

STRATEGIES FOR THE IMPLEMENTATION OF WEB 2.0 TOOLS IN ACADEMIC EDUCATION



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- The use of Web 2.0 tools (wikies, blogs, RSS feeds, collaborative writing, video sharing, social networks, etc.) can support **innovative teaching methods** and result in various positive educational effects
 - Communities of practice, syndicated content, learning as a creative activity, peer-to-peer learning, non-formal education (Bartolomé, 2008)
 - Enhanced student motivation, improved participation, facilitation of learning and social skills, stimulation of higher order cognitive skills, and increased self-directed learning (Redecker et al., 2009)
 - Innovative active learning approaches, novel forms of blended learning scenarios, integration with social communities, collaborative creation/exchange of learning content, and the creation of personalized learner-centered environments like blogs and e-portfolios (Heid et al., 2009)

- However, the adoption of Web 2.0 tools at universities is facing **important challenges**
 - Potential risks, institutional fear (Freire, 2008)
 - Potential problems with technology and quality of content, limited security, diversity of technologies, etc. (Grosseck, 2009)
 - Students also perceive the difficulties arising from the use of Web 2.0 tools in university courses in comparison with the use of traditional e-learning tools and classroom lectures (Kumar, 2009)

- The EduWeb2.0 project
 - Conducted from 2009 to 2011
 - Investigated the educational use of Web 2.0 technologies
- Among the outcomes of the EduWeb2.0 project are
 - Evaluations of more than 40 Web 2.0 tools
 - Recommended online pedagogical activities with Web 2.0 tools and services
 - Workshops and lectures for teachers in Croatia
 - Case studies
 - Scientific papers and conference presentations

- Applied novel approach to peer-to-peer learning for courses “Data Structures” and “English Language I” (the students used multiple Web 2.0 tools to present course topics)
- Investigated possibilities of using multiple Web 2.0 tools in combination with e-portfolio views and blog posts for the purpose of science promotion and popularization
- Variety of Web 2.0 tools used in the university context
 - Blog, wiki, e-portfolio, social bookmarking, online note taking, mind mapping, block-diagrams, video sharing and tagging, online cartoon strips, mockups, mashups, and online presentations (in the “Computer-Mediated Communication” course)

Innovation aspects 2/2

- In the “Data Structures” course the students used a wiki and seven different tools from each of the following categories: online note taking, social bookmarking, mind mapping, flowcharting, screencasting, collaborative programming, and mashups (PLEs)



Pedagogical aspects 1/2

- Design, implementation and evaluation of various online pedagogical activities in several university courses
- More than 30 general-type e-activities have been presented on the wiki portal of the EduWeb2.0 project
- Blog posts and e-portfolio views were evaluated as a means of presenting students' artifacts created with Web 2.0 tools, keeping a diary of weekly course-related topics and activities, as well as for the assessment of the results of students' work in various assignments
- We also investigated the usefulness of online community websites (Ning, SocialGO) for small groups of students and analyzed the effects of their use on student motivation and socialization
- Many of the Web 2.0 tools were evaluated for their pedagogical potential
- Most noticeable educational effects of the use of Web 2.0 tools
 - Fostering collaborative and peer-to-peer learning
 - Enrichment of learning experiences
 - Development of ICT-related competencies

Pedagogical aspects 2/2

- Integration of artifacts in an e-portfolio view (Mahara)

The screenshot shows a Mahara e-portfolio page for a project titled "Komunikacija između različitih razina u organizaciji". The page is divided into several sections:

- Naši radovi na temu "Komunikacija između različitih razina u organizaciji":** A list of documents including "CITRANJE OSOBE (Anamarija)", "ANALOGJE STARO-NOVO (Rosana)", "ŠTO SAM RANJE ZNAO O OVOJ TEMI (Nikola)", "SAŽETAK (Dunja)", and "PITANJA ZA PONAVLJANJE (Tihana)". A red box labeled "Links to project e-tivities" points to this list.
- Sažetak:** A video player titled "Interpersonal Communication Skills" with a "Power Tip #2" overlay: "Lead and pace with emotion". A red box labeled "YouTube video" points to the video player.
- Sažetak - karakteristike interpersonalne komunikacije:** A mind map diagram showing characteristics of interpersonal communication.
- Pitanja za ponavljanje:** A mind map diagram titled "Pitanja za ponavljanje" with sub-topics like "Karakteristike interpersonalne komunikacije" and "Dinamika interpersonalne komunikacije". A red box labeled "Mind maps created with Web 2.0 tool Gliffy" points to this diagram.
- Komunikacija u organizaciji:** A block diagram showing "KOMUNIKACIJA U ORGANIZACIJI" branching into "FORMALNA" and "NEFORMALNA" communication. A red box labeled "Block-diagram in Web 2.0 tool Gliffy" points to this diagram.
- Analogije staro-novo:** A complex mind map diagram comparing traditional and modern communication concepts.
- Manager:** A section with an RSS feed icon and a list of 10 items. A red box labeled "RSS Feed" points to the RSS icon.

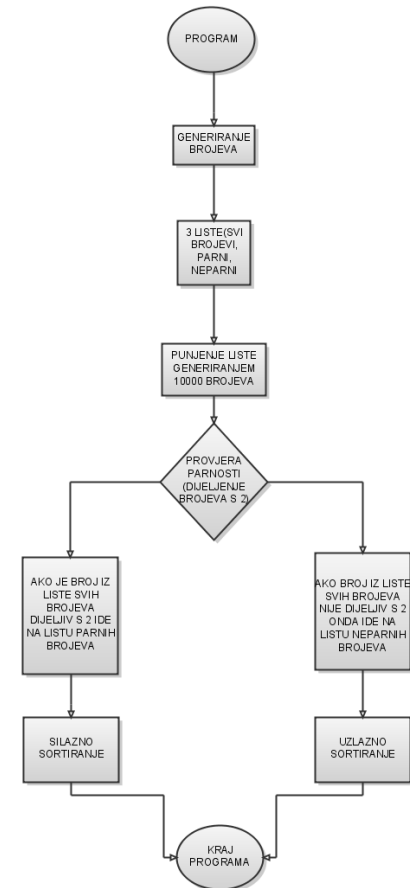
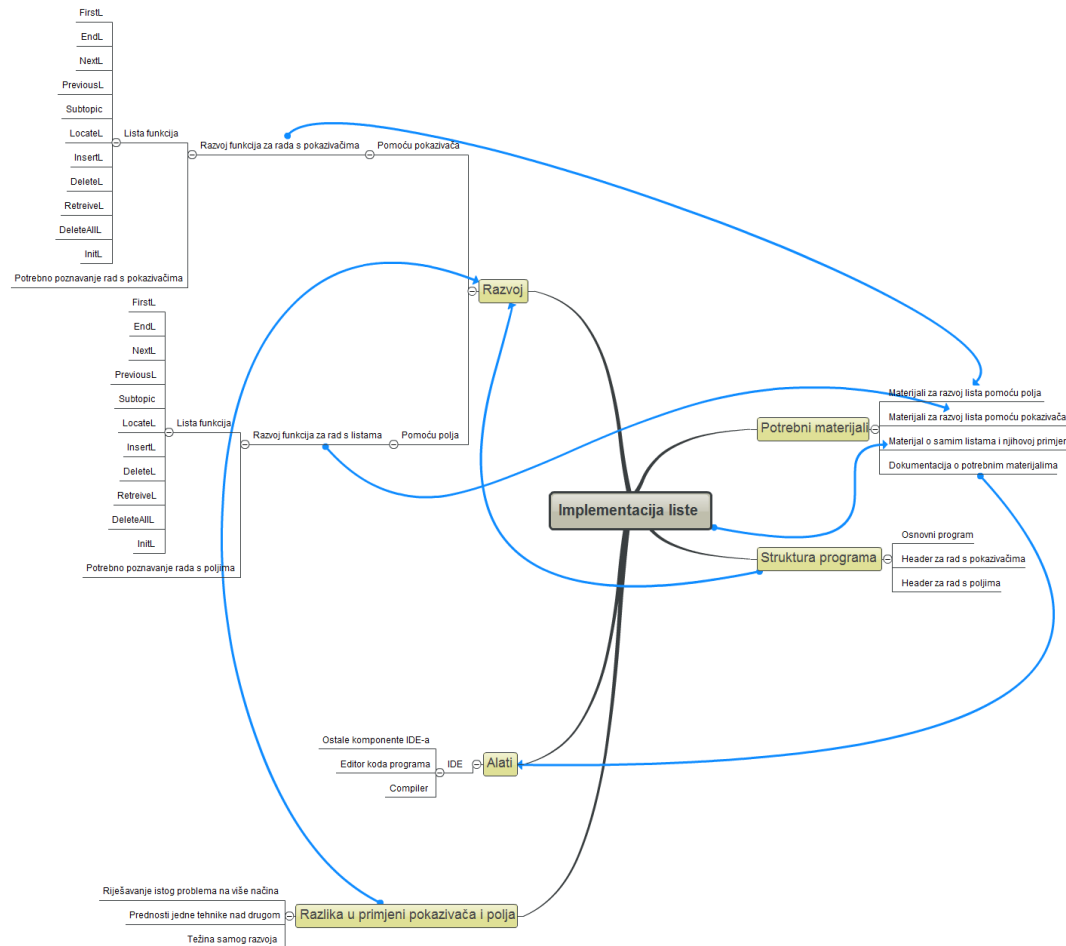
Annotations in red boxes with arrows point to these specific artifacts, highlighting their integration into the e-portfolio view.

