

Department of Medical Informatics



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- since 1990 – first computer classroom
- Medical Informatics, Evidence Based Medicine, Biostatistics, IS in Medicine, Computer Biometrics ...
- eLearning, telemedicine, videoconferences, human motion analysis, statistical evaluation of experimental data, virtual patients, e-Assessment, ...



Informatics at Medical and Healthcare Faculties



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history - education - computer literacy

trends - rather reduction in curricula

QUALITY OF EDUCATION VS. INFORMATION ABSENCE

- Health care - continuing changes - medical informatics should be considered a **key element** of continuing transformation
 - **correlates** with development of information and communication technologies





NICE TO HAVE,
BUT
NOT NEED TO HAVE ?!



diagnostic procedures **without** imaging techniques
therapeutic procedures **without** software control of interactions
complicated surgery interventions **without** computed aided tools
medical knowledge-base access **without** electronic information resources
patient data registration **without** electronic health record

???

- effective usage in practice - utilization in education of medical and health care students



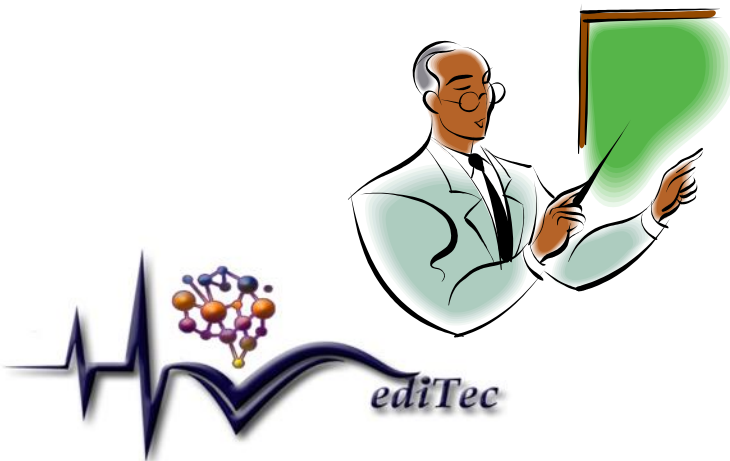


Traditional education

- textbooks and printed materials go out of date quickly
- revisions and reprints are time and cost demanding

multimedia – effective tool

- a lot of information disseminated across the study programs
- problem to be solved – practical utilization in pedagogical process



ICT & Education



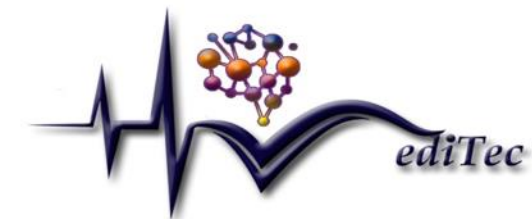
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of the European Union

- implementation of modern technologies
- used only as addition to traditional teaching form
- fully functional didactic tools
- to use effectively



trends: visualization, electronic processing, archiving, providing

demonstration: supported by visual information, often clinically sensitive



Activities



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main areas:

- **scientific background**

- special and scientific topics, integrated conception, motivation of professionals, outputs (records, e-books, text books, journals, ...)

- **technical/technological background**

- HW and SW equipment, methods, services, users' skills, technological demands, ...

**Can we cross the borders
of the faculty/university?**



mefanet



Medical faculties in MEFANET



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participated faculties

- **initially:** faculties of medicine (7 CZ and 3 SK)
- **nowadays:** all faculties of medicine and health care related institutions in Czech republic and Slovakia

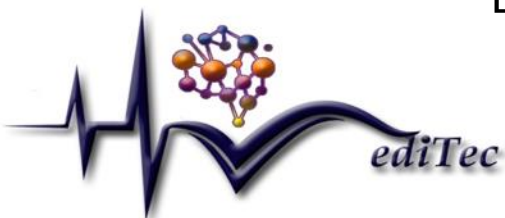
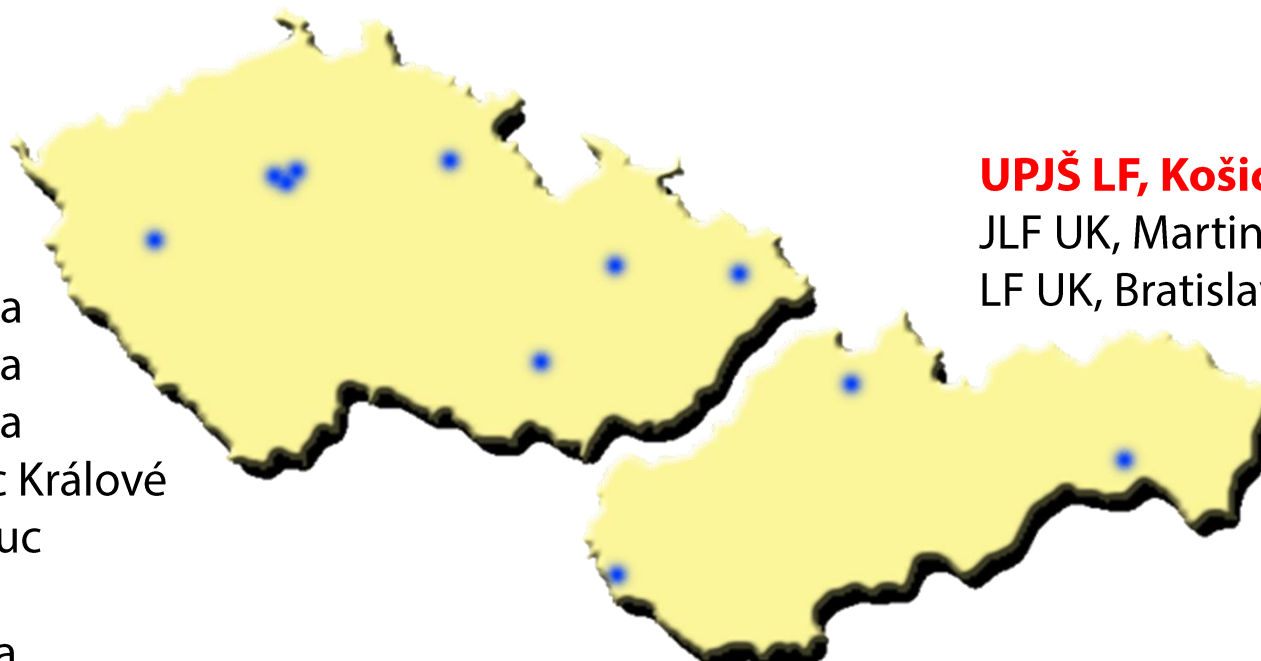


