

Digital Libraries As Resource Providers For Academic E-Learning

Abstract

The aim is to build a model of a university digital library. This will encompass resources required for university e-learning in the unified form of high-quality searchable e-books/e-texts linked to the e-learning management systems.

The real life application of e-learning is often falling behind the visions and technology opportunities. The barrier is the lack of a good content and resources. The aim of the project is to bring e-learning to the universities' environment and to broaden the number of subjects where it can be successfully applied.

This work describes the present situation of e-learning deployment at Comenius University in Bratislava, Slovakia. The project sketches a possible scenario of building an academic digital library on a selective on-demand basis with the utilization of free open-source content management systems. This way through an XML technology it can be linked to the e-learning courses and interoperable between partner universities and other authorized bodies.

Project stresses out the specific needs of e-learning system in open academic environment and evaluates the role of digital libraries for on-line but also classic courses. In the end it brings the comparison of different security solutions and provides strategy for safer providing of the content.

Introduction

Pace of development of the e-learning systems along with the information and communication technologies is swift; however the real life application is falling behind. The barrier is the lack of the good content and effective on-line resources – therefore since its introduction e-learning practically spread only in limited number of fields.

In university-level courses, student's focus has to be put on the independent work with external resources. These documents are rarely available on-line and if they are, they can be found in different incompatible forms. Since the core documents are available only in printed form, they have to be looked up, traveled for, borrowed and returned or paid for and their availability is limited. This significantly reduces the advantages and potential of e-learning and represents a barrier for its application – the barrier which can be removed only by making these resources available on-line.

Utilization of a digital library on-demand model will lead university e-learning system to be even alternative to classic courses applicable to more fields of study. It will also involve presently by-standing libraries more into the education processes. With the utilization of an open-source content management systems and XML for both – digital library and e-learning management, these resources will be interoperable between partner universities and other authorized bodies.

Methods

A survey with two separate questionnaires for both students and teachers was used to map the current situation and create background for the project. Questionnaires were printed on paper and personally

Graph 1. Distribution of students according to the year of study and sex.

