Thinking outside the task: Learner autonomy and creativity in Web 2.0-based dialogic spaces

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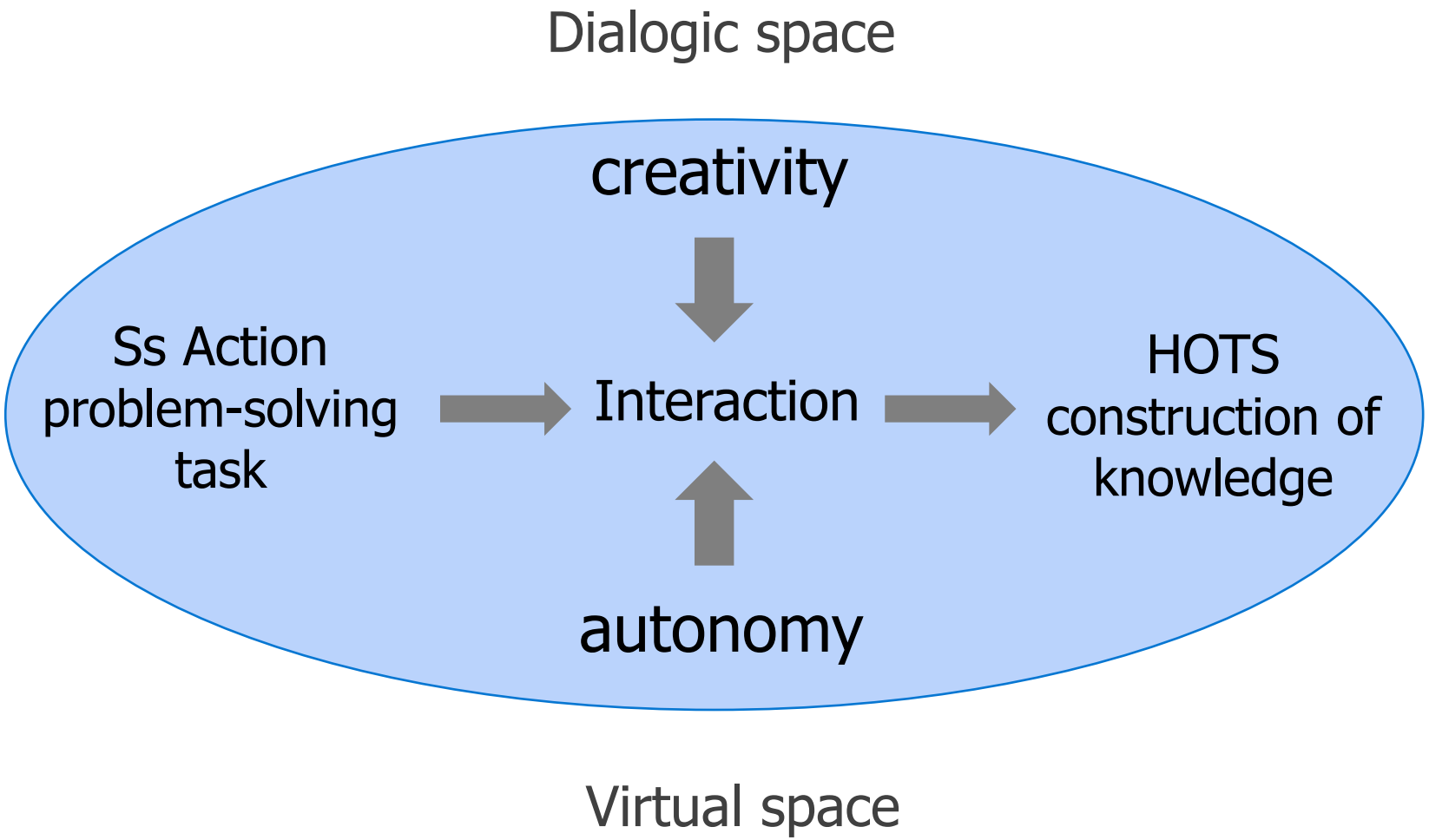
11. eLearning Tag 2012 - E-Didaktik - Lernen in virtuellen sozialen Räumen

Aim of the talk

- **General**
  - explore ***potential benefits*** of promoting learner autonomy and creativity in virtual dialogic spaces
  - creativity and autonomy situated within Web 2.0 supported instruction in three academic courses

- **Specific**
  - identify ***examples*** of autonomy and creativity
  - manifestations of ***higher order thinking skills*** used by college students in the execution of ***written online tasks*** that involve multimedia artifact generation (e.g. cartoons, block diagrams, screencasts)

Defining the context



Bloom's digital taxonomy

- Matching thinking skills with actions
  (Churches, 2007)

Generating/creating

new ideas, products, or ways of viewing things

Actions:

Designing
Constructing
Producing
Inventing
Building

programming, filming, animating, blogging, wikiing, publishing, podcasting ...

Autonomy and Creativity in e-learning

- **Autonomy for learners**
  - a novel trend in e-learning 2.0
  - characterized by a shift from the teacher-to-student knowledge transfer approach to ***mutual construction of knowledge*** (Ehlers 2009)
  - autonomy presupposes the learners' ***capacity to control their own learning*** and make informed decisions regarding the direction of their own learning efforts (Figura and Jarvis 2007)

- **Creativity**
  - ability to 'produce work that is novel' and 'appropriate' with regards to the adaptation concerning task constraints (Sternberg and Luart 1999, 3)
  - use of Web 2.0 tools has the potential to increase individual creativity and facilitate active participation of learners (Ullrich et al. 2008)

Dialogic space

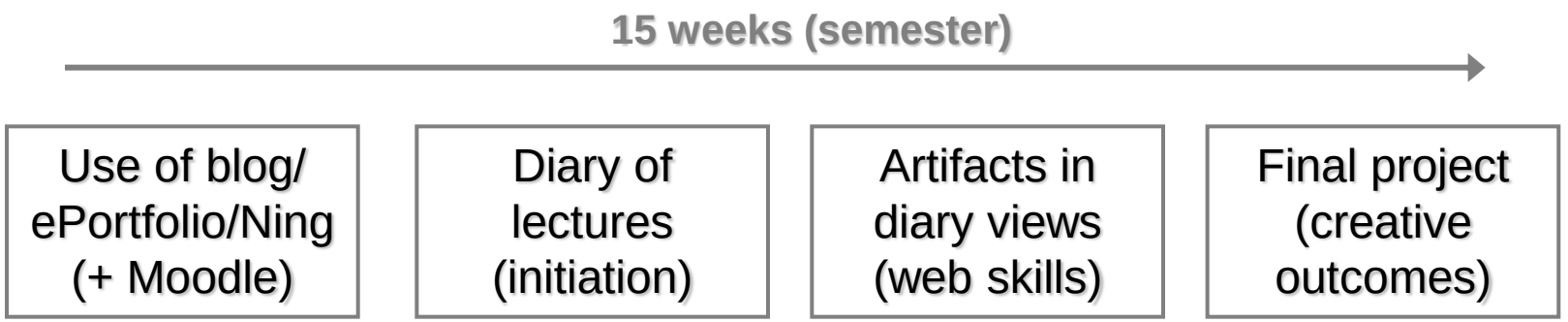
- **Dialogical Self Theory** (Hermans, 1993)
  - ***The self*** partly decentered and permeated by otherness yet having some degree of agency (Hermans and Salgado, 2010)
  - necessity of a ***dialogue*** in which the expression of a learner's voice and its interaction with other voices is central to construction of knowledge (Bakhtin, 1986)
  - ***inter***personal and ***intra***personal dialogue

'The mind needs not only *itself* but also the *other person*, not only the other person as an *outside* reality but also the other as a necessary and innovative force *in the self*.'