Technological aspects 1/3

- Evaluation of Web 2.0 tools that are open-source or free of charge, web based and without the need to be downloaded or placed on a personal computer
- The usability of 20 different Web 2.0 tools was tested with a comprehensive survey, along with a brief accessibility testing procedure (server response time, help included on the tool's webpage, the possibility of changing font size in the tool)
- Some of the best usability Web 2.0 tools were consequently recommended
- For most of the Web 2.0 tools used in various courses a brief overview was presented on the EduWeb2.0 portal with a list of *pros and cons* resulting from expert evaluation
- Possibilities of integrating and presenting student artifacts created with Web 2.0 tools were investigated in relation to the use of a wiki (MediaWiki), blog (WordPress), e-portfolio (Mahara), online community website (Ning) and LMS Moodle

Tehnological aspects 2/3

- Best usability Web 2.0 tools for mind mapping and block-diagrams (Mindomo & Gliffy)



Tehnological aspects 3/3

- **Mindomo** evaluation on EduWeb2.0 project wiki page

Main purpose

Mindomo is Flash-based mind map editor which can be used in online and offline (desktop) mode.

Useful information

If you just wanna see how Mindomo works, you can try demo version of an application which can be used without registration. However, in order to save created mind map or share it with others, you will have to register with a new username and password or login with existed Google or Yahoo account. Mindomo comes in three different versions: basic (free), premium and team. It has Office 2007 alike interface with a number of different functionalities for creating and editing mind maps. For those who are not familiar with this kind of interface or do not have an idea how to create a mind map, there is a very detail screenshot tour. Besides, you have also an option to search for most recent, most viewed and top rated mind maps or maps which were made in a specific language. Finally, this application can be used for time schedule and project management purposes.