LF MU, Brno

1. LF UK, Praha
 2. LF UK, Praha
 3. LF UK, Praha
- LF UK, Hradec Králové
LF UP, Olomouc
LF UK, Plzeň
LF UK, Ostrava

UPJŠ LF, Košice

- JLF UK, Martin
LF UK, Bratislava



Considering the right platform



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- two modes of integration:
 - to create communication interface in **own (already existing) platform/portal** to ensure exchange of data between portal and central gate
 - to implement and **adopt portal platform** developed by Institute of Biostatistics and Analyses at Masaryk University in Brno (CZ) with its independent management and subsequent administration according to the needs of particular faculty
- individual portals are **administered independently** and fully respects the particular faculty's needs and requirements
- RESULT: 11 standalone instances of the same software
- unique access through **central gate**



Users of portal platforms



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- **academic staff**
to publish their pedagogical works and to share their electronic educational materials
- **authors**
of multimedia education tools to communicate with the users of these outputs
- persons involved in **lifelong learning** of physicians and health care professionals
- **students**
not only from medical faculties





- <http://portal.lf.upjs.sk> [ISSN 1337-7000]

**Multimedia support in the education
of clinical and health care disciplines**
* Portal of Pavol Jozef Šafárik University's Faculty of Medicine in Košice

Multimedia | Educational works | Lectures | Terms of use | About

Slovak version

Search

Educational websites

Digital audio/video

Presentations

Elearning courses

Casustics in image

Login

Submit contribution

Download

Text version

Printable version

Multimediálna
podpora
vyučby
na lekárskech
fakultách ČR a SR

Miesto pre Vašu reklamu

Welcome to Portal of Pavol Jozef Šafárik University in Košice Faculty of Medicine.

This portal is the official platform of Pavol Jozef Šafárik University in Košice Faculty of Medicine (LF UPJŠ) for publication of electronic versions of educational works and multimedia materials to support education in medical disciplines. Its main objective is to make all electronic teaching materials which have been created at LF UPJŠ available. Apart from publication of teaching tools, the portal provides space and technical support for these materials to be published on-line.

[Registration instructions.](#)

Content categorized according to fields of medicine

Anaesthesiology and Intensive Care Medicine (0)	Genetics (0)	Nephrology (0)	Physiology and Pathophysiology (0)
Anatomy (52)	Geriatrics (0)	Neurology (0)	Psychiatry, Psychology, Sexology (0)
Biology (0)	Haematology (0)	Neurosurgery (0)	Public Health Care, Social Medicine (1)
Biophysics (0)	Health Care Sciences (0)	Nuclear Medicine (0)	Radiology and Imaging (0)
Cardiology, Angiology (0)	Histology, Embryology (0)	Obstetrics, Gynaecology (0)	Rehabilitation, Physiotherapy, Occupational Therapy (0)
Dentistry (1)	Immunology, Allergology (0)	Occupational Medicine and Toxicology (0)	Respiratory Medicine (0)
Dermatology (0)	Infectology (0)	Oncology, Radiation Therapy (0)	Rheumatology (0)
Diabetology, Dietetics (0)	Internal Medicine (0)	Ophthalmology and Optometry (0)	Sports Medicine (0)
Emergency Medicine (0)	Laboratory Diagnostics (0)	Other (0)	Surgery, Traumatology and Orthopaedics (0)
Endocrinology, Metabolism (0)	Medical Ethics and Law (1)	Otorhinolaryngology (0)	Urology (0)
Epidemiology, Preventive Medicine, Hygiene (0)	Medical Chemistry and Biochemistry (7)	Paediatrics, Neonatology (0)	
Gastroenterology and Hepatology (0)	Medical Informatics and Information Science (5)	Pathology and Forensic Medicine (1)	
General Practice Medicine (0)	Microbiology (0)	Pharmacology (0)	

[anatomy](#) | [biochemistry](#) | [blood supply](#) | [cranial nerves](#) | [diaphragm](#) | [esophagus](#) | [head innervation](#) | [kidney](#) | [muscles](#) | [neck](#)
[nerves](#) | [posterior mediastinum](#) | [skull](#) | [teeth](#) | [thoracic aorta](#) | [topography](#) | [upper limb](#) | [veins](#) | [vessels](#)

[List all tags](#)

Digestive system 2 (Stomach, Small intestine)

The presentation focuses on gross anatomy of stomach and small intestine. Throughout this presentation, external features of the stomach, duodenum, jejunum, ileum and their wall and mucosa are provided. Radiological images and clinical correlations are also included. Illustrations are an integral part of the presentation and are abundant throughout the material, they are used to simplify the study.

author: [MUDr. Janka Vecanová, PhD.](#) | discipline: [Anatomy](#) | published on: 13.3.2015 | last modified on: 22.3.2016

Virtual Patient - Survey

Project CROESUS aims to bring new technologies into the education processes at medical faculties. One of the project's activity is to establish a system to operate virtual patients. To do this, respecting teachers' as well as students' preferences in this area we prepared a survey. The survey tries to collect information about most preferred features of such systems and you can participate on it at <http://goo.gl/forms/30uloDJoEP>. Thanks for your time.