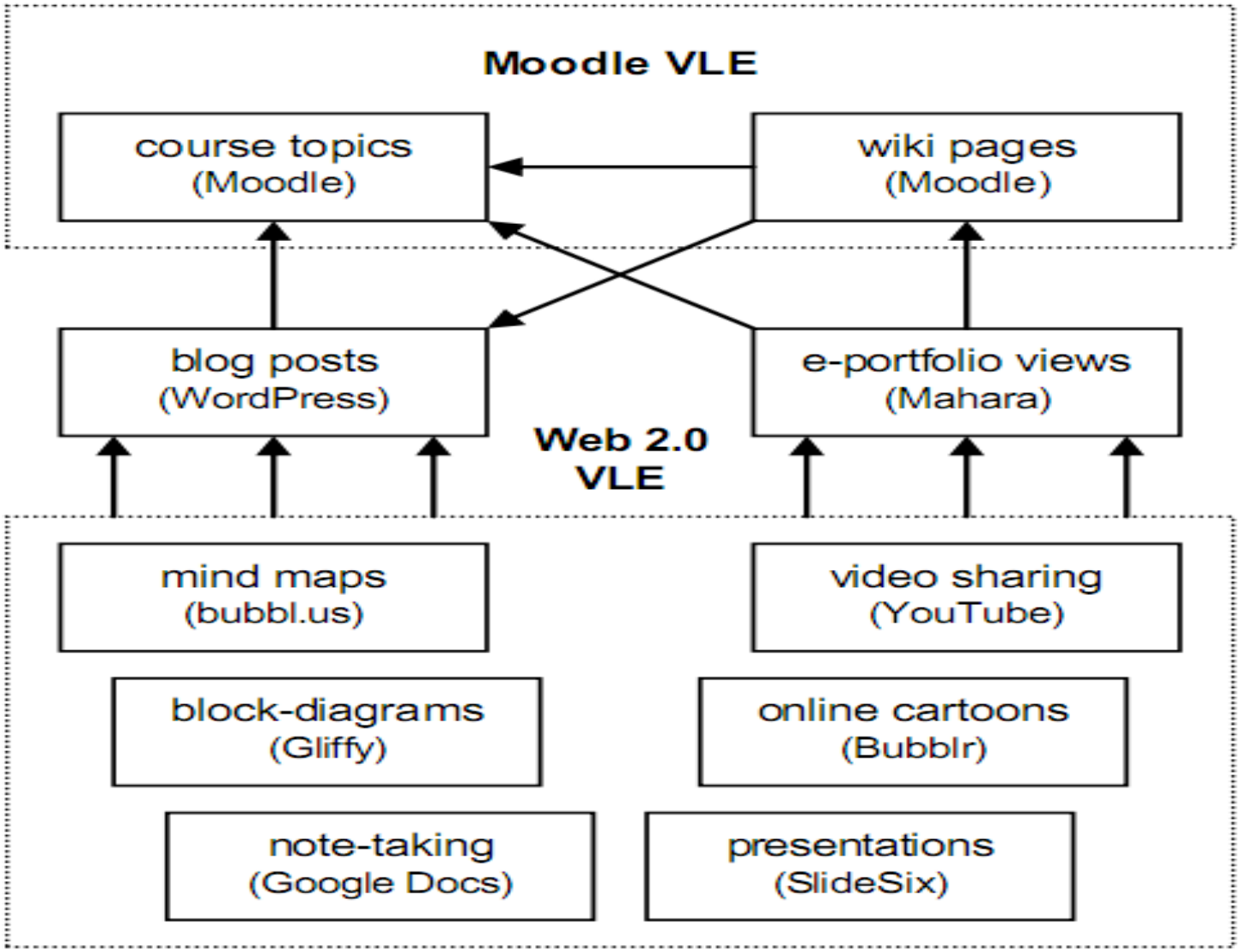
(Hermans and Salgado, 2010, 183)

Teaching communication with Web 2.0

- Computer-Mediated Communication ***(CMC)*** Course
  - ***hybrid learning environment*** in the fourth year of study of *Information Systems*
  - this course was conducted in form of classroom lectures, exercises in the computer laboratory, and with the use of various online tools in a virtual learning environment (VLE)
  - the VLE consisted of a Moodle course, blog, e-portfolio system, wiki, and numerous other Web 2.0 tools (for the creation of mind maps, block-diagrams, online surveys, mockups, mashups, online debates, web presentations etc.)



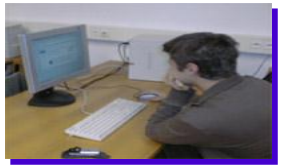
CMC course virtual learning environment



The beginning of our creative use of Web 2.0

- Hybrid course "Psychology and the Internet" (2004-2006) used wiki, blog, Delicious, Web CT & e-course

Classroom lecturing



Online activities

Web resources

E-course

WebCT materials & discussions

Blog & wiki

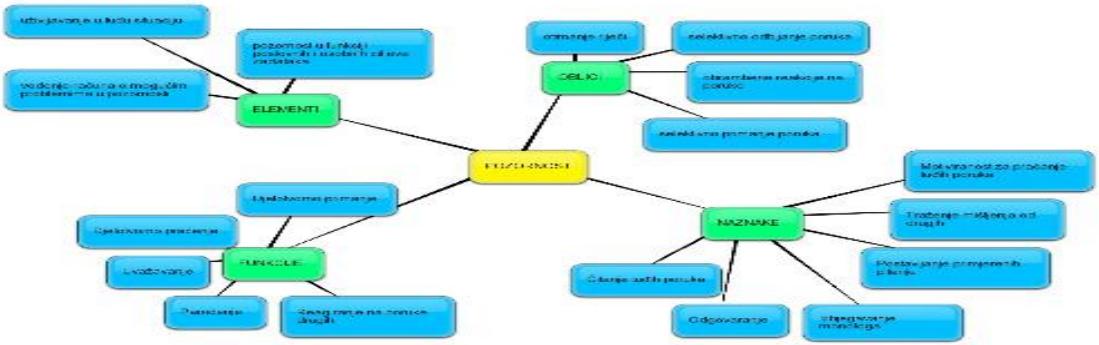
Creativity in online diary activity (blog)

Marija

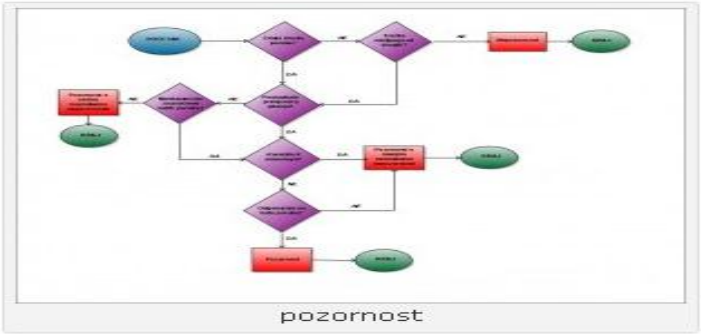
Blog iz kolegija Računalom posredovana komunikacija

Dnevnik_16.11.2009.

