learning. Similar trends can be observed in all four countries surveyed. It is important that several libraries have noticed the requirement to train librarians how to deliver e-courses (e-courses for teaching e-librarians).

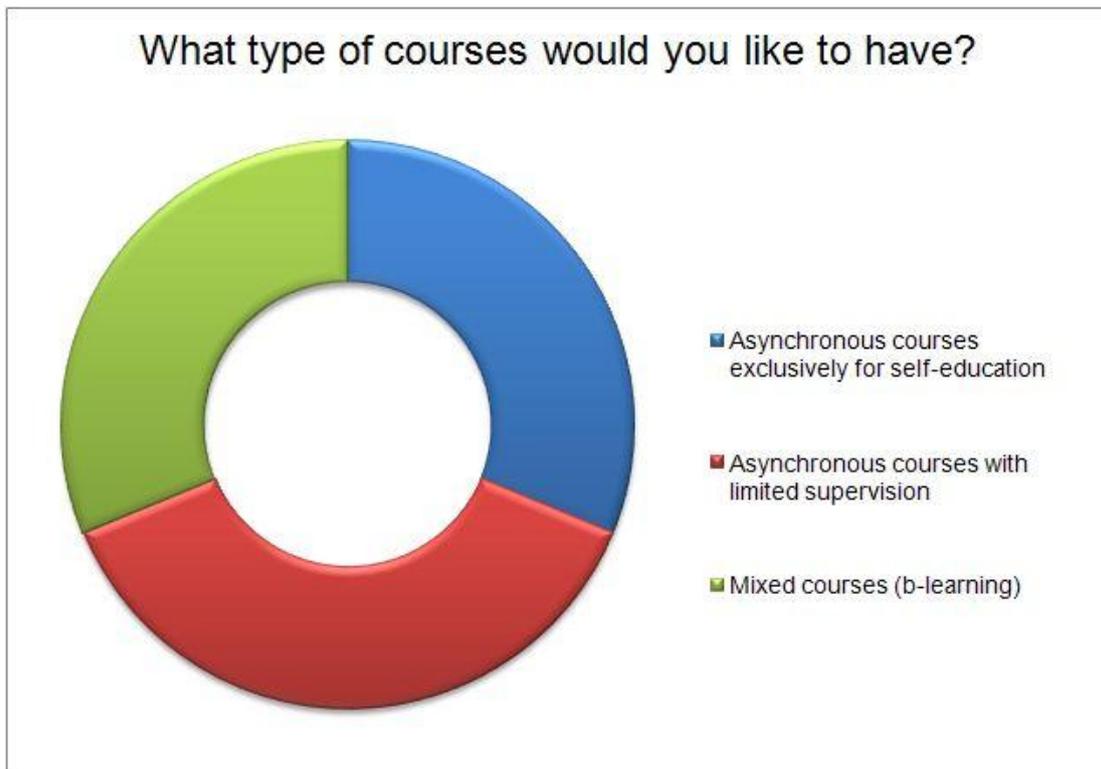


Fig. 7. Most desired types of future courses.