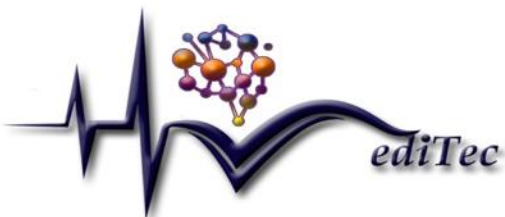
author: [Jaroslav Majerník, PhD.](#) | published on: 24.3.2015 | last modified on: 24.3.2015

Practical exercises from biochemistry (for Dental Medicine)

The laboratory manuals are developed to the foreign students of medicine for practical

Terms of use

The didactical materials published at the didactical portal of Pavol Jozef Šafárik University in Košice Faculty of Medicine are developed to the foreign students of medicine for practical



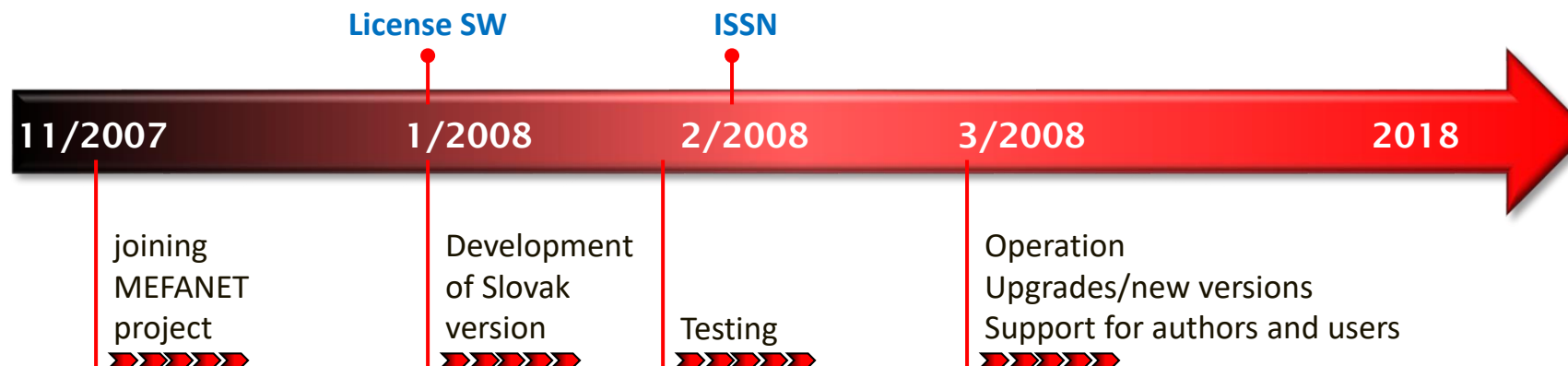
Portal of UPJŠ LF



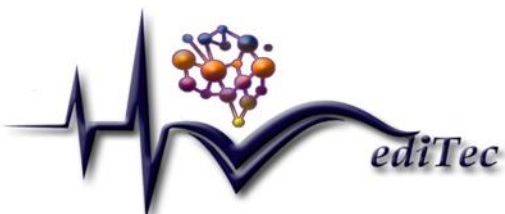
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<http://portal.lf.upjs.sk> [ISSN 1337-7000]

- Portal development



- 04. 12. 2007 ver. 1.0
- followed by ver. 1.1 , ver. 1.2 – to recent ver. 1.9.3
- improvements and new functionalities





Working with portal

Horizontal menu – content part (sections of the portal)

Vertical menu – types of multimedia tools/materials

Medical disciplines filter – the only obligatory structure for all portals

Searching engines



Structure of articles



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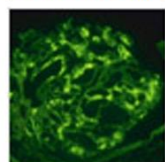
descriptive article

- public part available to everybody
- annotation picture
- annotation
- keywords
- extension text (more description)

attachments

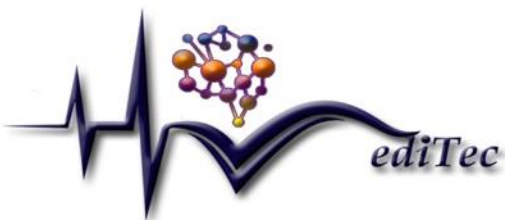
- accessibility according to the decision of the author
- published in the form of links in the body of the article

Schönleinova-Henochova nefritída - zvláštnosti klinického priebehu



Autori v prehľadnom článku uvádzajú epidemiológiu, klinický priebeh a komplikácie Schönleinovej-Henochovej purpury, ktorá je najčastejšie sa vyskytujúcou vaskulitídou v detskom veku. Zameriavajú sa osobitne na Schönleinovu-Henochovu nefritídu, vyzdvihujú prínos renálnej biopsie pre diagnostiku a prognózu. Analyzujú jednotlivé liečebné postupy a hodnotia ich efektívnosť podľa medicíny založenej na dôkazoch. V závere opisujú výsledky transplantácie obličiek u chorých so Schönleinovou-Henochovou nefritídou.

autor: [prof. MUDr. Ľudmila Podracká, CSc.](#), prof. MUDr. Miroslav Anton Šašínska, DrSc. | publikované: 8.4.2008 | posledné úpravy: 5.5.2008



Users



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Access to the educational materials can be specified for:

- anonymous users
- registered users
- MEFANET users
- university users
- faculty users
- personal request/demand to the author

Only authors decide and specify what kind of user rights will be applied in their education materials.