Kalendar
December 2009



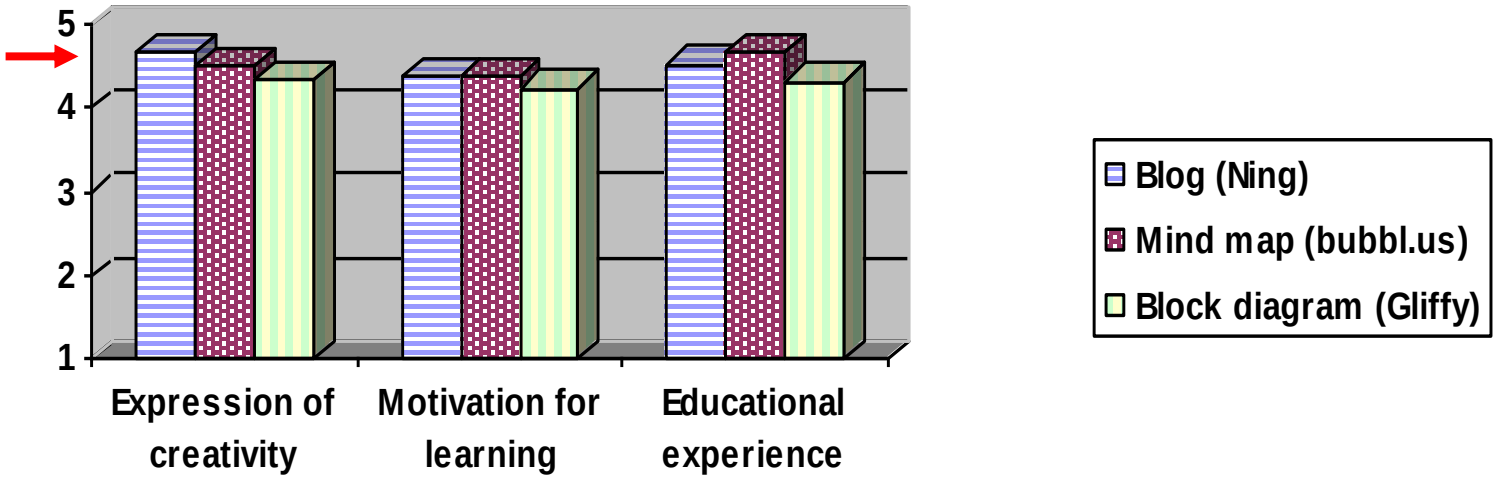
Također tu istu vještinu obradila sam u programskom alatu Gliffy. Pomoću njega prikazala sam na koje načine ljudi mogu biti pozorni, ne mogu biti i kada pokazuju manje odnosno veće naznake nepozornosti. To je prikazano na sljedećem dijagramu:



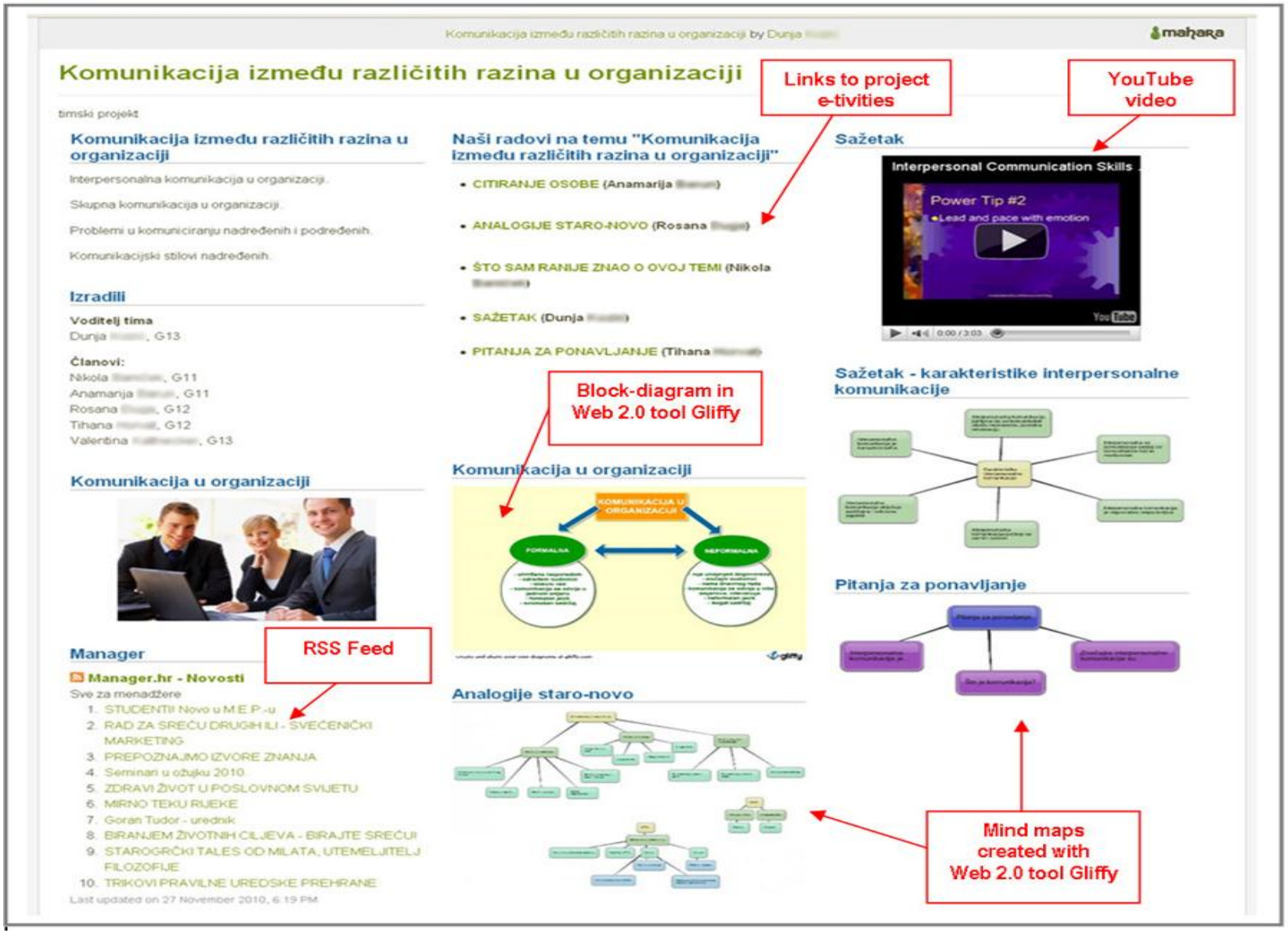
pozornost

Effects of creative use of Web 2.0 tools

- Very high average student evaluation of a ***blog tool*** (a component of Ning), ***mindmap*** (bubbl.us), and ***block diagram tool*** (Gliffy) regarding their potential to express personal creativity, positive influence on motivation for learning, and enrichment of educational experience *(scale: 1 = very poor, 5 = very good; N=38; part-time students)*