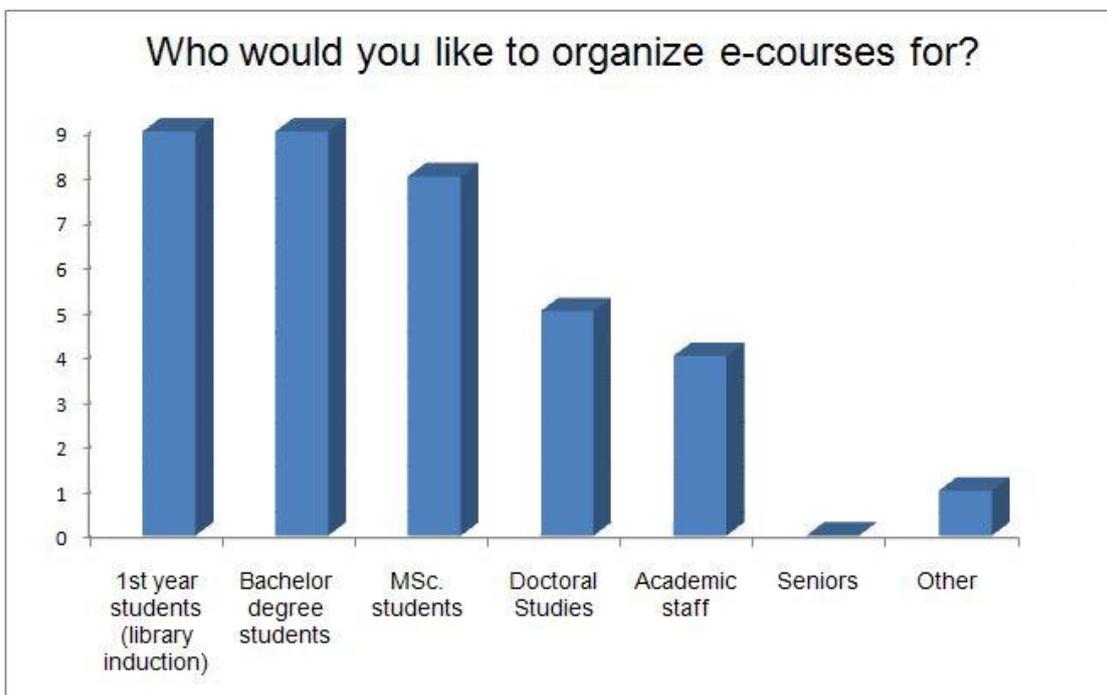


Fig. 8. Desired target groups of future e-courses.

3.5. Funds for library training

Educational activities conducted by libraries are funded mainly from the library budget. Some additional funds come from parent universities. Libraries have also reported some funds from external EU grants. Two libraries organize paid e-courses for external users.

4. Conclusions

Librarians of technical university libraries surveyed are well aware of the need to teach users (and non-users) of their libraries how to efficiently use information resources. In fact they have been doing it for many years [Appendix C]. Traditional IL courses at most of libraries started to have been delivered at the very beginning of these libraries activities, most often in the fifties or sixties of the previous age. As the information technology development has dramatically changed the ways of access to documents, solving information problems (i.e. identifying information needs, locating adequate sources, extracting and organizing relevant information and synthesizing information from various sources) is crucial for students and academics. Many experiments confirm that explicit and intensive instruction is necessary, because solving information problems is a complex cognitive skill [Wopereis, I., 2008]. Such instruction varies from upgrading basic library skills to comprehensive IL education including advanced research skills, assessment of resources and ethical issues (e.g. plagiarism).

Distance learning is used as a supplement to existing traditional user education in order to support student-centered learning. However, respondents indicated that the use of e-tools in library education will increase significantly in the next two years. There are a number of internet-based models of learning (which is an interesting topic for further research) and several e-learning platforms in use. Less than half of the libraries surveyed make use of educational e-learning platforms for teaching so far. Some misunderstanding concerning e-courses can still be observed – some libraries treat web tutorials (especially those with multimedia included) as e-courses. It is important to remember that e-learning courses as an element of distance education include instructional provisions, tutorial interactions, individual control of learning, as well as monitoring of practice.

In view of several research into learning outcomes of instruction provided in different environments [Baile, P. 2002, Wopereis, I., 2008, Xu, Y., 2010] e-learning courses are a desirable form of learner-centered instruction. Therefore libraries generally tend to introduce e-courses in addition to or instead of traditional face-to-face classes. Generally, desired types of future courses i.e. asynchronous courses without any assistance of a tutor, asynchronous courses with a limited supervision or mixed learning (b-learning) have received equal support from respondents i.e. similar numbers of respondents declare to provide new asynchronous courses with or without supervision and b-courses in the next two years. It is noticeable that libraries which have been using e-platforms for many years develop mainly b-courses and so are their plans for the future, whereas novices in e-learning plan to introduce mainly courses without any supervision to replace traditional ones. On the other hand, several libraries declare that after few years of exclusively e-courses practice they have noticed the need to deliver traditional ones as well. These remarks should not be deminished when transition to e-courses is considered.

Furthermore, libraries which have been providing e- or b-courses on various levels for many years (Estonia, Finland) most often have them embedded into academic curricula. Students develop their information competencies throughout the whole process of study. Apart from library induction, which most often is compulsory for novices, the IL courses are either stand-alone modules for 1-4 ECTS credit point or they are embedded into subject courses and supervised by subject librarians. If library courses are embedded into academic curricula “students have ongoing interaction and reflection with information” within units and across year levels, throughout their course. Students skills develop progressively from first year and throughout subsequent years of the course” [Australian and New Zealand Information Literacy Framework, 2004]. The same rules apply both to distance and traditional courses. In Latvia (Riga Technical University) IL courses are not embedded into academic curricula but they are obligatory for certain groups. Also in Poland IL courses are not obligatory, except a few universities and certain groups of users. It results in relatively low interest of students in courses provided by libraries. Significant discrepancy can be observed between relatively high numbers of first-year students trained by Latvian and Polish librarians at the beginning at their study and low numbers of students participating in advanced IL courses for bachelor’s or master’s studies [Appendix C]. Thus it seems crucial for the improvement of students IL competencies to strive for embedding professional IL courses into academic curricula.