E-publishing system – central gate

Portál vzdělávací sítě lékařských fakult MEFANET



Pokročilý vyhledávání

Vyhledat

<input checked="" type="checkbox"/> Akutní medicína (5)	<input checked="" type="checkbox"/> Anestezie (14)	<input checked="" type="checkbox"/> Anesteziologie a intenzivní medicína (8)	<input checked="" type="checkbox"/> Stomatologie (14)	<input checked="" type="checkbox"/> Stomatologie (3)	<input checked="" type="checkbox"/> Dermatoologie (2)	<input checked="" type="checkbox"/> Diabetologie, dietetika (3)	<input checked="" type="checkbox"/> Endokrinologie, metabolismus (2)	<input checked="" type="checkbox"/> Epidemiologie, preventivní lékařství, biostatika (2)	<input checked="" type="checkbox"/> Farmakologie (3)	<input checked="" type="checkbox"/> Fyzikální a paraneoplastická fyziologie (14)	<input checked="" type="checkbox"/> Gastroenterologie, hepatologie (7)	<input checked="" type="checkbox"/> Otorinolaryngologie (2)	<input checked="" type="checkbox"/> Internistologie (7)	<input checked="" type="checkbox"/> Radioterapie (2)	<input checked="" type="checkbox"/> Radioterapie a zobrazovací metody (2)	<input checked="" type="checkbox"/> Rehabilitace, fyzioterapie, ergoterapie (4)	<input checked="" type="checkbox"/> Revmatologie (5)	<input checked="" type="checkbox"/> Tělovýchovná lékařství (2)	<input checked="" type="checkbox"/> Urologie (2)	<input checked="" type="checkbox"/> Všeobecná zprávozná, sociální lékařství (4)	<input checked="" type="checkbox"/> Všeobecná praktická lékařství (2)	<input checked="" type="checkbox"/> Základní péče, všeobecná (2)	<input checked="" type="checkbox"/> Zubní lékařství (2)	
<input checked="" type="checkbox"/> Anatomie (14)	<input checked="" type="checkbox"/> Chirurgie, traumatologie, ortopedie (29)	<input checked="" type="checkbox"/> Kardiologie, angiologie (4)	<input checked="" type="checkbox"/> Infektologie (11)	<input checked="" type="checkbox"/> Kardiologie, angiologie (11)	<input checked="" type="checkbox"/> Laboratorní diagnostika (2)	<input checked="" type="checkbox"/> Lékařská etika a právo (3)	<input checked="" type="checkbox"/> Lékařská genetika (1)	<input checked="" type="checkbox"/> Lékařská chemie a biochemie (24)	<input checked="" type="checkbox"/> Lékařská informatika a informační věda (19)	<input checked="" type="checkbox"/> Mikrobiologie (4)	<input checked="" type="checkbox"/> Nefrologie (5)	<input checked="" type="checkbox"/> Neurochirurgie (2)	<input checked="" type="checkbox"/> Neurologie (9)	<input checked="" type="checkbox"/> Nukleární medicína (4)	<input checked="" type="checkbox"/> Oftalmologie, optometrie (2)	<input checked="" type="checkbox"/> Onkologie, radioterapie (13)	<input checked="" type="checkbox"/> Otorinolaryngologie (2)	<input checked="" type="checkbox"/> Otorinolaryngologie (2)	<input checked="" type="checkbox"/> Otorinolaryngologie (2)	<input checked="" type="checkbox"/> Otorinolaryngologie (2)	<input checked="" type="checkbox"/> Otorinolaryngologie (2)	<input checked="" type="checkbox"/> Otorinolaryngologie (2)	<input checked="" type="checkbox"/> Otorinolaryngologie (2)	<input checked="" type="checkbox"/> Otorinolaryngologie (2)
<input checked="" type="checkbox"/> Patologie (19)	<input checked="" type="checkbox"/> Patologie a související lékařství (21)	<input checked="" type="checkbox"/> Pediatrie, neonatologie (19)	<input checked="" type="checkbox"/> Pneumologie (2)	<input checked="" type="checkbox"/> Psyciatrie a psychologie (2)	<input checked="" type="checkbox"/> Pracovní lékařství a toxicologie (2)	<input checked="" type="checkbox"/> Psychiatrie, psychologie, sexuologie (18)	<input checked="" type="checkbox"/> Radioterapie (2)	<input checked="" type="checkbox"/> Radioterapie (2)	<input checked="" type="checkbox"/> Radioterapie (2)	<input checked="" type="checkbox"/> Radioterapie (2)	<input checked="" type="checkbox"/> Radioterapie (2)	<input checked="" type="checkbox"/> Radioterapie (2)	<input checked="" type="checkbox"/> Radioterapie (2)	<input checked="" type="checkbox"/> Radioterapie (2)	<input checked="" type="checkbox"/> Radioterapie (2)	<input checked="" type="checkbox"/> Radioterapie (2)	<input checked="" type="checkbox"/> Radioterapie (2)	<input checked="" type="checkbox"/> Radioterapie (2)	<input checked="" type="checkbox"/> Radioterapie (2)	<input checked="" type="checkbox"/> Radioterapie (2)	<input checked="" type="checkbox"/> Radioterapie (2)	<input checked="" type="checkbox"/> Radioterapie (2)	<input checked="" type="checkbox"/> Radioterapie (2)	

Odeslat

galerie tabulkový výpis řadit podle čas publikování

Leukoencefalopatie indukovaná cytostatickou léčbou

Autoři prezentují přehledový tutoriál Leukoencefalopatie indukované chemoterapií. Tato klinická jednotka představuje klinicko - radiografický syndrom heterogenní etiologie, který je skupený společně na základě podobných neuroobrazovacích (MRI) nálezů. V přímětiví j i lze naléznout pod různými názvy, např.:

Metotrexát indukovaná neurotoxicita. Akutní toxická leukoencefalopatie. Reversibilní posterior leukoencefalopaty syndrom (RPLS). Posterior reversible encephalopathy syndrom (PRES). Žádný z těchto názvů není uspokojivý: syndrom není vždy reverzibilní a není vždy omezený pouze na bílou hmotu mozku nebo do zadních oblastí mozku. Může se vyskytovat v jakémkoliv věku. Součástí tohoto tutoriálu jsou i tři hlavní kazistiky dětí s akutní lymfoblastickou leukémií, u kterých různé protokoly.

autor: Prof. MUDr. Vladimír Mihal, CSc., MUDr. Kamil Mihalčík | LEJL | oboj: Farmakologie, Pediatrie, neonatologie, Radioterapie a zobrazovací metody | kategorie: Tutoriál | klíčová slova: Leukoencefalopatie indukovaná cytostatickou léčbou, Metotrexát indukovaná neurotoxicita, Akutní toxická leukoencefalopatie, Reversibilní posterior leukoencefalopaty syndrom (RPLS), PRES, Sauerstein, BSL, Cytostatika | přílohy: 1 | zobrazeno: 10x | publikováno: 21.11.2011

Lékařská chemie, biochemie a molekulární biologie. Praktická cvičení I a II.

