Izobraževalna gradiva

Vladimir Batagelj
Univerza v Ljubljani
FMF, matematika

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## Outline

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http://www.educa.fmf.uni-lj.si/izodel/dela/IT/gradiva.pdf

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Prosta izobraževalna gradiva

Pri *informatizaciji* izobraževanja je zelo pomembno, da se zagotovite za učitelje in učence:

- učni *izdelki* (programi, predavanja, preverjanja, ...);
- prijazna a vseeno zmogljiva *orodja/okolja* za pripravo lastnih izdelkov oziroma prilagoditev obstoječih;
- *gradiva* potrebna pri pripravi izdelkov: knjižnice postopkov, besedila, slike, zvoki, video, podatki, ... izdelek $\subseteq$ gradivo.

Ker so sredstva v šolstvu pogosto zelo skromna, bi bilo dobro, da je večina gradiv

- vsaj *prosto dostopnih* za izobraževalne namene tako v šoli kot tudi *doma*;
- in *odprtih* – lahko ’*pogledamo vanje*’ in jih po potrebi spreminjamo.
Primer: Učenje ob virih

Sporočilo generala Eisenhowerja generalu Marshallu o D-Day
...Prosta izobraževalna gradiva

Gre za to, da so gradiva prosta za uporabnike. To ne pomeni, da morajo avtorji delati zastonj – obstajajo različni načini, kako ’nagraditi’ avtorje. Odprtost gradiv omogoča:

Učenje iz dobrih zgledov z vpogledom v ’drobovje’ (pascal).

Prilagoditev gradiv za lastne potrebe (operacijski sistem, poslovenjenje, sprememba ali dopolnitev zmogljivosti, ...).

Razvoj izdelkov z zlaganjem ’kock’.

vse sami – vse od začetka – nikoli končano

Vzpostavitev knjižnic/zbirk/kladišč izobraževalnih gradiv. Vsebovati morajo ’prijazna gradiva’ – varna (brez virusov, ’prisluškovalcev’,...) in nežaljiva (rasa, spol, vera, XXX, ...).
Zbirke/Skladišča – spletna sejmišča

Prva so bila vzpostavljena že v predspletnem obdobju in so temeljila na FTP.

Spletna sejmišča za izmenjavo gradiv.

- Simtel, C|Net, WinSite, Tucows, Stroud’s CWSApps.
- NASA, Free pictures index, Heraldry.
- Explorer, Utah Education Network, Digital classroom.
- MIT, Rice, berklee, Public Library of Science, BioMed Central.
- Project Gutenberg,
  Zbirka slovenskih leposlovnih besedil, Beseda.
- Data and Story Library / StatLib, The CIA World Factbook.
Virtual Software Library

Oče Virtual Software Library (sedaj C|net) je Žiga Turk:

Other resources for searching

If you're looking for freeware or shareware (and they're not the same -- you're supposed to pay for shareware), try the Virtual Software Library, which allows searching and retrieval of more than 130,000 files. The library was started by Professor Ziga Turk at the University of Ljubljana, Slovenia, but has recently moved to a new site at a company that calls itself c|net: the computer network (http://vsl.cnet.com). [02 Mar 1997: now called Shareware.Com, http://www.shareware.com.]

from EEI Communications, November 1995
### Math-related Programs

**Flash Math 1.03**
- **Released:** Nov 08, 2003
- **OS:** Handheld
- **License:** Shareware
- **Price:** $2
- **User Rating:** N/A

Children in years past have always practiced their basic mathematics by using flash cards. This learning methodology is highly effective in sharpening children’s computational capacity but lacks dynamic feedback. Flash Math duplicates the positive aspect of flash cards and provides dynamic feedback. Also, Flash Math scales problems according to children’s proficiency so that they are not frustrated by difficult problems or unchallenged by less intricate equations. The problems presented are for children in grades first through third in a standard US school curriculum.