Example of a creative outcome in a course



A team project on acid rain effects /1

mahara

Back

ONEČIŠĆENJE ATMOSFERE (25.1.2011.) by Marin

Popularizacija znanosti **Ekologija** čiji su autori:

- Marin
- Matkc

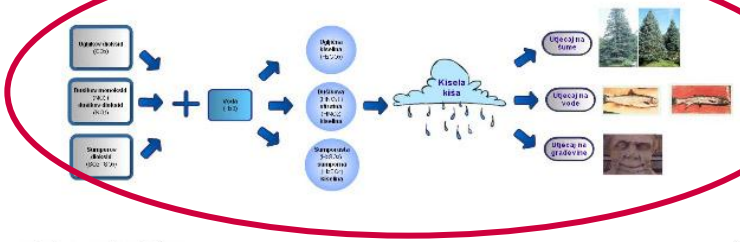
1. Uvod

Pregled onečišćenja kroz povijest

Onečišćenje atmosfere započelo je još prije naše ere. **Nomadska plemena** iskusila su posljedice štetnosti plinova nakon paljenja vatre u zatvorenom prostoru. Onečišćenje se nastavilo u **srednjem vijeku** kad je ugljen zamijenjen drvom kao glavnim ogrjevnim elementom. Izum parnog stroja (1784. god.) i početak **industrijske revolucije** utjecao je na zamjenu ugljena drvom i njegovu masovnu upotrebu kao glavnim ogrjevnim elementom. Početkom **20. stoljeća** stanje se još više pogoršava (razvoj termoelektrana, automobilska industrija, dva svjetska rata, itd.). Najveći **onečišćivači** atmosfere **današnjice** su ***kisele kiše, smog i efekat staklenika*** te ćemo njih u ovom seminaru pojasniti i prikazati koristeći odabrane Web 2.0 alate.

Grafički prikaz procesa nastanka kiselih kiša

Blok dijagram uzročnika i posljedica kiselih kiša



gliffy

3. Smog

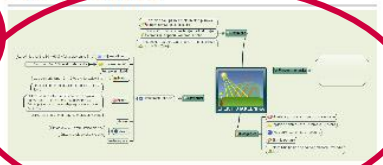
Slijedeća mentalna mapa izrađena je koristeći ala ***iMindMap*** (trial verzija) te objašnjava **definiciju**, **vrste** i **posljedice** smoga. Možemo napomenuti da je smog glavni problem velikih gradova (Peking, Los Angeles i New York) što potvrđuje i prikazani ***YouTube*** videozapis.

4. Efekt staklenika

Efekst staklenika je još jedna negativna pojava koja ugrožava i uništava atmosferu, zaštitnicu života na Zemlji.

Mentalna mapa izrađena u Web 2.0 alatu ***Mindomo*** prikazuje **što je** efekt staklenika, njezine **uzročnike**, **proces nastanka** koristeći ***YouTube*** videozapis te negativne **posljedice**. Na ovom **linku** dan je uvećani i animirani prikaz izrađene mentalne mape.

