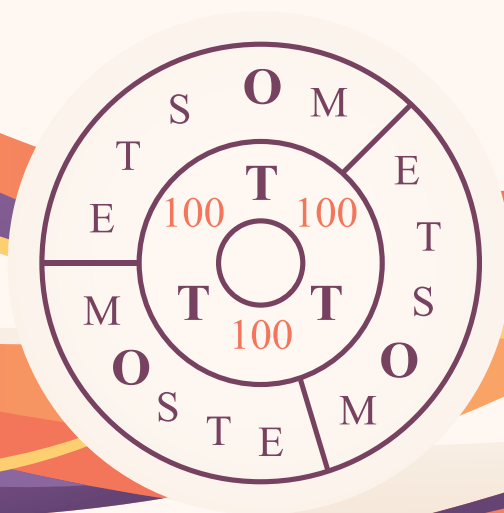


Mednarodna konferenca
International Conference

100 PRILOŽNOSTI ZA SPOZNANJE NOVIH POTI POUČEVANJA

STO

SCIENCE TEACHING OPPORTUNITIES



CIP - Kataložni zapis o publikaciji
Narodna in univerzitetna knjižnica, Ljubljana

37.091.3(082)(0.034.2)

MEDNARODNA konferenca 100 priložnosti za spoznavanje novih poti poučevanja (2014; Ljubljana)

STO [Elektronski vir]: science teaching opportunities / Mednarodna konferenca 100 priložnosti za spoznavanje novih poti poučevanja, Ljubljana, 21. marec 2014; organizator Gimnazija Moste; uredila Mojca Orel. - El. knjiga. - Ljubljana: Gimnazija Moste, 2014

Način dostopa (URL): <http://www2.arnes.si/~morel/sto/sto.htm>

ISBN 978-961-281-360-4 (pdf)

1. Gl. stv. nasl. 2. Dodat. nasl. 3. Orel, Mojca, 1971- 4. Gimnazija Moste (Ljubljana)

272959232

Mednarodna konferenca
International Conference

100 PRILOŽNOSTI ZA SPOZNANJE NOVIH POTI POUČEVANJA

STO

SCIENCE TEACHING OPPORTUNITIES



Ljubljana, 21. marec

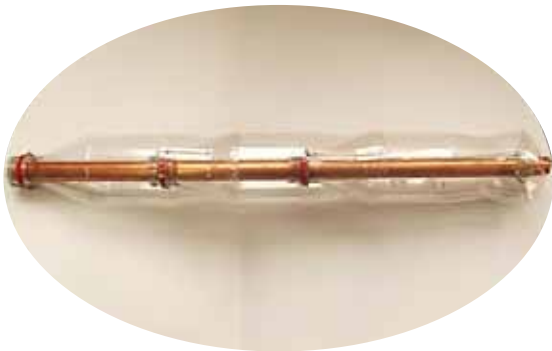
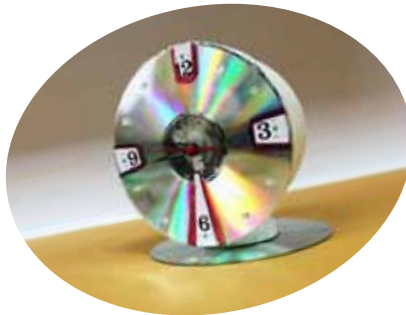
Organizator: Gimnazija Moste

Uredila: mag. Mojca Orel

Oblikovanje in tisk: Mako R d.o.o.

Fotografije: 100 najboljših izdelkov dijakov Gimnazije Moste iz natečaja ekoSTO – sto inovativnih in kreativnih stvari iz odpadnih snov





O KONFERENCI

100 priložnosti za spoznanje novih poti poučevanja Science Teaching Opportunities

100 let tradicije poučevanja je častitljiv dosežek, s katerim se ne more pohvaliti vsaka izobraževalna ustanova. Take dosežke je vredno primerno obeležiti. In kaj lahko storimo, da se bomo naše stoletnice še dolgo in z veseljem spominjali? Povabimo ljudi z znanjem in izkušnjami ter se od njih učimo. Zavedamo se, da bomo samo učitelji, dobro opremljeni z znanjem, lahko nadaljevali tradicijo poučevanja v novi stoletnici. Tako se je rodila ideja o organizaciji konference **100 priložnosti za spoznanje novih poti poučevanja**.