- **Downloads:** 50
- **File Size:** 148.44 KB
- **Company:** Phan Network
- **Web Site:** http://www.PhanNetwork.com

**LabStat 3.10.15**
- **Released:** Oct 14, 2003
- **OS:** Windows 95/98/ME/XP
- **License:** Freeware
- **Price:** -
- **User Rating:** 83.33%

LabStat was written for research professionals who often compile sample data from raw data files. In manual mode, LabStat is also ideal for student work in lab courses: From data entry to analysis, LabStat demands fewer and less complicated steps than Excel and other Windows software. - Build 3.10.15 fixes bugs with correlation operations. - Users running 3.8.1 or later need only download the updated EXE file from the LabStat website.

- **Downloads:** 601
- **File Size:** 1.38 MB
- **Company:** S. A. DeCaro, Ph.D.
- **Web Site:** http://software.sdecnet.com/labstat
# Mathomatic

Mathomatic is a small, portable symbolic math program that can automatically solve, simplify, differentiate, combine, and compare algebraic equations, perform polynomial and complex arithmetic, etc.
Categories

Categories of software by Chao-Kuei.
Licences

- Public / Center for the Public Domain
- Free / GNU, The FreeBSD Copyright
- Open / Open Source Initiative, Open Content, Open Access
- Share / Association of Shareware Professionals, Trialware Professional Association
- Commercial / U.S. Copyright Office

The public domain is a space where intellectual property protection does not apply. When copyrights and patents expire, innovations and creative works fall into the public domain. They may then be used by anyone without permission and without the payment of a licensing fee.
GNU

GNU Operating System - Free Software Foundation

Free as in Freedom

Welcome to the GNU Project web server, www.gnu.org. The GNU Project was launched in 1984 to develop a complete UNIX style operating system which is free software: the GNU system. (GNU is a recursive acronym for "GNU's Not UNIX"; it is pronounced "guh-noo.") Variants of the GNU operating system, which use the kernel Linux, are now widely used; though these systems are often referred to as "Linux," they are more accurately called GNU/Linux systems.

This is also the web site of the Free Software Foundation (FSF). FSF is the principal organizational sponsor of the GNU Project. FSF receives very little funding from corporations or grant-making foundations. We rely on support from individuals like you who support FSF's mission to preserve, protect and promote the freedom to use, study, copy, modify, and redistribute computer software, and to defend the rights of Free Software users.
Open source

"The basic idea behind open source is very simple: When programmers can read, redistribute, and modify the source code for a piece of software, the software evolves. People improve it, people adapt it, people fix bugs. And this can happen at a speed that, if one is used to the slow pace of conventional software development, seems astonishing.

We in the open source community have learned that this rapid evolutionary process produces better software than the traditional closed model, in which only a very few programmers can see the source and everybody else must blindly use an opaque block of bits.”
Our experiences with free materials

- we got the Wirth’s pascal compiler in RRC Ljubljana in 1974;
- in mid eighties we started to use \TeX, and later also \texttt{Ghostscript/Gsview};
  Support (project Ro) of distribution of \texttt{TUG’s edition of} \TeX \ CDs;
- around 1990 LogoS – an interpreter for the slovenian dialect of logo was developed for PC/DOS. From 1994 on each new version of \texttt{MSWlogo’s GUI} is translated in Slovenian;
- \texttt{Lokar’s collection of mathematical educational programs};
- \texttt{SIO} catalogs;
- \texttt{Panel INFOS 2000}, …
Creative Commons

free as the air to common use

From the CC legal concepts:
”Creativity and innovation rely on a rich heritage of prior intellectual endeavor. We stand on the shoulders of giants by revisiting, reusing, and transforming the ideas and works of our peers and predecessors. Digital communications promise a new explosion of this kind of collaborative creative activity. But at the same time, expanding intellectual property protection leaves fewer and fewer creative works in the ’public domain’”

”Following legislative changes in 1976 and 1988, creative works are now automatically copyrighted (also in U.S.). We believe that many people would not choose this ’copyright by default’ if they had an easy mechanism for turning their work over to the public or exercising some but not all of their legal rights. It is Creative Commons’ goal to help create such a mechanism.”
...Creative Commons

When you create a work, it's automatically protected by full copyright—whether you file for protection or not, whether you display the copyright symbol (©) or not, this is fine for people who want control over every last use of their work, but what about those people who want to share their work on certain terms?