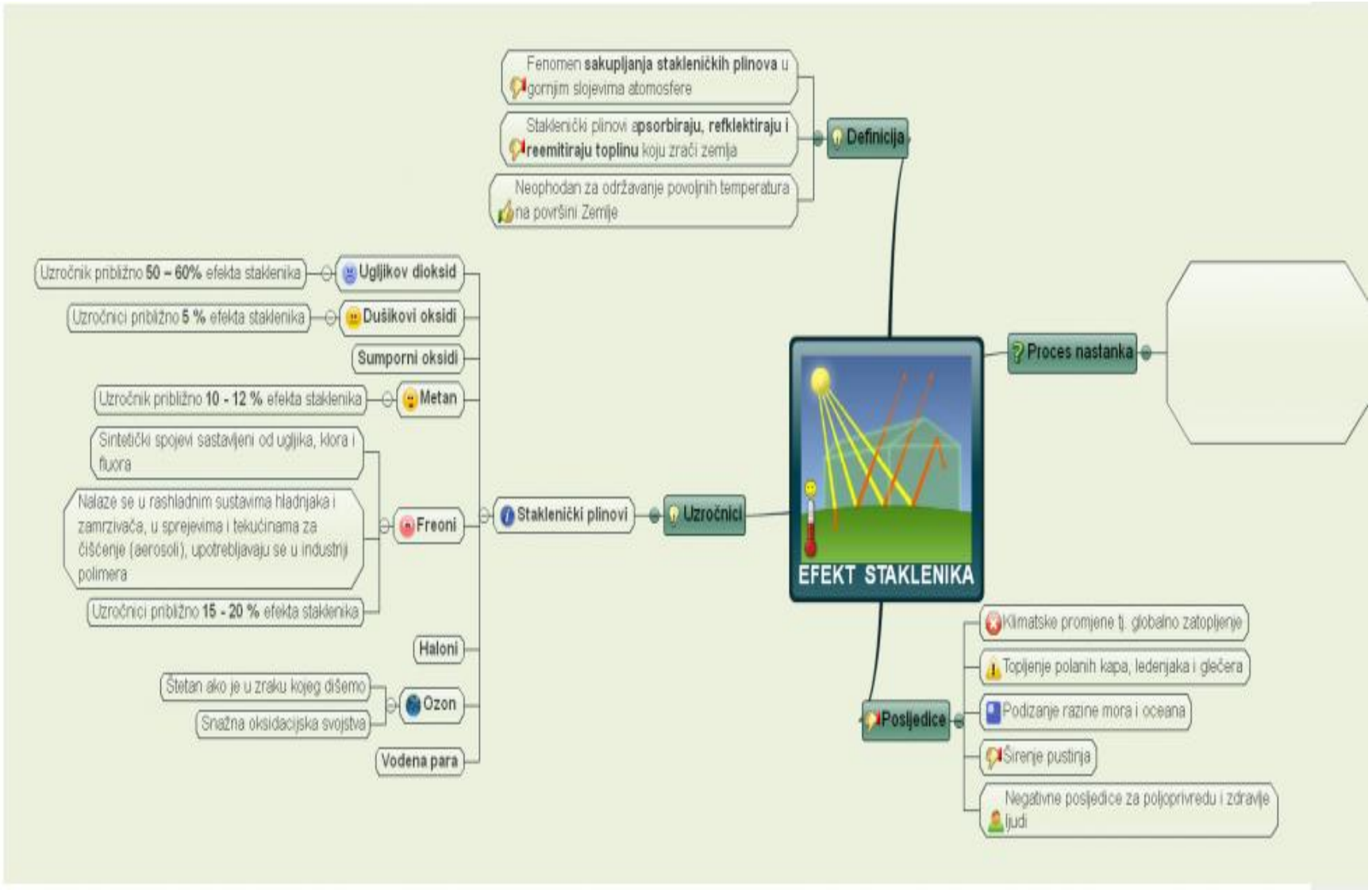
Mentalna mapa o efektu staklenika



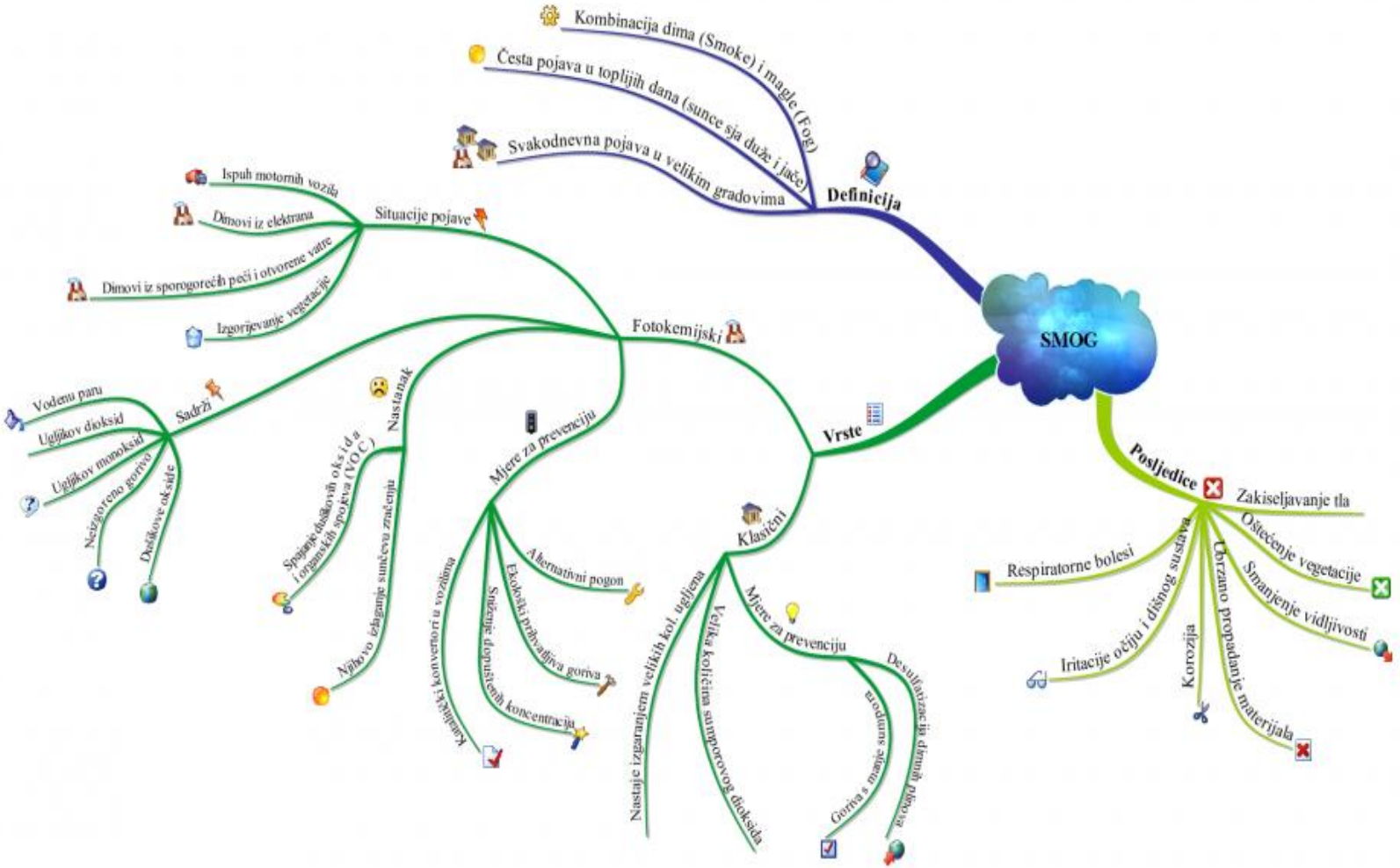
5. Zaključak

Krajnje je vrijeme da se čovječanstvo u potpunosti posveti očuvanju zaštitnice planeta Zemlje, koja je već do te mjere narušena onečišćenjem i uništavanjem da smo i sami postali svjedoci negativnih posljedica.

A team project on acid rain effects /2



A team project on acid rain effects /3



Pedagogical foundations and outcomes

- Self-reflection, self-awareness, self-regulation...
- Internet/web skills, use of multimedia, ICT literacy
- Writing skills, web design skills, presentation of information
- Connectedness, networking, exchange, teamwork
- Peer-to-peer learning, collaborative learning, social learning
- Experiential learning, cognitivism, constructivism
- Scaffolding, cognitive apprenticeship, modeling
- Learner-centered pedagogy, transformative learning
- Distributive cognition, integrated learning, connectivism
- Construction, reflection, critical thinking, (peer) feedback
- Learning outcomes, competences, employability

Creativity in Data Structures course (1)

- an online note-taking tool had to be used to explain the theoretical background of a data structures related problem
- mind mapping tool was used to complement problem definition, which contributed to creative analysis of a specific programming task
- students had to create a flowchart of their programming solution
- a screencasting tool was used to explain the solution step-by-step so each code snippet recording was supplemented with an oral explanation
- for each step the students were able to use a variety of Web 2.0 tools

Online note-taking

ZOHO Writer
Home Download Email This Page Plain View RSS
38 Views | Last Modified : 374 days ago

Proširenje bilješki (Tanja Maltar)

Euklidov algoritam i primjeri njegova rješavanja

Euklidov algoritam smatra se jednim od najstarijih algoritama koji se koristi u današnje vrijeme. Prvi puta se javio u 3. st. pr. Kr. u Euklidovim elementima. Danas se smatra da Euklid nije originalni tvorac algoritma jer je u svojim knjigama skupljao sva znanja o matematici koja su do tad bila poznata. Postoje nagađanja da je algoritam bio poznat još Eudoksu sa Knida (375. god. pr. Kr.), a neki nagađaju da je još i stariji.

U matematici, Euklidov algoritam je efikasan način za određivanje djelitelja (NZD) danih brojeva. NZD dva broja je najveći broj koji istovremeno dijeli oba broja bez ostatka. Euklidov algoritam djeluje tako da se najveći zajednički djelitelj dva broja ne mijenja ukoliko se manji broj oduzme od većeg, pa se zatim odredi NZD novodobivenog broja i manjeg od prethodna dva. Na primjer, 21 je NZD za 252 i 105 ($252 = 21 \times 12$; $105 = 21 \times 5$); pošto je $252 - 105 = 147$, NZD za 147 i 105 je također 21. Kako je veći od dva polazna broja na ovaj način smanjen, ponavljanjem postupka dobivati će se sve manji brojevi, dok se jedan od njih ne svede na nulu. U tom trenutku, drugi broj je jednak najvećem zajedničkom djelitelju dva polazna broja. Ukoliko se okrene redoslijed koraka u Euklidovom algoritmu, NZD se može izraziti kao zbroj dva polazna broja od kojih je svaki pomnožen nekim cijelim brojem, u prethodnom primjeru $21 = 5 \times 105 + (-2) \times 252$. Ova važna osobina je poznata kao Bezuov identitet.