Zato smo vas povabili. Vas, spoštovani predavatelji, da nam boste predstavili dosežke sodobne znanosti z različnih področij. Naše goste iz tujine, Češke, Španije, Portugalske, Poljske in Latvije, da nam bodo povedali, s kakšnimi izzivi v izobraževanju se soočajo v teh državah. In seveda vas, učitelje in druge pedagoške delavce, ki ste zakladnica idej, ki jih uresničujete pri svojem vsakodnevnem delu in smo vam namenili vaših **100 minut**.

Konferenca pa ni samo priložnost za obogatitev različnih znanj ter pridobivanje in izmenjavo novih idej. Pomembno je tudi druženje tistih, ki si prizadevamo za to, da bi prihodnje generacije pridobile dovolj znanja in veščin za uspešno premagovanje izzivov, s katerimi se bodo soočali v življenju. Zato smo veseli vseh, ki ste danes z nami in ste del naše konference.

Programski in organizacijski odbor mednarodne konference STO

PREDGOVOR

Mednarodna konferenca STO

Science Teaching Opportunities

»100 priložnosti za spoznanje novih poti poučevanja«

*Svet je zrcalo:
poglej se vanj in
vrne ti tvojo podobo.*

(egipčanska modrost)

Življenje nam ponuja nešteto možnosti za spoznavanje narave in ljudi okrog sebe in nam hkrati daje priložnost, da se zblížamo, izmenjamo izkušnje, dobimo nova spoznanja in se tako oplemenitimo, da prihodnja dejanja dosežejo svoj namen.

Svet zunaj nas nam kaže našo notranjo podobo. Zato zberimo pogum in poiščimo poti novih spoznanj in se zazrimo vase ter spremenimo, kajti edina stalnica v življenju je sprememba. Le s spreminjanjem sebe, z nenehnim učenjem, kažemo pot učenja mlajših generacij, saj sami veste, da zgledi vlečejo.

In prav druženje nam omogoča, da pridemo v stik eden z drugimi, si izmenjamo dragocene ideje in izkušnje ter zapustimo sled v srcih ljudi. Bolj kot ideje delimo, več jih dobimo, saj dajemo prostor, da se zasejejo in najdejo plodna tla.

Naj ta konferenca zaseje ideje v vaša srca in jih oplemeniti za nova spoznanja in dejanja pri spoznavanju novih poti poučevanja.

*mag. Mojca Orel
vodja programskega odbora konference STO*

PREDGOVOR RAVNATELJICE

Spoštovani udeleženci konference!

Na Gimnaziji Moste praznujemo letos 100 let. V počastitev visokega jubileja na šoli potekajo številne dejavnosti in prirejamo različne dogodke, ki nas medsebojno povezujejo in bogatijo. Poleg aktivnega sodelovanja v projektu Comenius na temo ogenj, voda, zemlja, zrak posebno pozornost namenjamo še:

- skrbi za okolje,
- zdravemu načinu življenja in
- dobrodelni dejavnosti.

Naša skrb za zdravo okolje se kaže v urejenosti šole, za katero si prizadevajo Ekofrendi. Pripravili so več razstav recikliranih oblačil in drugih izdelkov iz različnih odpadnih materialov. V Ekopopoldnevu so dijaki predstavljali seminarske naloge na temo ekologija.

S pridobitvijo naziva Planetu Zemlja prijazna šola in z aktivnim sodelovanjem v projektu Zdrava šola se izraža naš odnos do zdravega načina življenja. Ker se zavedamo, da je šport eden od pomembnih dejavnikov za zdravo življenje, bomo 24. aprila 2014 organizirali veliko tekaško prireditev 100 km za 100 let.

Sodelovanje v projektih Anina zvezdica, Narišimo nasmeh na obraze otrok, botrstvo, razmah prostovoljstva in odmevna novoletna dobrodelna prireditev v Španskih boricah potrjujejo, da ne mislimo samo nase, ampak tudi na sočloveka, ki se je znašel v stiski.