Every Creative Commons license allows the world to distribute, display, copy, and webcast your work — provided they abide by certain conditions of your choice.

Our licenses are designed for those folks — those who understand that innovation and new ideas come from building off existing ones.

There are four conditions you can apply with a Creative Commons license. The first is an attribution requirement. Let's say that I'm a budding photographer and want to get my name and work out on the Web. The attribution option lets people freely redistribute my photos as long as they give me credit.

- **BY**: Attribution
- **NC**: NonCommercial
- **ND**: No Derivative Works
- **SA**: Share Alike
Creative Commons Educators’ and Scholars’ Corner

Do you want people to redistribute your research and writings widely, as long as they give you credit?

Do you mind if people copy your materials, so long as they don't make money off them? Provided that they share the materials built from yours with the world on the same terms?

Do you like the idea of other people making new works based on yours – provided they offer those derivations back to the public on the same terms?

Do you want to help create and have access to a pool of royalty-free educational material?

If you publish your educational materials online...

Creative Commons provides an interface so that the world knows how they can distribute or re-use your educational materials. We can also help you find material to share and build upon.
Creative Commons na Ars Electronica 2004

Lawrence Lessig (Stanford), eden od ustanoviteljev CC. Paula LeDieu (BBC Creative Archive) – BBC, kot javna ustanova, namerava odpri svoje arhive za netržne uporabe – zaenkrat samo za uporabnike znotraj UK. Pri širjenju odprtosti bodo najbrž pričakovali vzajemnost.

Uradne slike: 44, 45, 47, 19; moje slike.
Open Source Water
...licences

Existing licensing schemes support the coexistence of commercial and free resources.

The *same price everywhere* principle used by most vendors of resources is also one reason for wide spread of unauthorized copying (pirates). In the last years some vendors are adapting to the markets by different pricing of localized versions.

A big issue in our field are the software patents.

League for Programming Freedom
Scripting, Platform independence, Standards

Using scripting languages (Perl, Python, ...) blocks for partial tasks can be combined together into more complex solutions.

Unfortunately most users are not programmers. For them systems with implicit programming (Record, Play) can be the answer.

Platform independent resources can be used on different platforms – types of computers. This is an old idea – Fortran, TeX; fundamental for web resources.

Platform independence is supported by standardization.

In last years several standards are expressed as XML based markup languages.
Resource standards

AICC - Aviation Industry CBT (Computer-Based Training) Committee, docs.
Adobe, XMP, dl.
CC Metadata

```xml
<rdf:RDF xmlns="http://web.resource.org/cc/"
  xmlns:dc="http://purl.org/dc/elements/1.1/"
  xmlns:rdf="http://www.w3.org/1999/02/22-rdf-syntax-ns#">
  <Work rdf:about="http://example.org/gnomophone.mp3">
    <dc:title>Compilers in the Key of C</dc:title>
    <dc:description>A lovely classical work on compiling code.</dc:description>
    <dc:creator><Agent>
      <dc:title>Yo-Yo Dyne</dc:title>
    </Agent></dc:creator>
    <dc:rights><Agent>
      <dc:title>Gnomophone</dc:title>
    </Agent></dc:rights>
    <dc:date>1842</dc:date>
    <dc:format>audio/mpeg</dc:format>
    <dc:type rdf:resource="http://purl.org/dc/dcmitype/Sound" />
    <dc:source rdf:resource="http://example.net/gnomovision.mov" />
    <license rdf:resource="http://creativecommons.org/licenses/by-nc-nd/2.0/" />
    <license rdf:resource="http://www.eff.org/IP/Open_licenses/eff_oal.html" />
  </Work>
  <License rdf:about="http://creativecommons.org/licenses/by-nc-nd/2.0/">
    <permits rdf:resource="http://web.resource.org/cc/Reproduction" />
    <permits rdf:resource="http://web.resource.org/cc/Distribution" />
    <requires rdf:resource="http://web.resource.org/cc/Notice" />
    <requires rdf:resource="http://web.resource.org/cc/Attribution" />
    <prohibits rdf:resource="http://web.resource.org/cc/CommercialUse" />
  </License>
</rdf:RDF>
```
Organizacija