Određivanje najveće zajedničke mjere brojeva

Najveća zajednička mjera brojeva 4002 i 3102.

4002 = 1 * 3102 + 900

3102 = 3 * 900 + 402

900 = 2 * 402 + 96

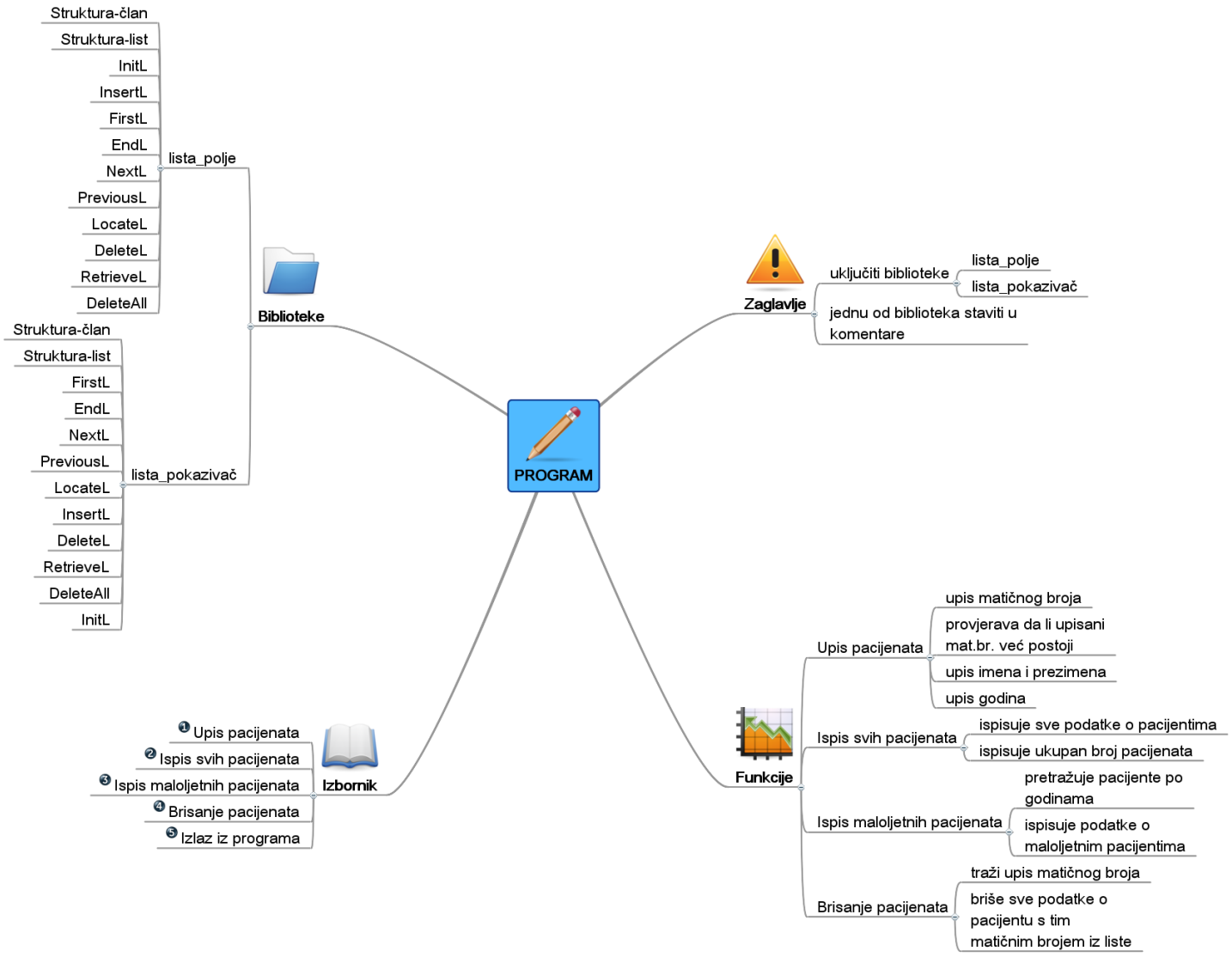
402 = 4 * 96 + 18

96 = 5 * 18 + 6

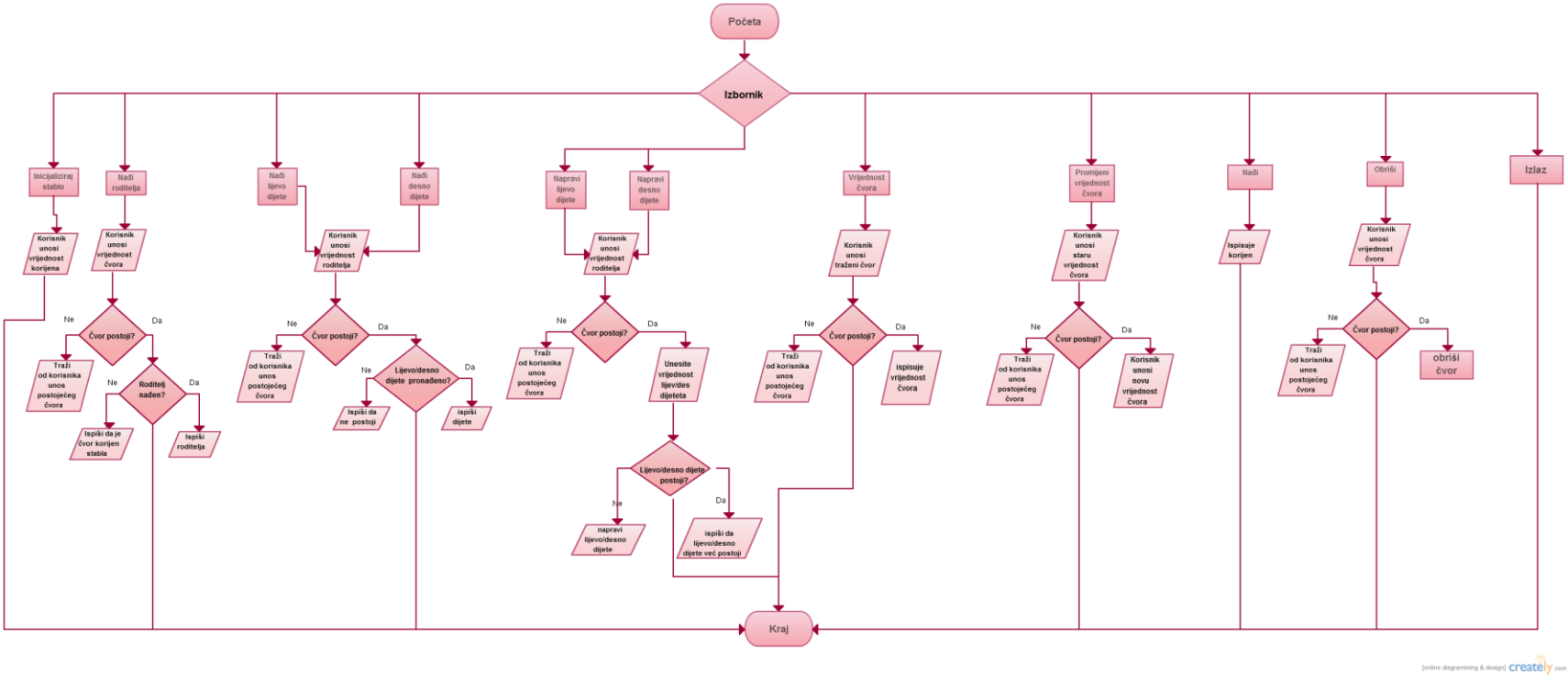
18 = 2 * 6 + 6

6 = 6

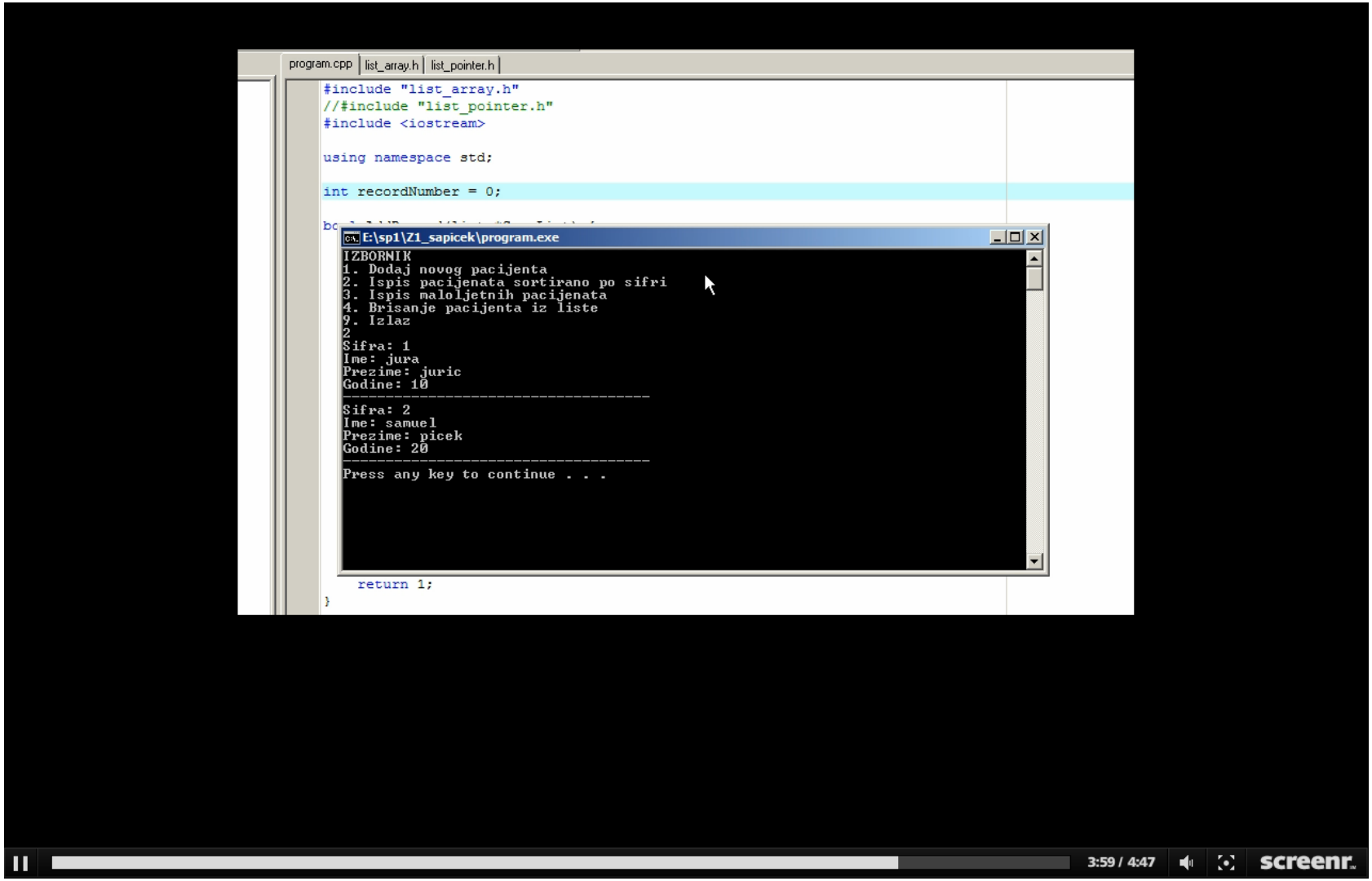
Mind map


PROGRAM
Biblioteke
Struktura-član
Struktura-list
InitL
InsertL
FirstL
EndL
NextL
PreviousL
LocateL
DeleteL
RetrieveL
DeleteAll
lista_polje
Struktura-član
Struktura-list
FirstL
EndL
NextL
PreviousL
LocateL
InsertL
DeleteL
RetrieveL
DeleteAll
InitL
lista_pokazivač
Zaglavlje
uključiti biblioteke
lista_polje
lista_pokazivač
jednu od biblioteka staviti u komentare
Izbornik
1 Upis pacijenata
2 Ispis svih pacijenata
3 Ispis maloljetnih pacijenata
4 Brisanje pacijenata
5 Izlaz iz programa
Funkcije
Upis pacijenata
upis matičnog broja
provjerava da li upisani mat.br. već postoji
upis imena i prezimena
upis godina
Ispis svih pacijenata
ispisuje sve podatke o pacijentima
ispisuje ukupan broj pacijenata
Ispis maloljetnih pacijenata
pretražuje pacijente po godinama
ispisuje podatke o maloljetnim pacijentima
Brisanje pacijenata
traži upis matičnog broja