Različne dejavnosti dijake medsebojno povezujejo.

Poleg različnih dejavnosti pa ves čas skrbimo tudi za kakovostno izobraževanje. Gimnazija Moste je leta 2005 doživela temeljito prenovo, tako nam sodobno opremljeni prostori omogočajo vse možnosti za najsodobnejše načine poučevanja. Dovzetni smo za novosti, zato je konferenca »100 priložnosti za spoznanje novih načinov poučevanja« za nas dragocena izkušnja. Zanimiva predavanja osvetljujejo aktualna področja sodobne znanosti: nevroznanost, ekologijo, trajnostni razvoj in zelena delovna mesta, obogatijo naše znanje, dajejo nam nove ideje, hkrati pa nam ponuja možnost zblžanja, izmenjave izkušenj in dragocenih idej.

Vsi spoštovani predavatelji na konferenci predavajo brezplačno. Na tem mestu se jim iskreno zahvaljujem, vsem udeležencem pa želim, da bo konferenca STO lepa izkušnja!

*Špela Škof Urh
ravnateljica Gimnazije Moste*

PROGRAMSKI IN RECENZENTSKI ODBOR MEDNARODNE KONFERENCE

mag. Mojca Orel, vodja programskega odbora

Gimnazija Moste, Ljubljana

Alenka Perko Bašelj

Gimnazija Moste, Ljubljana

Špela Škof Urh

ravnateljica Gimnazija Moste, Ljubljana

dr. Elizabeta Tratar Pirc

Fakulteta za kemijo in kemijsko tehnologijo, Univerza v Ljubljani

ORGANIZACIJSKI ODBOR MEDNARODNE KONFERENCE

Alenka Perko Bašelj, vodja organizacijskega odbora

Gimnazija Moste, Ljubljana

Lovro Dretnik

Gimnazija Moste, Ljubljana

mag. Mojca Orel,

Gimnazija Moste, Ljubljana

Špela Škof Urh

ravnateljica Gimnazija Moste, Ljubljana

Katja Rotar

Gimnazija Moste

O FOTOGRAFIJAH V ZBORNIKU

Z namenom spodbujanja inovativnosti in ustvarjalnosti ter skrbi za okolje je bil na pobudo ekofrendov in njihovih mentorjev iz Gimnazije Moste, ki delujejo v okviru projekta Pozor!ni za okolje, izveden natečaj za najboljši izdelek iz odpadnih snovi z naslovom ekoSTO – sto inovativnih in kreativnih stvari iz odpadnih snovi. Izmed prispelih izdelkov smo izbrali 100 najboljših in njihove fotografije objavili v zborniku.

PROGRAM KONFERENCE

13:00 - 13:30 **Prihod in registracija udeležencev**

13:30 - 15:50 **OTVORITEV KONFERENCE STO**

Science Teaching Opportunities

Kulturni program

Pozdravni govor

Špela Škof Urh, ravnateljica Gimnazije Moste

Andreja Lenc (CMEPIUS, Vodja sektorja)

PLENARNI DEL I

- **Nevroznanost v poučevanju: blagoslov ali prekletstvo?** / *Zvezdan Pirtošek (Katedra za nevrologijo, Medicinska fakulteta, Univerza v Ljubljani; Klinični oddelek za bolezni živčevja, UKC Ljubljana)*
- **Zgradba in osnove delovanja možganov** / *Grega Brecl (Klinični oddelek za bolezni živčevja, UKC Ljubljana)*
- **100 let nevroznanosti 1914 – 2014** / *Jurij Dreo (Katedra za nevrologijo, Medicinska fakulteta, Univerza v Ljubljani)*
- **Obogateni kontekstualni okvir za poučevanje kemije**
Kemija v umetnosti / *Margareta Vrtačnik (Univerza v Ljubljani, Naravoslovnotehniška fakulteta)*
- **5 ritmov kot dinamična telesno-orientirana gibalna praksa v podporo osebne integritete učitelja** / *Bojana Boh (Univerza v Ljubljani, Naravoslovnotehniška fakulteta)*
- **Samoevalvacija informatizirane šole** / *Borut Čampelj (Ministrstvo za izobraževanje, znanost in šport)*