Estonian and Finnish libraries focus on IL courses for bachelor’s and master’s studies. Libraries without e-teaching background in turn tend to focus on library induction e-courses. On one

hand, such an approach can be easily explainable – library orientation courses are good starting points for IL education of students. On the other hand it is important to have in mind, that IL competencies should be developed at further stages of subject education, preferably with some group work, discussion and assistance (b-courses).

Interrelations between faculties and libraries are an important factor in IL education at the academic level. Estonian and Finnish respondents reported active participation of librarians in academic curricula development and e-learning organization at their parent universities. The role of librarians in academic teaching in Poland is often diminished. However, some positive examples of librarians participation in academic education processes have been noticed, including an example of Lodz Technical University Library responsible for coordination of e-learning activities within the parent institution. It is advisable that libraries try to persuade academic authorities to have them involved in teaching processes. It requires openness and flexibility of both sides, however, pro-active approach of libraries is of unquestionable importance. "After many years of librarians working hard to build working relationships with academic colleagues, e-learning offers the potential to engage as true partners in learning and teaching and in some instances to take the lead" [SCONUL, 2005]. And this opportunity should not be missed..

In some countries academic organizations and library associations for many years have been working on standards, guidelines and recommendations concerning distance education for academics, librarians and policy makers. Activities of UK Joint Information Systems Committee (JISC) [<http://www.jisc.ac.uk>], the Society of College, University and National Libraries (SCONUL) [<http://www.sconul.ac.uk>] or Universities and Colleges Information Systems Association (UCISA) [<http://www.ucisa.ac.uk>], Association of College and Research Libraries ACRL [<http://www.ala.org/ala/mgrps/divs/acrl/index.cfm>] or Australian and New Zealand Institute for Information Literacy (ANZIL) [<http://www.anzil.org/>] can inspire academic institutions not only in their parent countries but also in other ones to innovative use of digital technologies. Librarians from the countries less-experienced in e-learning may learn the lesson from those who have already worked out standards and guidelines for IL education.

Finally, the survey described above was conducted by librarians and referred to IL education as defined in 1.2. In other words it focused on the development of basic and advanced personal IL skills. It should be noticed however, that there are many concepts of information literacy. Carla Basili discusses three perspectives for analysis of IL: socio-political (IL as an educational policy goal), disciplinary (as a form of study) and cognitive (as a form of personal competences) [2006, 2008]. "Adoption of a comprehensive policy on Information Literacy is crucial for its institutionalisation within the Higher Education context" [Basili, C., 2006].

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APPENDIX A

SURVEY FORM

I. Organization of courses

1. Does your library conduct any e- or b-courses?

- a. Yes
- b. No – *go straight to III.*

2. Who are e- or b-courses designed for?

- a. 1st year students (library induction)
No of courses:.....; Average No of participants per year:.....
Time students are expected to spend on the course (No of hours):.....
- b. Bachelor's studies (which year of study?)
No of courses:.....; Average No of participants per year:.....
Time students are expected to spend on the course (No of hours):.....
- c. Master's studies (which year of study?)
No of courses:.....; Average No of participants per year:.....
Time students are expected to spend on the course (No of hours):.....
- d. Doctoral Studies
No of courses:.....; Average No of participants per year:.....
Time students are expected to spend on the course (No of hours):.....
- e. Academic staff/ teachers/.
No of courses:.....; Average No of participants per year:.....
Time students are expected to spend on the course (No of hours):.....
- f. Seniors
No of courses:.....; Average No of participants per year:.....
Time students are expected to spend on the course (No of hours):.....
- g. Other (who?)
No of courses:.....; Average No of participants per year:.....
Time students are expected to spend on the course (No of hours):.....

3. What type of courses are they?

- a. Asynchronous courses exclusively for self-education (without any assistance of teachers or tutors)
- b. Asynchronous courses with limited supervision (i.e. tutor replies for questions and/or assists with assignments)
- c. Mixed courses (b-learning) – synchronous on-site (in the library or at the departments) and asynchronous distance course (on the platform), a teacher / tutor involved in the whole course
- d. Other (please describe)

4. How long has your library been involved in e-teaching? (the year your library started e-teaching)

5. How many library staff is involved in e- teaching?

- a. Asynchronous:.....
- b. Mixed :.....