briše sve podatke o pacijentu s tim matičnim brojem iz liste

Flowchart


Početa
Izbornik
Inicijaliziraj stablo
Korisnik unosi vrijednost korijena
Nađi roditelja
Korisnik unosi vrijednost čvora
Čvor postoji?
Ne
Da
Traži od korisnika unos postojećeg čvora
Roditelj nađen?
Ispiši da je čvor korijen stabla
Ispiši roditelja
Nađi lijevo dijete
Nađi desno dijete
Korisnik unosi vrijednost roditelja
Čvor postoji?
Traži od korisnika unos postojećeg čvora
Lijevo/desno dijete pronađeno?
Ispiši da ne postoji
Ispiši dijete
Napravi lijevo dijete
Napravi desno dijete
Korisnik unosi vrijednost roditelja
Čvor postoji?
Traži od korisnika unos postojećeg čvora
Unesite vrijednost lijevog/desnog djeteta
Lijevo/desno dijete postoji?
napravi lijevo/desno dijete
ispiši da lijevo/desno dijete već postoji
Vrijednost čvora
Korisnik unosi traženi čvor
Čvor postoji?
Traži od korisnika unos postojećeg čvora
Ispisuje vrijednost čvora
Promijeni vrijednost čvora
Korisnik unosi staru vrijednost čvora
Čvor postoji?
Traži od korisnika unos postojećeg čvora
Korisnik unosi novu vrijednost čvora
Nađi
Ispisuje korijen
Obriši
Korisnik unosi vrijednost čvora
Čvor postoji?
Traži od korisnika unos postojećeg čvora
obriši čvor
Izlaz
Kraj