Předkládaná skripta pro výuku praktických cvičení z lékařské chemie, molekulární biologie a biochemie vycházejí z textu publikovaného v roce 2004. Od té doby došlo k řadě různých změn a tak bylo nutno texty upravit pro stávající potřeby. V ohledu inovace ve výuce uvedených oborů byla některá čistě teoretická témata vypuštěna, zejména ta, která budou probírána na seminářích. Naopak jiné kapitoly byly doplněny.

autor: kolektiv: Lékařská chemie, biochemie a molekulární biologie | LEJL | oboj: Lékařská chemie a biochemie | kategorie: Podklady k přednáškám | klíčová slova: Lékařská chemie, biochemie a molekulární biologie, Praktická cvičení | přílohy: 2 | zobrazeno: 391x | publikováno: 20.4.2011 | poslední úprava: 1.11.2011

Laboratorní úlohy z lékařské biofyziky

Materiál přináší inovovanou verzi laboratorních úloh pro praktická cvičení z lékařské biofyziky na lékařské fakultě v Hradci Králové. Jde o kurzy postavené na LMS Moodle v 1.9, a to ve formě klasické kombinované a kurzy se strukturou mnohastupňového e-learningu. Součástí kurzu je buď celkový souhrnný materiál ve formě Moodle-knihy či Moodle-přednáška v kombinaci se souhrnným materiálem ve formě MSL. Pro zájemce z měření je přiložen elektronický protokol s možností automatického odeslání dat.

automatizace

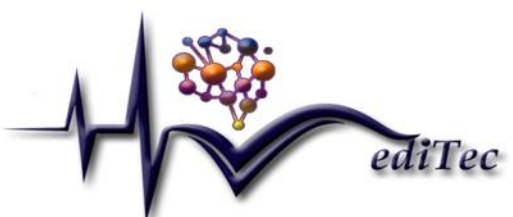
- [infarkt krev](#)
- [laparoskopie](#)
- [mikroskop](#)
- [mikroskopie operace orl](#)
- [ošetřovatelství](#)
- [patologie](#)
- [postup psychiatrie](#)
- [robot srdce statistika](#)
- [video](#)
- [Význam včelstva řídky](#)

Naposledy prohlížené

- [Návody k praktickým cvičením z lékařské chemie a biochemie, lékárná](#)
- [Základní seznámení v zubním lékařství](#)

Přihlásit se k MEFANETmaile

e-mail:

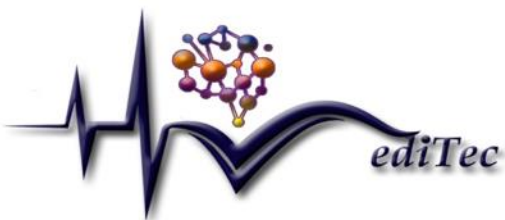
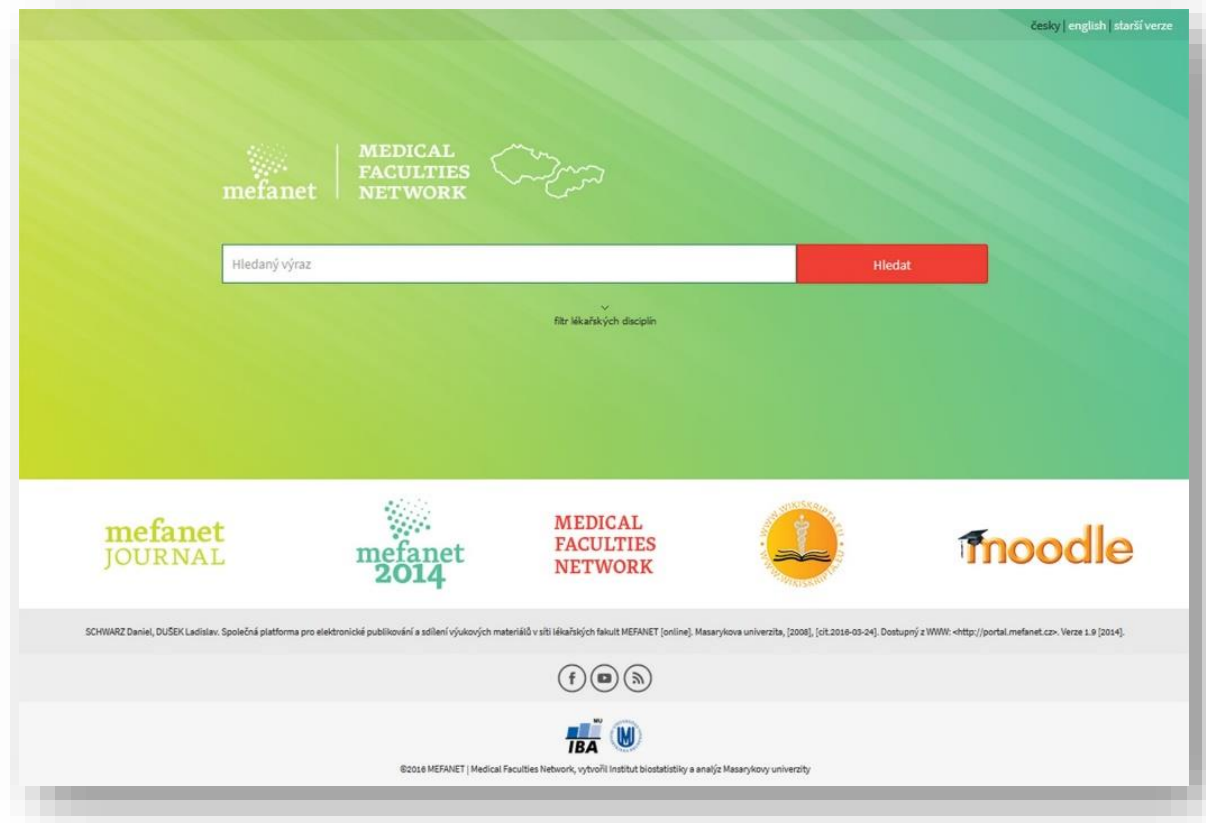