6. Which e-learning platform is used for e-learning at your library / university? (name, version)

.....

7. Who prepares content for the courses?

- a. Librarians themselves
- b. Librarians supported by other specialists
- c. External specialists (where from?).....

8. Who prepares multimedia?

- a. Librarians themselves
- b. Librarians supported by other specialists
- c. External specialists (where from?).....

9. **Is there at your parent university an organizational unit responsible for distance-learning**
- Yes
 - No

II. Embedding the library e-courses into academic curricula. Involvement of the Library in supporting distance learning at the parent university

- Does your library conduct e-courses individually or in cooperation with university departments (faculties, other units)?**
 - Individually
 - In cooperation with other units (which ones? Who plays the role of a coordinator?).....
- Are the courses included in academic curricula?**
 - Yes, as separate courses
 - obligatory
 - optional
 - Yes, as part of other courses
 - obligatory
 - optional
 - No
- Do students get credits for completing courses in IL?**
 - Yes (how many?).....
 - No
- Has your library been involved in the process of e-learning courses design and/or management at your parent university?**
.....
- What measures do you use to assess outcomes of the courses?**
 - Comparison of the results of tests delivered before and after the courses
 - Scores received by participants in tests at various stages of study
 - Scores received by participants in final tests
 - Course assessment surveys
 - Other (please specify)
 - Your comments
.....

III. Plans for organizing e- or b-learning courses in the future?

- Do you intend to introduce e- or b- courses in the future?**
 - Yes, within 2 years
 - Yes, but no earlier than after 2 years
 - No (why not?)
 - I don't know.
- Who would you like to organize e-courses for?**
 - 1st year students (library induction)
 - Bachelor's studies (which year of study?)
 - Master's studies (which year of study?)
 - Doctoral Studies
 - Academic staff/ teachers/.
 - Seniors
 - Other (who?)
- What type of courses would you like to have?**
 - Asynchronous courses exclusively for self-education (without any assistance of teachers or tutors)
 - Asynchronous courses with limited supervision (i.e. tutor replies for questions and/or assists with assignments)

3. Mixed courses (b-learning) – synchronous on-site (in the library or at the departments) and asynchronous distance course (on the platform), a teacher / tutor involved in the whole course
4. Other (please describe)

IV. Teaching background (traditional teaching)

1. How long has your library been involved in traditional teaching? (the year of the first course).
2. How many people (on average) do you train per year?
 - a. 1st-year students (library induction)
 - b. Bachelor's studies (which year of study?)
 - c. Master's studies (which year of study?)
 - d. Doctoral studies
 - e. Academic staff / teachers / researchers
 - f. Seniors
 - g. Other (who?)
3. How many library staff is involved in traditional teaching of the following groups?
 - a. 1st-year students (library induction)
 - b. Bachelor's studies (which year of study?)
 - c. Master's studies (which year of study?)
 - d. Doctoral studies
 - e. Academic staff / teachers / researchers
 - f. Seniors
 - g. Other (who?)
4. Are traditional courses included in academic curricula?
 - a. Yes, as separate courses
 - i. obligatory
 - ii. optional
 - b. Yes, as part of other courses
 - i. obligatory
 - ii. optional
 - c. No

V. Funds for educational activities of the library

What are the sources of funds for educational activities conducted by your library?

- a. From the budget of the library
- b. From the budget of the parent university
- c. From external sources (e.g. grants)
- d. From other sources (please, specify)

Your comments:

.....

INFORMATION ABOUT YOUR PARENT UNIVERSITY (as of 31 December 2010)

No of full-time students.....
 No of extra-mural students
 No of academic staff

INFORMATION ABOUT THE LIBRARY

No of library staff
 No of registered users
 including:
 No of students of the parent university
 No of employees of the parent university

APPENDIX B

Technical universities which libraries responded to the survey

Estonia

Tallinn University of Technology

Finnland

1. Aalto University
2. Lappeenranta University of Technology
3. Oulu University
4. Tampere University of Technology

Latvia

Riga Technical University

Poland

1. Białystok University of Technology
2. University of Bielsko-Biała (Academy of Technology and Humanities)
3. Częstochowa University of Technology
4. Silesian University of Technology
5. Kielce University of Technology
6. Koszalin University of Technology
7. AGH University of Science and Technology
8. Cracow University of Technology
9. Lodz University of Technology
10. Poznań University of Technology
11. Rzeszów University of Technology
12. West Pomeranian University of Technology
13. Warsaw University of Technology
14. Wrocław University of Technology