Ponujata se dve rešitvi:

- središčna zbirka vseh građiv – premalo odporna in prilagodljiva; pravne ovire – izdelovalci prostih izdelkov želijo imeti nadzor nad razpečevanjem (npr. Acrobat reader);
- središčno spletno kazalo/iskalnik z arhivom lokalnih izvodov nekaterih građiv. Porazdeljene zbirke: prosto in odprto programje (OKO), podpora učenju na daljavo, fotografije in drugo slikovno građivo, kemijska građiva, …

...Organizacija

Glavni problem vseh takih rešitev je, poleg tehničnih vprašanj (vzdrževanje, posodabljanje) in 'kritične mase', vnedrenje v uporabniško sredino – vsi 'dejavniki' jo morajo vzeti za svojo.
Vrednotenje

Eno od pomembnih vprašanj pri graševih je ovrednotenje njihove kakovosti – uporabnik naj bi dobil poleg seznam grašev tudi informacijo o njihovi kakovosti.

Podobno, kot pri običajnih učilih, je tudi tu smiselno razmišljati o več ravneh – npr.: potrjena (podobno kot učbeniki), priporočena (svetovalci, predmetne skupine), zvezdice (glas uporabnikov), …Te ocene so lahko dopolnjene z zbirko mnenj.
Vrednotenje – OKO

1. Tuj izdelek OKO
2. Ocena ustreznosti / potrebnosti
   - Razdelava?
     - Da
     - Razdelava predloga - "scenarij"
     - Strokovno, tehnično, finančno ovrednotenje
     - Izdelava?
       - Da
       - Tehnična / strokovna priporočila
         - Izbira izvajalcev
           - Izvedba izdelka / prilagoditve
             - Priprava gradiv
               - Strokovni, tehnični pregled
                 - Preverjanje v izobraževanju
                   - Uvajanje v šolo, izobraževanje uporabnikov
                     - UPORABA
                       - Ponudba na spletu SIO
                         - Vrednotenje, zbiranje pripomb in predlogov
   - Ne
     - Ocena zahtevnosti prilagoditve, stroški
     - Prilagajanje?
       - Da
       - Ocena ustreznosti / potrebnosti
         - Predlog izdelka ali gradiva
           - Učitelji, svetovalci, posamezniki, ...
What to do?

- collection of (information about) educational resources on the web (SIO);
- localization of selected resources (Project OKO);
- active support of production of critical resources (language, history, geography, ...) by initiating projects;
- user education for efficient use of resources and materials;
- local copyright legislation about ’fair use’ should be ’education-friendly’;
- results of publicly financed projects and other activities should be in public domain;
- support of standards.
Examples

**IrfanView:** Universal viewer. [Home page](#).

**Rasmol:** Molecular viewer. [Home page](#), [program](#), [RasWin](#);  
Data: MathMol, 1400+ molecular models, the Molecule of the Month.

**geom SVG:** SVG based dynamic geometry system. [Pilat](#);  

**Netlogo:** Simulation environment in Java. [Netlogo MIRK 2003](#).

**R-project:** Statistical environment. [CRAN](#).