Central gateway



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- Tool to **publish** electronic education materials (not to create content of individual education materials)
- Intended to share the best quality outputs across faculties from **one central place**.
- Secured access to shared materials depending on authors decision.
- ISSN 1803-6619



Central gateway



Co-funded by the
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of the European Union

- **User-friendly** and comprehensible content browsing
- Complete image about the **available digital educational materials** across all standalone portal instances
- Easy **data sharing** and capturing
- Sophisticated tool for **searching** in the entire database
- **Federated authentication** framework based on Shibboleth/SAML technology
- **Quality assessment** of published contents
- Available at <http://portal.mefanet.cz>

The screenshot displays the MEFANET Portal interface. At the top, there is a search bar and a language selector (English). Below the search bar, a grid of medical disciplines is shown, each with a checkbox and a count in parentheses. The disciplines include: Anaesthesiology and Intensive Care Medicine (0), Anatomy (15), Botany (1), Biochemistry, Analytical (5), Dentistry (19), Dermatology (5), Diabetology, Endocrinology (2), Emergency Medicine (2), Endocrinology, Metabolism (0), Epidemiology, Preventive Medicine, Hygiene (7), Gastroenterology and Hepatology (9), General Practice Medicine (0), Geriatrics (0), Haematology (7), Health Care and Nursing (0), Histology, Embryology (12), Immunology, Allergy (1), Infectiology (0), Laboratory Diagnostics (0), Laboratory Medicine (1), Medical Ethics and Law (1), Medical Chemistry and Biochemistry (11), Medical Informatics (5), Microbiology (0), Nephrology (0), Neurology (7), Neurosurgery (0), Nuclear Medicine (0), Obstetrics, Gynaecology (2), Occupational Medicine and Toxicology (0), Oncology, Radiation Therapy (15), Ophthalmology and Optometry (1), Other (0), Otorhinolaryngology (1), Paediatrics, Neonatology (9), Pathology and Forensic Medicine (8), Pharmacology (3), Physiology and Pathophysiology (29), Psychiatry, Psychology, Sexology (4), Public Health Care (7), Radiology and Imaging (10), Rehabilitation, Physiotherapy, Ergotherapy (6), Respiratory Medicine (0), Rheumatology (0), Surgery, Traumatology and Orthopaedics (17), and Urology (4).

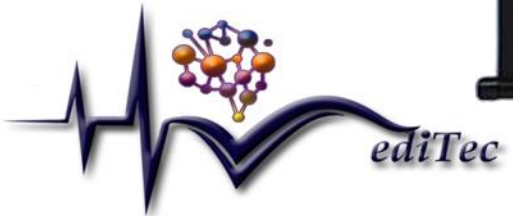
Below the grid, there are two detailed view cards for educational materials:

- Childhood malignancies (lymphomas, germ cell tumors, brain tumors)**
Special oncology - educational material
author: [MUDr. Alena Fialová](#) | 2. LF UK | discipline: Oncology, Radiation Therapy | category: Educational Materials, Presentations | attachment: 1 | viewed: 25x | published on: 8.7.2010
- Congenital (infantile) cataract**
Příspěvek je určen studentům 4. ročníku magisterského studia medicíny 2. LF v rámci bloku Oftalmologie.
author: [Doc. MUDr. Alena Fialová](#) | 2. LF UK | discipline: Ophthalmology and Optometry | category: Educational Materials, Presentations | keywords: cataract, congenital, infantile, cataract, congenital, infantile | attachment: 1 | viewed: 30x | published on: 30.4.2010
- 2nd year - Immunochemical methods**
Seminar
General medicine - winter semester





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MEFANET - 4D quality assessment