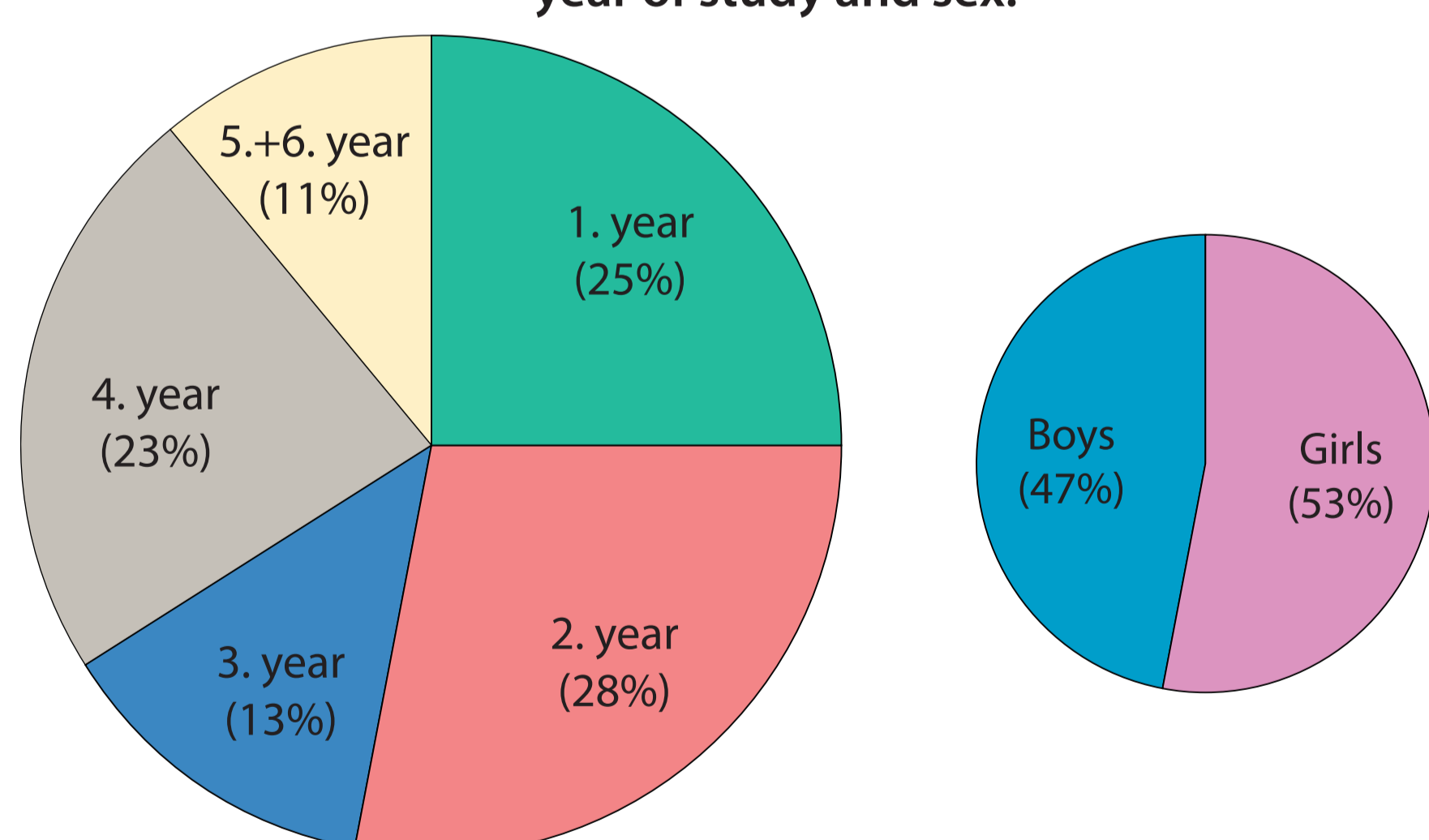


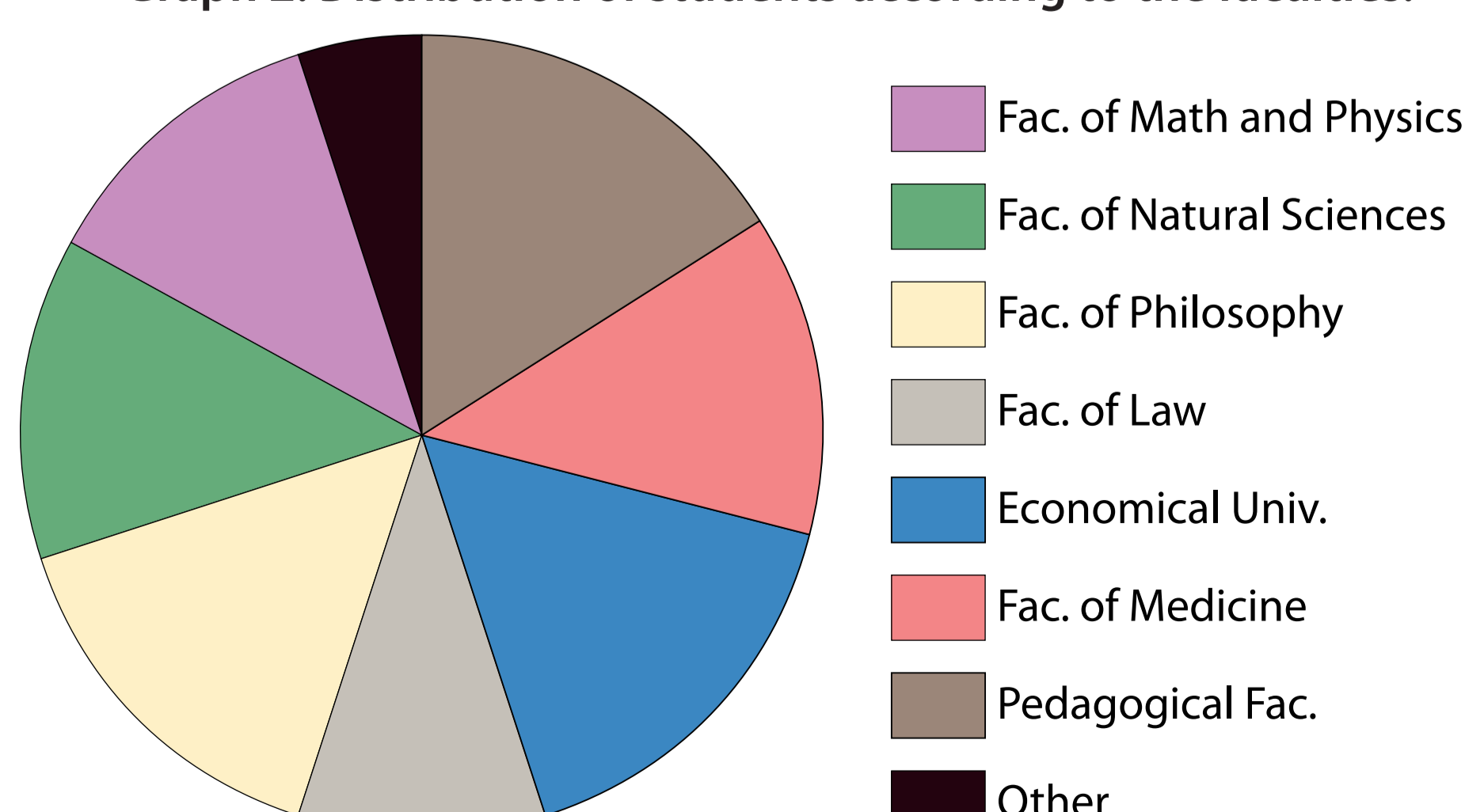
Table 1. Number of respondents (n)