APPENDIX C

Brief description of public technical libraries which responded to the survey and their parent universities

Estonia

University	Library
<p>Tallinn University of Technology (TUT) http://www.ttu.ee/</p> <p>The only national technology university in Estonia, it supports sustainable development of Estonia through scientific research and science-based higher education in the field of engineering, technology, natural and social sciences.</p> <p>TUT was founded in 1918 and is one of the largest universities in Estonia.</p> <p>It has over 14 000 students and personnel of about 2000. The university offers engineering and economics diploma, bachelor's, master's and doctoral degree programmes.</p> <p>University comprises of 8 faculties, 33 departments, 9 faculty research centres, 10 affiliated institutions.</p> <p>More details: http://www.ttu.ee/tallinn-university-of-technology/about-tut/facts-and-figures/</p>	<p>Tallinn University of Technology (TUT) Library http://www.ttu.ee/library/</p> <p>Founded in 1919, is the university centre of library services and electronic information. It provides information for academic, research and development activities at TUT. As the only scientific technical library in Estonia it is open for public use.</p> <p>Library has about 26 000 users, including 10 000 external users.</p> <p>Annual visits reach 285 000, an average number of daily visits is about 1800 - 2000.</p> <p>Library holds over 720 000 titles of printed books or journals. In 2010 university's computer network allowed access to nearly 65 000 e-journals, 60 000 e-books and different bibliographic, review and fact related databases.</p> <p>Searches to licensed databases: 470 000, with downloading of nearly half a million documents.</p> <p>User education – 847 hours of user training sessions with 2278 participants.</p> <p>Library staff - 74 (FTE). Total staff, incl. TUT Press and TUT Museum, - 84</p> <p>Library induction since 1961</p> <p>More details: http://www.ttu.ee/library/about-library/the-library-in-figures/</p>

Finland

University	Library
<p>Aalto University was established in January 2010 as merger of three Finnish higher education institutes: Helsinki School of Economics, Helsinki University of Technology and University of Art and Design Helsinki. Aalto University is a foundation-based university. Aalto University is second biggest university in Finland with its 19 500 students. Staff is 4 300. Since the beginning of year 2011 it comprises of six schools: School of Engineering, School of Chemical Technology, School of Science, School of Electrical Engineering, School of Economics and School of Art and Design.</p> <p>http://www.aalto.fi/en/about/statistics/</p>	<p>Aalto University Library consists of three libraries: Arabia Campus Library, Otaniemi Campus Library and Töölö Campus Library. The Otaniemi Campus Library's predecessor Helsinki University of Technology library was founded in 1849. The Otaniemi Campus Library has organized e-courses since 1994. The library personnel have been very active in piloting new pedagogical methods and ways to organise trainings.</p>
	<p>Helsinki University of Technology Library data as of 2009:</p> <p>8 300 users (6 400 internal, 1 900 external)</p> <p>No of visits - 233 000</p>

	<p>No of visits to library's web pages - 9 953 387</p> <p>User education - 3 929 hours with 2 636 participants</p> <p>Library staff – 57</p> <p>Library induction since 1970</p> <p>E-learning courses – yes, since 1994</p> <p>http://lib.tkk.fi/Julkaisut/vuosikertomus2009.pdf</p>
<p>Lappeenranta University of Technology</p> <p>http://www.lut.fi/en/lut/Pages/Default.aspx</p>	<p>Lappeenranta University of Technology Library</p> <p>http://www.lut.fi/en/library/pages/default.aspx</p> <p>Library induction since 1978</p> <p>E-learning courses – yes, since 2001</p>
<p>Tampere University of Technology</p> <p>http://www.tut.fi/en/</p>	<p>Tampere University of Technology Library</p> <p>http://www.tut.fi/library/dlib/</p> <p>Library induction since 1975</p> <p>E-learning courses – yes, since 1996</p>
<p>University of Oulu</p> <p>http://www.oulu.fi/english/</p>	<p>Science and Technology Library Tellus</p> <p>http://www.kirjasto.oulu.fi/index.php?id=533</p> <p>Library induction since 1985</p> <p>E-learning courses – yes, since 2007</p>