Pros & Cons

Pros

- mouse and keyboard shortcuts
- number of multimedia items which can be attached to every node
- interactive and familiar interface

Cons

- account security issues in free version
- only seven private maps in basic version

Reference

- <http://www.mindomo.com>

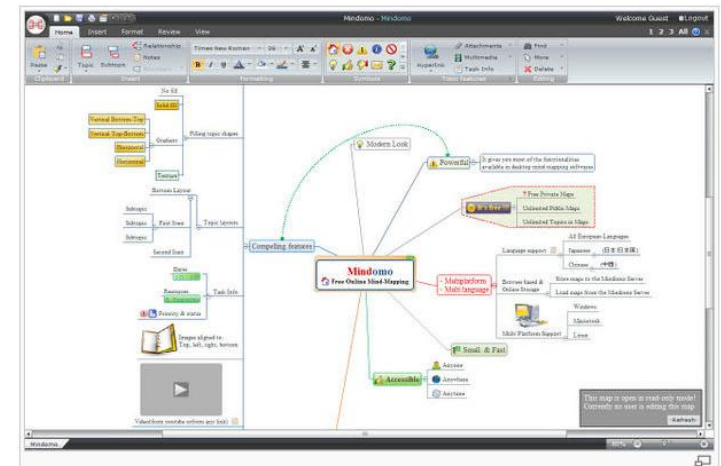
Tool accessibility test (15 June 2010)

Server Response Time test performed from Seattle, WA / Munich, Germany / Brisbane, Australia : 1.255 sec / 0.407 sec / 2.211 sec

Server Response Time Scale: Less than 0,1 = Optimal; 0,1 - 1 = Acceptable; 1 - 4 = Noticable but tolerable delay; 4 - 8 = Bearly tolerant delay

This tool has help included on the tool's webpage (link): <http://www.mindomo.com/help/welcome.htm?sessionId=931CBCA82881F7B2FD8FA7277C2659FC>

There is no possibility of changing the type or size of fonts in the tool (it can be done only as a browser functionality).

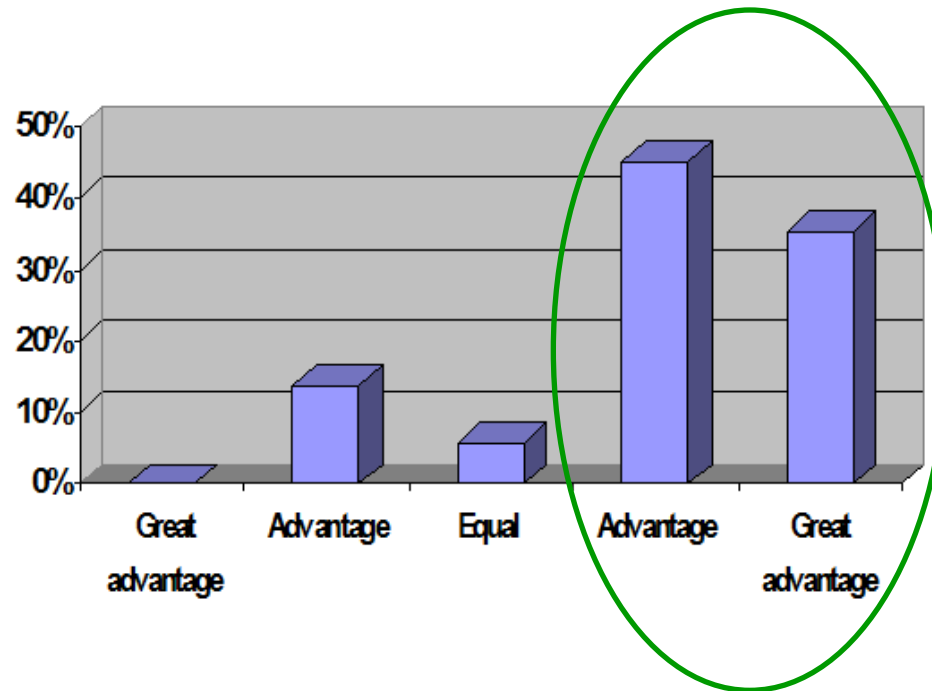


- Development of students' ICT skills and other related competencies (*"Key Competences for Lifelong Learning – A European Framework"*, 2006)
- Case studies with survey evaluation and anecdotal evidence from students
- Presentation of the results of the EduWeb2.0 project at 10+ conferences
- So far 5 workshops and 1 webinar delivered in Croatia
- The EUNIS 2011 report describes strategies that can be used for successful implementation of Web 2.0 tools in higher education
 - *Adoption*
 - *Usability*
 - *Maintenance*
 - *Pedagogy*
 - *Social interaction*
 - *Privacy*
 - *Security*

Usefulness and benefits 2/2

- Student responses to the question of ***which approach enabled more permanent knowledge acquisition or long term memorizing*** (ability to remember course content several months or years after learning activity); N=51

The use of *E-learning 1.0* course „Online Communication“ (quizzes, tests and questionnaires)



The use of *E-learning 2.0* approach with Web 2.0 tools for content creation (blog, wiki, mind maps, online cartoons, etc.)