Teachers	32
Students	264

distributed and collected. They consisted of 11 closed questions for students and 8 questions for teachers. Teachers were asked both closed and open questions with a room for discussion.

The file of students was designed as statistically representative; teachers were from diverse positions and faculties, however the aim was just to build a statistically acceptable file.

Graph 2. Distribution of students according to the faculties.



On the move towards distance education and e-learning at Comenius University

Providing and supporting external forms of education is one of the current priorities. It has two main reasons:

- **demand from students:** increasing costs of living & studying and relatively well paid half-time or full time jobs for young people (especially in international companies) are a strong motivation to start or transfer to external form of study.
- **economic situation of the university:** “There is no school fee for state universities in Slovakia what has both positive and negative effects on the education.”
poor, sometimes unbearable economic situation of universities in Slovakia leads to lack of capacities, lack of equipment and lack of qualified teachers

Motivators towards e-education – Pull factors

- advantages that ITs and Internet are bringing into education
- more efficient time investment for both students and teachers
- personalized access, multimedia, collaborative work
- lower overall costs...

Motivators towards e-education – Push factors

- problems and needs students and teachers are coping with today

“Libraries had not used their chance. Instead of transforming into modern information centers, they remained typical shelf libraries.”

- 68% of the teachers experienced problems with publishing their works (delays, inadequate print quality and too small circulation)

- 94% of teachers were in favor of putting their older or hardly accessible publications on-line for free downloading
- 72% of students described their compulsory books as hardly accessible or inaccessible
- 95% of students would welcome these materials in an electronic form

Specific needs of the academic e-learning systems – even the best system will never make it alone

In higher education, students must be able and must be encouraged to independently work with external resources. If these are not available on-line, it is not possible to bring up a good e-learning course.

In general, academic subjects and courses are broader which requires:

- open lessons
- flexible paths of going through course
- more entry and exit points

“Forget that you can put everything inside your on-line modules!”