Latvia

University	Library
<p>Riga Technical University (RTU)</p> <p>http://www.rtu.lv/en/</p> <p>RTU is the only multi-branch technical university in Latvia. RTU was founded in 1862 and is the oldest higher educational establishment of Latvia. The principal goal of RTU is to provide the Latvian national economy with qualified human resources for its stable growth and development. At the moment RTU is the second largest university in Latvia and there are almost 16 000 students, including 12 000 full-time students, 4000 part-time students and about 1000 academic staff. The university offers academic and professional study programmes at three levels – undergraduate, postgraduate and doctoral studies</p> <p>To date the RTU comprises 8 faculties. There are also part-time and correspondent</p>	<p>RTU Scientific Library (SL)</p> <p>http://www.rtu.lv/en/content/view/3771/2037/lang_en/</p> <p>Founded in 1862 RTU SL is the only library in Latvia having a rich collection of information resources on engineering and architecture to be drawn on as a relevant source of reference for developing the Latvian national economy. The collection of the Scientific Library is being developed in accordance with the areas of RTU academic activities and research.</p> <p>The library provides readers with an access to a collection of about 1.800,000 printed items on natural sciences, engineering, architecture, economics and other scientific areas. The holdings are located in the central building and in eight branch libraries as well as in lending departments and reading-rooms.</p> <p>The library users have access to the library information and electronic resources (e-books, e-journals and databases) through the library homepage and the university portal ORTUS. There were 250 430 searches to databases and about 600 000 downloads in 2010. The Library has about 19 000 users, who visited library 350 000 times.</p> <p>No of library staff: 47 (FTE). Total staff – 59</p> <p>No of registered users: 19 082 including:</p> <p>No of students of the parent university: 16 000</p> <p>No of employees of the parent university: 400</p> <p>Library induction since 1999</p>

<p>departments. The RTU has branches in the 3 largest towns of Latvia – Daugavpils, Liepaja, and Ventspils.</p> <p>No of full-time students: 12 000</p> <p>No of extra-mural students: 4 000</p> <p>No of Academic staff 800</p>	E-learning courses – no
--	-------------------------

Poland

<p>Białystok University of Technology</p> <p>http://www.pb.edu.pl/en/</p> <p>Data as of 31 Dec 2010</p> <p>No of full-time students: 9 723</p> <p>No fo extra-mural students: 3 877</p> <p>No of academic staff: 676</p>	<p>The Library of Białystok University of Technology</p> <p>http://www.pb.edu.pl/en/library.html</p> <p>No of the library staff: 44</p> <p>No of registered users: 9 421</p> <p>including:</p> <p>No of parent university students: 7 758</p> <p>No of parent university staff: 820</p> <p>Library induction since 1970</p> <p>Average number of users trained per year:</p> <ul style="list-style-type: none"> • No of first-year students (library induction): 800 • Bachelor's studies: 90 • Master's studies: 90 <p>No of library staff involved in traditional teaching: 4</p> <ul style="list-style-type: none"> • For first-year students (library induction): 4 • For Bachelor's studies: 4 • For Master's studies: 4 <p>E-learning courses – no</p>
<p>University of Bielsko-Biała (Academy of Technology and Humanities)</p> <p>http://www.ath.bielsko.pl/english/</p> <p>Data as of 31 Dec 2010</p> <p>No of full-time students: 4 522</p> <p>No of extra-mural students: 2 868</p>	<p>The Main Library of the University of Bielsko-Biała (Academy of Technology and Humanities)</p> <p>http://www.bibl.ath.bielsko.pl/index_en.php</p> <p>No of the library staff: 14</p> <p>No of registered users: 8 909</p> <p>including:</p> <p>No of parent university students: 8 352</p> <p>Library induction since 1983</p> <p>Average number of users trained per year:</p> <ul style="list-style-type: none"> • No of first-year students (library induction): 1 400 • Bachelor's studies: 0 • Master's studies: 0 <p>No of library staff involved in traditional teaching:</p>