Vodi: Mojca Orel

15:00 - 15:10 Odmor (kava, čaj, pecivo)

15:10- 16:15 **PLENARNI DEL II**

Comenius

- **4 elementi: Kako predstaviti okoljsko izobraževanje z uporabo metode učenja z odkrivanjem v okviru mednarodnega projekta** / *Daniel Aguirre-Molina (Colegio Pedro Poveda de Jaén), Španija*
- **Štirje elementi v luči medpredmetnih povezav** / *Irena Šterman (Gimnazija Moste), Slovenija*
- **Evropski projekti v naši šoli** / *Monika Bartova (Zakladni skola, Klasterec nad Ohri), Češka*
- **Scientix2: kako z lahkoto najti kvalitetne znanstvene in matematične učne vire** / *Carlos Cunha (Escola Secundária Dom Manuel Martins), Portugalska*
- **Jezik – spoznanje – znanost** / *Malgorzata Zajackowska (Zespół Szkół Integracyjnych No 1), Białystok, Poljska*
- **Alternativne poti poučevanja okoljske vzgoje** / *Baiba Karlsberga (Priekulj Secondary School), Latvija*
- **Poučevanje znanosti z uporabo metode učenja z odkrivanjem (IBL)** / *Daniel Aguirre-Molina (Colegio Pedro Poveda de Jaén), Španija*

Vodi: Mojca Orel

16:15 - 16:30 Odmor (kava, čaj, pecivo)

16:30 - 17:10

PLENARNI DEL III

- **Zeleno gospodarstvo za našo bodočnost in za bodoče generacije. Najboljše prakse projekta Alpstar** / *Darja Piciga (Ministrstvo za kmetijstvo in okolje)*
- **Kako glasno je preglasno?** / *Sonja Jeram (Nacionalni inštitut za javno zdravje)*
- **Volkovi iz slovenskih gozdov** / *Miha Krofel (Univerza v Ljubljani, Biotehniška fakulteta, Oddelek za gozdarstvo in obnovljive gozdne vire)*
- **Smernice poučevanja prihodnjih generacij** / *Mojca Orel (Gimnazija Moste)*

Vodi: Alenka Perko Bašelj

17:10 - 17:20 Odmor (kava, čaj, pecivo)

17:20 - 19:10

100 MINUT UČITELJI UČITELJEM

- **Tandemska kontrolna naloga: priložnost ali potuha?** / *Đulijana Juričič (Osnovna šola Trnovo)*
- **Raziskovalno eksperimentalno delo pri pouku kemije** / *Ana Logar (Osnovna šola Metlika)*
- **Raziskovalna dejavnost na GESŠ Trbovlje** / *Darja Užmah (GESŠ Trbovlje)*
- **Projekt?! Zakaj? – Zakaj pa ne?** / *Tjaša Milijaš (Osnovna šola Dravljce)*
- **Tabor preživetja v naravi za srednješolce** / *Matej Makar, Alenka Špan (Gimnazija Krško)*
- **Evolucija učenja in poučevanja** / *Mirela Kapetanović Mujkić (Osnovna šola Polje)*
- **Obdobje moderne malo drugače** / *Martina Golob (Osnovna šola Sostro)*
- **Uporaba osnov statistike v 3. in 9. razredu osnovne šole s pomočjo IKT-ja** / *Anita Smole, Sonja Strgar (Osnovna šola Vide Pregarc)*
- **Razvijanje socialne in državljanske kompetence skozi medkulturno sodelovanje** / *Iris Kravanja Šorli (Osnovna šola Martina Krpana Ljubljana)*
- **Uporaba bralne učne strategije »VŽN« pri geografskem raziskovanju pokrajine** / *Tatjana Pecin Završan (Osnovna šola Polje)*
- **Komunikacijske veščine in druga znanja iz transakcijske analize za boljše poučevanje** / *Irena Lukić (Osnovna šola Spodnja Šiška)*
- **Hot potatoes – retro, ampak uporabno** / *Mladen Kopasić (Osnovna šola Polje)*
- **E-knjiga kot interdisciplinarno projektno delo** / *Miha Vrčko (Osnovna šola narodnega heroja Maksa Pečarja)*
- **Poučevanje poezije** / *Katja Rotar (Gimnazija Moste)*
- **Pesem o ogljikovih hidratih** / *Tanja Vičič (Osnovna šola Brinje Grosuplje)*