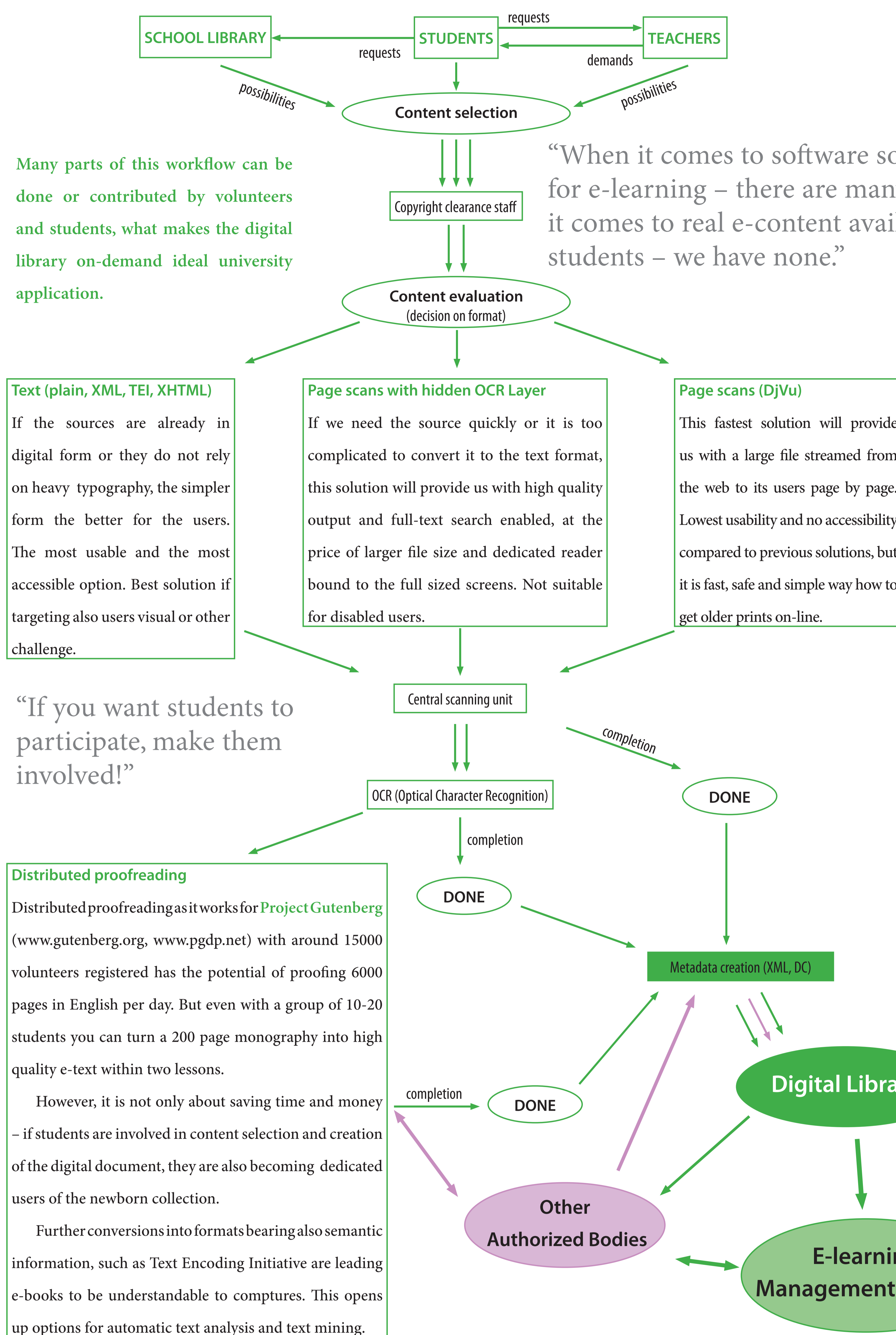
Putting everything into prepared modules is often impossible and not the aim. It is necessary to divide the content to **static** and **dynamic**. Organizing and sharing this static content means we are creating a **digital library**.