	<ul style="list-style-type: none"> • For first-year students (library induction): 4-5 <p>E-learning courses – no</p>
<p>Częstochowa University of Technology http://www.pcz.pl/english/</p> <p>Data as of 31 Dec 2010</p> <p>No of full-time students: 7 145</p> <p>No of extra-mural students: 4 610</p> <p>No of academic staff: 817</p>	<p>The Main Library of Częstochowa University of Technology http://www.bg.pcz.pl/ [in Polish]</p> <p>No of the library staff: 38</p> <p>No of registered users: 7 234</p> <p>including:</p> <p>No of parent university students: 5028</p> <p>No of parent university staff: 837</p> <p>Library induction since 1950</p> <p>Average number of users trained per year:</p> <ul style="list-style-type: none"> • No of first-year students (library induction): 1502 • Bachelor's studies: 22 • Master's studies: 25 • PhD studies: 20 • Academic staff of parent university: 60 • Other (students of high schools) : 17 <p>No of library staff involved in traditional teaching:</p> <ul style="list-style-type: none"> • For first-year students (library induction): 10 • For Bachelor's studies: 3 • For Master's studies: 3 • PhD studies: 6 • Other: 4 <p>E-learning courses – no</p>
<p>Silesian University of Technology http://www.polsl.pl/en/Strony/0_welcome.aspx</p> <p>Data as of 31 Dec 2010</p> <p>No of full-time students:</p> <p>No of extra-mural students:</p> <p>No of academic staff:</p>	<p>The Main Library of Silesian University of Technology http://www.polsl.pl/Jednostki/RJO1/Strony/witamy.aspx [in Polish]</p> <p>No of the library staff:</p> <p>No of registered users:</p> <p>including:</p> <p>No of parent university students:</p> <p>No of parent university staff:</p> <p>Library induction since 1975</p> <p>Average number of users trained per year: 1 000</p> <p>No of library staff involved in traditional teaching:</p> <ul style="list-style-type: none"> • For first-year students (library induction): 2 • For Bachelor's studies: 4 • For Master's studies: 2 • For PhD studies: 2

	<ul style="list-style-type: none"> For academic staff of parent university: 2 E-learning courses – yes, since 2009
Kielce University of Technology http://www.tu.kielce.pl/en/	The Main Library of Kielce University of Technology http://lib.tu.kielce.pl/ [in Polish] E-learning courses - no
Koszalin University of Technology http://www.tu.koszalin.pl/eng/ Data as of 31 Dec 2010 No of full-time students: 6 135 No of extra-mural students: 3 268 No of academic staff: 525	The Library of Koszalin University of Technology http://biblioteka.tu.koszalin.pl/ [in Polish] No of the library staff: 18 No of registered users: 7 122 including: No of parent university students: 9403 No of parent university staff: 958 Library induction since 1984 Average number of users trained per year: <ul style="list-style-type: none"> No of first-year students (library induction): 2000 E-learning courses – yes, since 2010
AGH University of Science and Technology http://www.agh.edu.pl/en Data as of 31 Dec 2009 No of full-time students: 23 261 No fo extra-mural students: 8 585 No of academic staff: 4 072	The Library of AGH University of Science and Technology http://www.bg.agh.edu.pl/EN/index.php?p=home&skin=1 No of the library staff: 85 No of registered users: 29 933 including: No of parent university students: 25 290 No of parent university staff: 3088 Library induction since 1970 Average number of users trained per year: <ul style="list-style-type: none"> No of first-year students (library induction): 569 (in the academic years 2009 / 2010) Master's studies: 384 No of library staff involved in traditional teaching: <ul style="list-style-type: none"> For first-year students (library induction): 26 For Master's studies: 6 E-learning courses – yes, since 2010
Cracow University of Technology http://www.en.pk.edu.pl/ Data as of 31 Dec 2010 No of full-time students: 12 025 No of extra-mural students: 4 349 No of academic staff: 1 181	The Library of Cracow University of Technology http://www.biblos.pk.edu.pl/ No of the library staff: 72 No of registered users: including: No of parent university students:

	<p>No of parent university staff:</p> <p>Library induction since 1960</p> <p>Average number of users trained per year:</p> <ul style="list-style-type: none"> • No of first-year students (library induction): 4 000 • Bachelor's degree students: 65 • Master's studies: 40 • Academic staff of parent university: 300 • Other (Library and Information (LIS) students of other universities 80 <p>No of library staff involved in traditional teaching:</p> <ul style="list-style-type: none"> • For first-year students (library induction): 14 • For Bachelor's studies: 2 • For Master's studies: 5 • For the academic staff of parent university: 5 • Other: 2 <p>E-learning courses – yes, since 2009</p>
<p>Technical University of Lodz http://www.p.lodz.pl/en/index.htm</p> <p>Data as of 31 Dec 2010</p> <p>Total No of students: 19 879</p> <p>No of full-time students: 14 859</p> <p>No of academic staff: 1505</p>	<p>Library of the Technical University of Lodz http://bg.p.lodz.pl/astr_2.htm</p> <p>E-learning courses – yes (introductory courses for teachers and learners - how to use the e-learning platform)</p>
<p>Poznań University of Technology http://www2.put.poznan.pl/en</p> <p>Data as of 31 Dec 2010</p> <p>No of full-time students: 13 513</p> <p>No of extra-mural students: 5 990</p> <p>No of academic staff: 1 244</p>	<p>Poznan University of Technology Library http://www.library.put.poznan.pl/en/index.html</p> <p>No of the library staff: 44</p> <p>No of registered users: 11 340</p> <p>including:</p> <p>No of parent university students: 10 009</p> <p>No of parent university staff: 1 029</p> <p>Library induction since 1963</p> <p>Average number of users trained per year:</p> <ul style="list-style-type: none"> • No of first-year students (library induction): 2600 • Bachelor's studies: 600 • PhD studies: 20 • Academic staff of parent university: 100 <p>No of library staff involved in traditional teaching:</p>