Adoption strategies

- Promotion of the use of Web 2.0 tools in academic teaching (lectures, demonstrations, webinars, conference papers etc.)
- Development of related ICT skills of teaching staff (workshops)
- Tutorials to students before giving assignments with the use of Web 2.0 tools
- Links to online resources that explain the use of a given Web 2.0 tool
- Precise instructions regarding the use of a Web 2.0 tool and the related online learning activity
- Sufficient technological support for teachers at their college
- Sharing of case studies and practical experiences between teachers

Usability strategies

- A Web 2.0 tool should be **thoroughly tested** before students are required to use it for assignments
- A new type of a Web 2.0 tool should ideally *first be used in small study groups* (10-15 students)
- For tools that are freely available on the Web (when the service provider is not located on campus) the teacher should have an alternative (for mind mapping, bubbl.us vs. Mindomo; for mashups, iGoogle vs. PageFlakes).
- Teachers should **exchange their experiences** with the use of various Web 2.0 tools regarding their **usability attributes** like ease of use, navigability, learnability, and reliability
- More than 40 Web 2.0 tools were *evaluated in practice* and the results are presented on the EduWeb 2.0 project wiki

- **Maintenance**

- Use one's own (college/university) server for tools like wiki (e.g. MediaWiki), blog (e.g. Wordpress), e-portfolio (e.g. Mahara), or social network (e.g. Elgg.org), **OR**
- Use tools and services that are either free, or available on the web at a small charge (e.g. WikiSpaces, Blogger, Foliospaces, Grou.ps)

- **Pedagogy**

- Suitable Web 2.0 tools should be selected on the basis of their potential effectiveness to attract interest, engage students and better illustrate the course content
- *Evaluation of online pedagogical activities* is needed with the intention of improvement of instructional design with next generations of students
- *Collaboration and peer-to-peer learning* can be facilitated with more than one generation of students
- Potential positive effects can be obtained regarding *retention and higher order cognitive learning*

- **Social interaction**

- Ning was best for small groups of part-time students
- E-portfolio tool Mahara was best for large groups of 50-100 students
- Blog was suitable for medium-sized groups of students
- Tight deadlines and work overload may decrease the amount of online socializing
- Wiki is best for student collaboration and production of publicly available content

- **Privacy and security**

- We recommend use of pseudonyms and creation of anonymous mail accounts that enable students' registration required for using free Web 2.0 tools and services
- Consider use of closed systems like Moodle (including Moodle wiki)
- Proper maintenance is required of institutional IT resources (servers, software) where Web 2.0 tools are placed

Example of current project activity

- Mobile solution for peer-to-peer and informal learning which combines open-source **Mobile Joomla** and a wiki (**PmWiki**)
- The open-source *Mobile Joomla* with *PmWiki* solution enables content viewing with browser compatibility including **Android**, **iPhone**, **Blackberry**, **Nokia** and other mobile phone systems
- The Mobile Joomla CMS was used for the creation of students' articles on *leadership communication* and a wiki for a glossary
- *Project started in March 2011 and the solution was tested in June 2011*



Conclusion

- The use of Web 2.0 tools in academic education extends the limits of classical LMSs (Moodle, Blackboard) regarding the potential for social interaction, collaboration and novel forms of information presentation
- The EduWeb2.0 project will continue to investigate novel Web 2.0 tools (their usability and suitable pedagogical activities) for their potential usefulness and appropriateness in online education



Thank you for your
attention!

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