On-line Module	
Dynamic Content	Static content
• frequently updated / recreated	• rarely updated or changed
• tightly integrated part of the lesson	• more independent
• shorter	• no preferences about the size
• bound to the special features of the e-learning system (like evaluation)	• independent from the special features of the system
• usually produced and maintained by tutor however	• well described with the metadata structures (like qualified Dublin Core)
• can be shared as collaborative content where more tutors a cooperating	• indexed and searchable
• creates information	• shared among other modules and courses
	• preserves information

“New technologies have the potential to remove the gap between now by-standing libraries and e-education.”

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How to build a digital library **on-demand**



Current stage of deployment of digital libraries in Slovakia

At this moment none of the digital libraries in Slovakia is really utilized. A virtual library "Virtua" holds catalogue records from the six main libraries, however despite its potential it does not incorporate full-texts.

Another stream of Slovak Virtual Library is represented by portal Memoria Slovaca (www.memoria.sk) with digital presentation of national cultural and scientific heritage.

Real contribution to academic community will be The National Digital Library of Thesis and Dissertation, at this moment in a beta-testing cycle. When launched, it will be a part of NDLTD (www.theses.org). The reason why not other sources are available on the internet today is in many cases the copyright issue.

The role of digital libraries in the development of academic (e-) education

- digital libraries will become in the near future content providers supporting both forms of education e-learning and classic forms as well
- having digitized collections of historical prints and classic literature in the national language of the country is essential step towards broader propagation of e-learning in humanities
- digital libraries can be the gateways to and providers of external sources, textbooks or even monographs
- utilization of digital library is the ideal solution for international on-line courses and cooperation between universities, what is one of the priorities for the new enlarged European Union

Advanced features of digital libraries in connection with e-learning management systems

Benefits from more direct connection between digital libraries and educational environment are clear, however the ways how to do it are not. Wise use of modern technologies is helping to remove the gap, simple on-line directory is not enough.

- server driven dynamic in-line references to sources with meta descriptions
- combination of faceted browse and full text search on one page
- collaborative creation of content such as annotated bibliographies
- user reviews added to the catalogue records of the sources
 - by tracking users activities offering links to documents other users visited / rated before
 - automatic context search and dynamic offer of new sources to users

Conclusions

Utilizing e-learning in the university environment requires taking specifics of academic education into account. In e-content creation it is more effective when provided information can be divided into two parts – dynamic, covered by the modules and static, stored in the linked digital library. This way the information can be more complex and also easily shared among other groups of students or authorized bodies. Current projects in the Slovakia do not fulfill the needs of an academic library, but thanks to XML/plain text format it is possible to link them with the proposed library.

The best way to build digital library as a resource provider of e-education is to build it on-demand. The title will be processed and included in the catalogue when needed. To speed up and improve the quality of the conversion into the digital form, Project Gutenberg Distributed Proofreaders interface can be used. This way also students will participate in creating their new digital library.

A perfect protection of any published material does not exist. Instead of aggressive and expensive proprietary Digital Rights Management, protection should consist of selecting the suitable content. If necessary, personalized on-line-only viewing of the titles or providing tools such as quoting scripts to provide patrons with correct citation of the source on a single click, can make the whole trick.

Copyright protection vs. usability

Imposition of any kind of protection always works against usability but not doing it puts authors' rights at risk. In survey:

- 76% of students expressed that they would not mind to pay for the access to digital library
- 83% of students however confessed that they would take a chance to use pirated copies and half of them would even pay for the illegal access if it was much cheaper.

Stealing however cannot be avoided also in print (62% of students preferred photocopying of the whole books instead of buying them). Ways to limit access or use of the protected sources:

Copyright Control	Business Models	Technology Requirements	Control over Technology
More	Access plus copy and redistribution	Requires only software provided by control over copyrighted materials or on behalf of copyright owner (Adobe eBook, RealMedia, Windows Media)	More
	Access but not copy or redistribution	No special technology required on control over copyrighted materials users' equipment (New York Times/Wall Street Journal online)	
	Tax and Royalty System	No special technology required on users' equipment	
	Noncommercial Use Levy	No special technology required on users' equipment	
Less			Less

"The best way to build a digital library as a resource provider for e-education is to build it on-demand."