	<ul style="list-style-type: none"> • For first-year students (library induction): 1 • For Bachelor's studies: 5 • For PhD studies: 2 • For the academic staff of parent university: 2 <p>E-learning courses – yes, since 2008</p>
<p>Rzeszów University of Technology http://portal.prz.edu.pl/en/ Data as of 31 Dec 2010 No of full-time students: 12 118 No of extra-mural students: 3 699 No of academic staff: 706</p>	<p>The Rzeszow University of Technology Main Library http://biblio.portal.prz.edu.pl/en/ No of the library staff: 38 No of registered users: 14 024 including: No of parent university students: 12 762 No of parent university staff: 842 Library induction since 1980 Average number of users trained per year:</p> <ul style="list-style-type: none"> • No of first-year students (library induction): 3 600 <p>No of library staff involved in traditional teaching:</p> <ul style="list-style-type: none"> • For first-year students (library induction): 10 <p>E-learning courses – no</p>
<p>West Pomeranian University of Technology, Szczecin http://www.zut.edu.pl/index.php?id=6930 Data as of 31 Dec 2010 No of full-time students: 10 173 No of extra-mural students: 3 039 No of academic staff : 1 114</p>	<p>Main Library of West Pomeranian University of Technology http://bg.zut.edu.pl/ No of the library staff: 79 Library induction since 1954 Average number of users trained per year:</p> <ul style="list-style-type: none"> • No of first-year students (library induction): 2 577 • Bachelor's and master's studies: 1 182 • Phd studies: 45 <p>No of library staff involved in traditional teaching:</p> <ul style="list-style-type: none"> • For first-year students (library induction): 18 • For Bachelor's and master's studies: 8 • For PhD studies: 2 <p>E-learning courses – n</p>
<p>Warsaw University of Technology http://eng.pw.edu.pl/ Data as of 31 Dec 2010 No of full-time students: 23 797 No of extra-mural students: 8 103 No of academic staff: 2 430</p>	<p>Main Library of Warsaw University of Technology http://www.bg.pw.edu.pl/eng/ No of the library staff: 125 (incl. 15 students) No of registered users: 53 905 Library induction since 1980 Average number of users trained per year:</p> <ul style="list-style-type: none"> • No of first-year students (library induction):

	<p>over 4000</p> <ul style="list-style-type: none"> • Master's studies: 700 • Phd studies: 400 • Academic staff of parent university: 60 <p>No of library staff involved in traditional teaching:</p> <ul style="list-style-type: none"> • For first-year students (library induction): 10 • For Master's studies: 5 • For PhD studies: 3 • For the academic staff of parent university: 3 <p>E-learning courses – yes, since 2011</p>
<p>Wroclaw University of Technology</p> <p>http://www.portal.pwr.wroc.pl/index,242.dhtml</p> <p>Data as of 31 Dec 2010</p> <p>No of full-time students: 27 361</p> <p>No of extra-mural students: 5 568</p> <p>No of academic staff: 1 835</p>	<p>The Library of Wroclaw University of Technology</p> <p>http://www.bg.pwr.wroc.pl/index,162.dhtml</p> <p>No of the library staff: 171</p> <p>No of registered users: 33 556</p> <p>including:</p> <p>No of parent university students: 26 321</p> <p>No of parent university staff: 2 546</p> <p>Library induction since 1956</p> <p>Average number of users trained per year:</p> <ul style="list-style-type: none"> • No of first-year students: 0 • Bachelor's studies: 8 868 • Master's studies: 506 • PhD studies: 150 • Academic staff of parent university: 100 • Other (e-journals – course for librarians and staff of other institutions): 40 <p>No of library staff involved in traditional teaching:</p> <ul style="list-style-type: none"> • For Bachelor's studies: 36 • For Master's studies: 15 • For PhD studies: 11 • For the academic staff of parent university: 11 • Other: 13 <p>E-learning courses – no</p>