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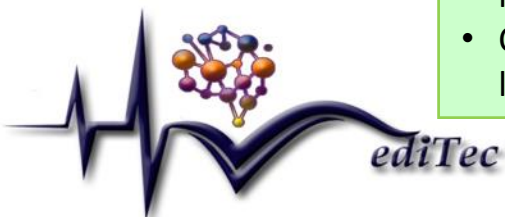
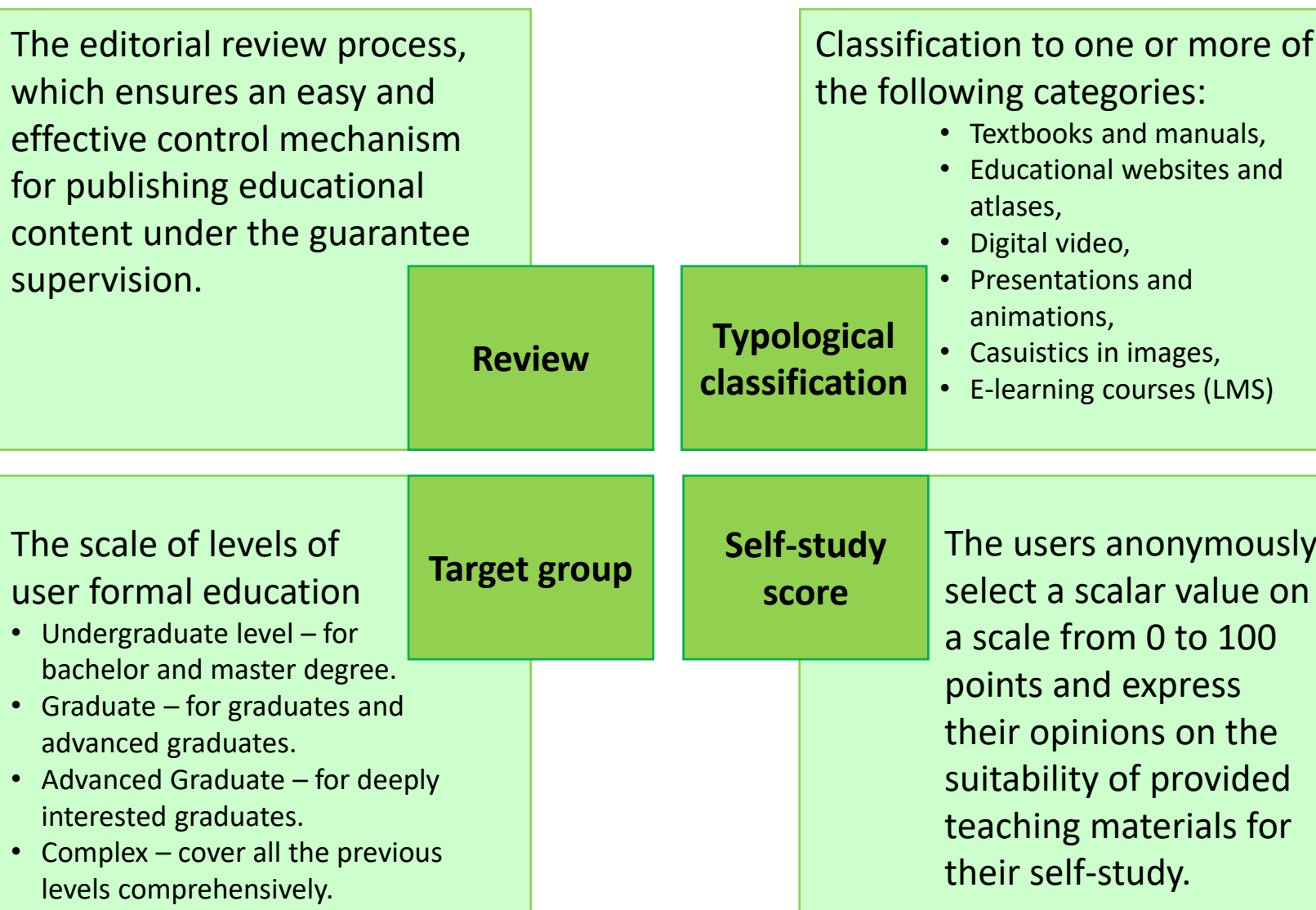
- Major emphasis is placed on **quality** instead of the quantity of learning content.
- Set of new effective classification and review mechanisms covers four **independent principles**, which enable complex quality assessment of published educational materials.
- The four dimensions consist of the following parts:
 - review
 - typological classification
 - level of the target group
 - user self-study score



4 dimensions



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4D quality assessment



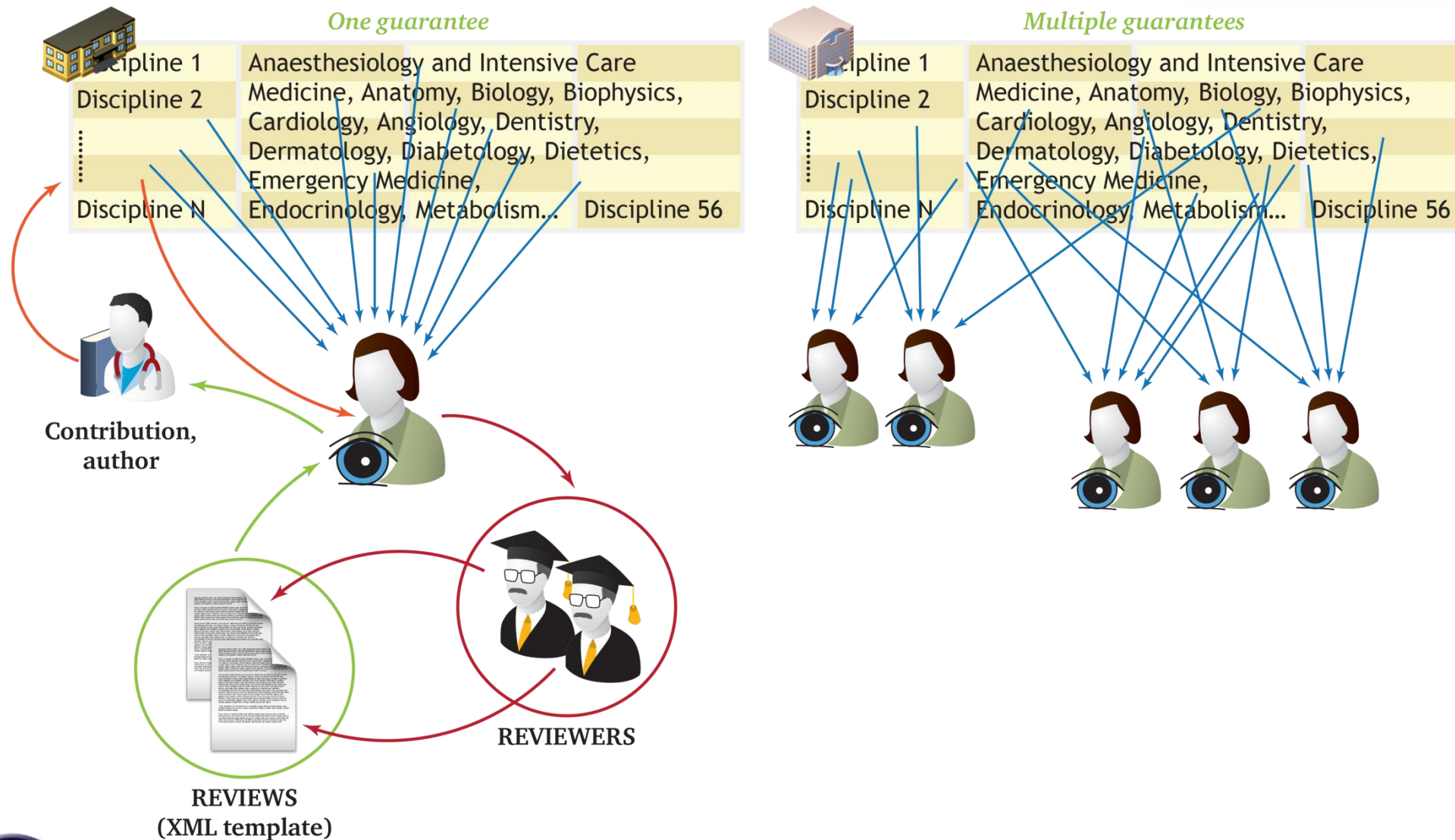
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4D quality assessment: guarantors, reviewers, authors



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One guarantee

Review process [X]

Guarantee

prof. Inž. Jurai Guzv. CSc.