Screencast


program.cpp
list_array.h
list_pointer.h
#include "list_array.h"
//#include "list_pointer.h"
#include <iostream>
using namespace std;
int recordNumber = 0;
E:\sp1\Z1_sapicek\program.exe
IZBORNIK
1. Dodaj novog pacijenta
2. Ispis pacijenata sortirano po sifri
3. Ispis maloljetnih pacijenata
4. Brisanje pacijenta iz liste
9. Izlaz
2
Sifra: 1
Ime: jura
Prezime: juric
Godine: 10
Sifra: 2
Ime: samuel
Prezime: picek
Godine: 20
Press any key to continue . . .
return 1;
}
3:59 / 4:47
screenr

Creativity in Data Structures course (2)

- student teams integrated their artifacts with a wiki page that linked together the parts of their multimodal solution to a specific programming problem
- the tasks facilitated student-to-student interaction and peer-to-peer learning
- a greater degree of student autonomy and learning outcomes were achieved owing to mobilization of higher order thinking through knowledge presentation and application
- much of the course content was covered with the topics of student projects, which contributed to the creation of resources for learning and meeting course requirements.

Wiki 1/2

URL: http://e.foi.hr/wiki/strukture_podataka/index.php/Main_Page

Wiki 2/2

navigation

- Main Page
- Community portal
- Current events
- Recent changes
- Random page
- Help

search

Go Search

toolbox

- What links here
- Related changes
- Special pages
- Printable version
- Permanent link

page | discussion | view source | history

Zadaci kontinuiranog praćenja 2010./2011.

Prvi zadatak

- Osnovni pojmovi i dijelovi struktura podataka
- Apstraktni tip podatka polinom
- Operacije nad ATP polinom
- Implementacija polinoma pomoću polja
- Analiza složenosti algoritma
- Apstraktni tip podatka lista
- Operacije nad ATP lista
- Implementacija liste pomoću polja i pokazivača

Drugi zadatak

- Apstraktni tip podatka stog
- Operacije nad ATP stog
- Implementacija stoga pomoću polja i pokazivača
- Pretvaranje infiksnog zapisa u postfiksni korištenjem stoga
- Generirajuće funkcije

Treći zadatak

- Apstraktni tip podatka red
- Operacije nad ATP red
- Implementacija reda pomoću cirkularnog polja i pokazivača
- Euklidov algoritam

Četvrti zadatak

- Apstraktni tip podatka stablo
- Implementacija stabla "prvo dijete - sljedeći brat"
- Apstraktni tip podatka binarno stablo
- Implementacija binarnog stabla pomoću polja i pokazivača
- Binarno stablo pretraživanja
- Hrpa

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Integration of educational artefacts

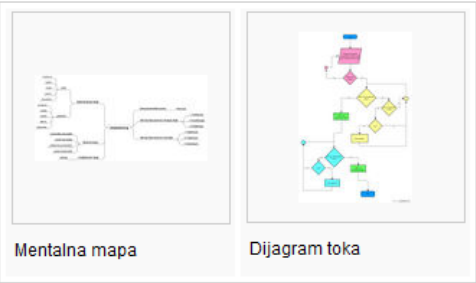
Proširene bilješke

bilješke
U alatu **Adobe Buzzword** opisala sam način pretvorbe infiksnog zapisa u postfiksni pomoću stoga.

Društvene knjižne oznake

Slika na kojoj se vide 3 izvora u alatu **Reddit** korištena kod pisanja bilješki.

Grafički prikazi programskog rješenja



Mentalna mapa | Dijagram toka

Mentalna mapa izrađena je u alatu **Mind42**, a dijagram toka u alatu **Lovely Charts**.

Screencast

vizualizacija koda
Na linku se nalazi snimka koja prikazuje programski kod glavnog programa te implementacije stoga pomoću polja i pokazivača, praćena audio sadržajem. Alat u kojem je snimka izrađena je **Screencast-o-Matic**.

Programski kod

Glavni program u kojem se nalaze funkcije za unos elemenata na stog i ispis elemenata sa stoga. Funkcija *ispis1* radi pomoću dodatnog stoga, a funkcija *ispis2* pomoću rekurzije te pritom koristi funkciju *umetni_element* za vraćanje elemenata u stog također pomoću rekurzije. Funkcija *okreni_stog* mijenja redoslijed elemenata na stogu pomoću rekurzije. Program radi neovisno o implementaciji stoga.

Zaglavlje stog_polje.h sadrži implementaciju standardnih funkcija nad stogom (**InitS, IsEmptyS, PushS, PopS, TopS**) te 2 strukture. Stog je implementiran pomoću strukture *stog* koja se sastoji od polja struktura *tAuto* (50 elemenata) i varijable tipa *int* koja kroz program sadrži indeks prvog praznog elementa u polju, tj. vrha stoga.

Zaglavlje stog_pokazivac.h također sadrži implementacije standardnih funkcija nad stogom, ali pomoću pokazivača. Struktura *stog* sadrži element tipa struktura *tAuto* i pokazivač sljedeci tipa *stog* koji kroz program pokazuje na sljedeci element, a zadnji pokazuje na NULL.

Sav kod je objavljen u alatu **Snipplr**.

Osobni portal

Slika prikazuje RSS-feedove wiki stranica postavljene u osobni portal **Netvibes**.

Teaching EFL with Web 2.0

- **English as a Foreign Language I *(EFL)* course**
  - undergraduate hybrid course in the first year of study of *Information Systems*
  - standalone wiki resource was used to supplement the course that comprised face-to-face lectures and practical language sessions
  - individual and more conventional out-of-class activities submitted online through the course LMS Moodle
  - the wiki resource provided students with a ***shared space*** for publishing and sharing their collaboratively developed content
    - 2009/2010 ***grammar-focused e-tivities*** introduced
    - range of Web 2.0 tools used for visualization, knowledge organization and presentation of articles

Teaching EFL with Web 2.0

- **Structure of wiki articles**
  - the *textual part* of the task - objective description of a particular unit of English grammar
  - *artifact* - the more personalized and less constrained part of the task
- **Creativity**
  - not restricted to planning and designing artifacts
  - conceptualization of abstract grammar concepts in form of a dialogue/cartoon
  - problem-solving concerning tool usage and selection
  - integrating narration with the video for the purpose of article presentation beyond a mere content reproduction

4 examples

Conclusions

- interplay between creativity and autonomy: evidence of the '*shared enquiry*' (Bakhtin 1986) and '*creative cognition*' (Wheeler et al. 2002)

- qualitative analysis of the students' artifacts yielded ***cognitive***, ***metacognitive*** and ***social dimensions*** of student involvement with Web 2.0-supported tasks:
  - *re-construction* of meaning through content negotiation (e.g. integration of core-discipline-related knowledge in a linguistic task)
  - *externalization* of meta/cognitive awareness through content/task mediation
  - *identity negotiation* through student-teacher role reversal
  - *problem-solving skills*

Thank you for your attention!

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