Ústav
UPJ
pho
e-m

Rating [X]

Please select achieved education degree and then evaluate the teaching material particularly in light of material suitability for self-learning.

Review

Student - student of bachelor or master degree

Graduate - graduate of bachelor or master degree

Ph.D. Graduate - Ph.D. student, Ph.D. graduate, researcher, ...

doc. I
Ústav
phone
e-mail

doc. M
Ústav
phone
e-mail

Send

Number of users, who have already evaluated.: 1

Multiple guarantees

Anesthesiology and Intensive Care
Cine, Anatomy, Biology, Biophysics,
fology, Angiology, Dentistry,
atology, Diabetology, Dietetics,
rgency Medicine, ...

Discipline 56

Reviewed
information

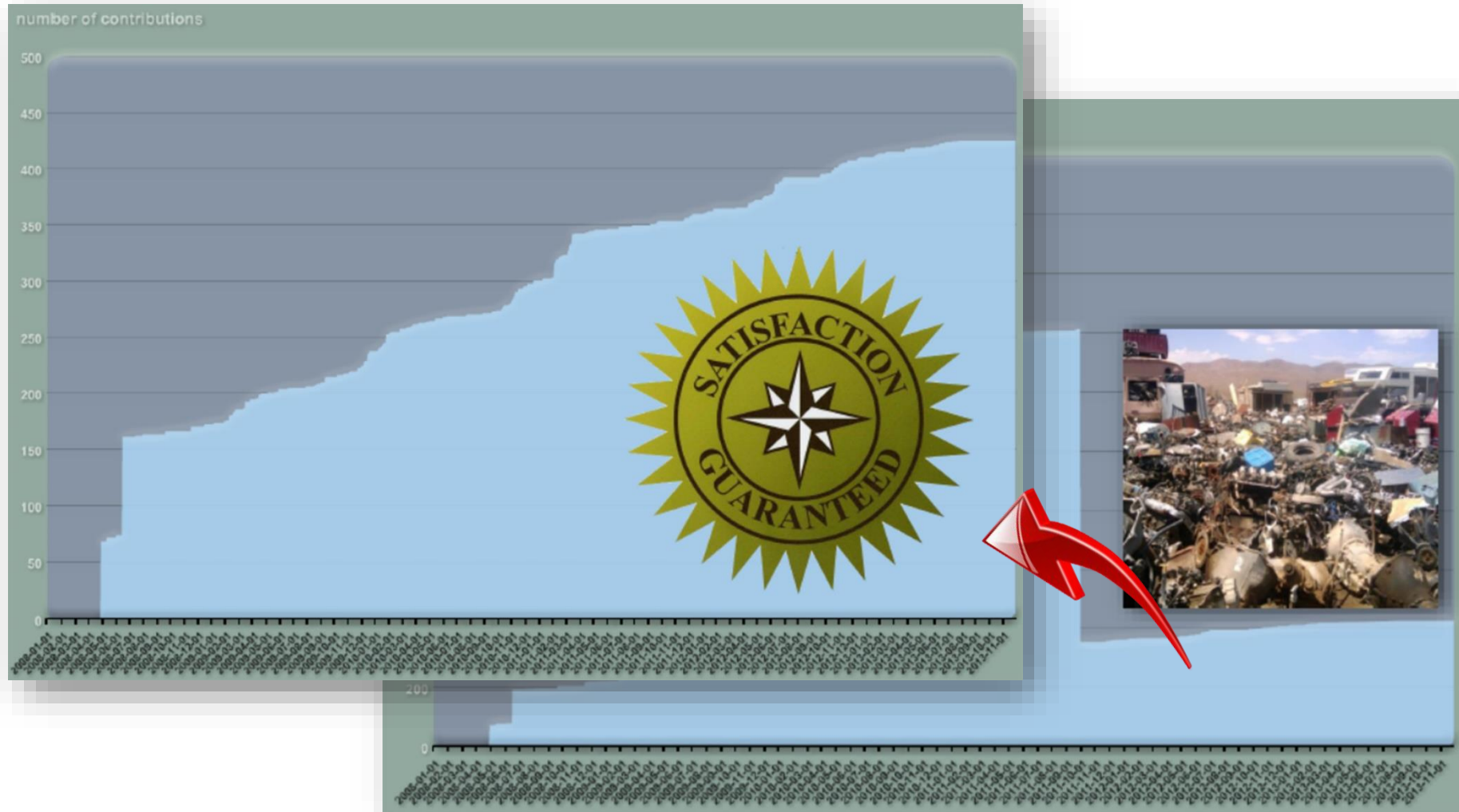
90.0 %
user evaluation
evaluate

REY
(XML template)

Central Gateway and Sandbox



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Portals and Central gateway

- platforms are **not designed to replace LMS** and/or similar systems
- their character is tend to be an **e-publication system** rather than the digital library and/or encyclopedia
- local instances send **only reviewed materials** to the MEFANET Central gateway
- modern ICT
 - opportunities to produce qualitative electronic educational works
 - motivate teachers to use them
- organizing - difficult process:
 - technical part (finances)
 - content (willingness of teachers to cooperate)
- overcoming the problems – contribution not only for education



Quality acceptance?



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**THE THINGS ARE BETTER REMEMBERED
WHEN SEEN THAN ONLY READ ABOUT.**





Thanks for your attention



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