Vodi: Lovro Dretnik

19:10 - 19:30

- **H kakovostnemu poučevanju sodi tudi učinkovito govorno nastopanje**
Tomaž Petek (Pedagoška fakulteta Univerze v Ljubljani)

ZAKLJUČEK KONFERENCE

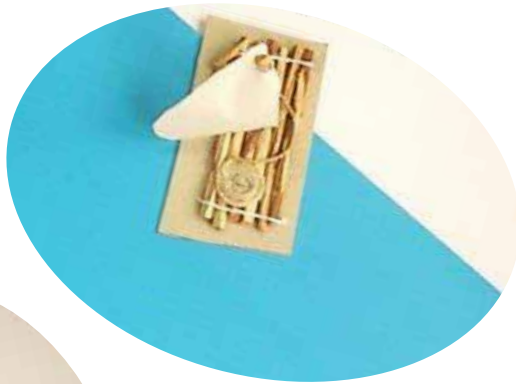
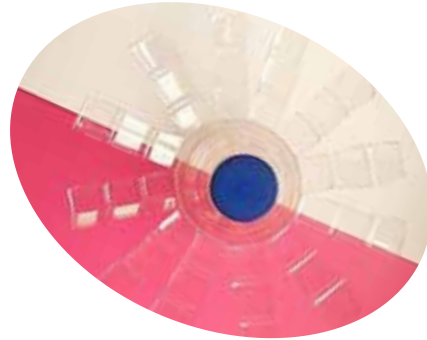
CONFERENCE PROGRAMME	
13:00 - 13:30	Arrival and registration of participants
13:30 - 15:50	OPENING OF THE CONFERENCE Science Teaching Opportunities <i>The cultural program</i> <i>Welcome speech</i> <i>Špela Škof Urh, headmistress Gymnasium Moste</i> <i>Andreja Lenc (CMEPIUS, Head of Unit)</i> PLENARY PART I • Brain sciences in teaching: blessing or curse? / Zvezdan Pirtošek (Department of Neurology, Faculty of Medicine, University of Ljubljana and Univesity Medical Center Ljubljana) • Brain organisation and its function / Grega Brecl (Department of Neurology, University Medical Center Ljubljana) • 100 years of neuroscience 1914 - 2014 / Jurij Dreo (Department of Neurology, Faculty of Medicine, University of Ljubljana) • Enriching contextual framework for teaching chemistry Chemistry in Art / prof. dr. Margareta Vrtačnik (Faculty of Natural Sciences and Engineering, University of Ljubljana) • 5 rhythms as a dynamic body-oriented movement practice to support personal integrity of a teacher / Bojana Boh (Faculty of Natural Sciences and Engineering, University of Ljubljana) • Self-evaluation of school informatisation / Borut Čampelj (Ministry of Education, Science and Sport) Moderator: Mojca Orel
15:00 - 15:10	Break (coffee, tea, cakes, juice)
15:10- 16:15	PLENARY PART II – foreign speakers Comenius • The 4 elements. How to introduce enviromental education trough IBL in an international project / Daniel Aguirre-Molina (Colegio Pedro Poveda de Jaén), Spain • Four elements in the perspective of cross-curricular connection / Irena Šterman (Gymnasium Moste), Slovenia • European projects and our school / Monika Bartova (Zakladni skola, Klasterec nad Ohri), Czech Republic • Scientix2: easy to find high quality science and maths teaching resources / Carlos Cunha (Escola Secundária Dom Manuel Martins), Portugal • Language - Cognition - Science / Malgorzata Zajackowska (Zespół Szkół Integracyjnych No 1), Białystok, Poland • Alternative ways of teaching environmental studies / Baiba Karlsberga (Priekulī Secondary School), Latvia • Teaching science trough inquiry based learning (IBL) (IBL) / Daniel Aguirre-Molina (Colegio Pedro Poveda de Jaén), Spain Moderator: Mojca Orel
16:15 - 16:30	Break (coffee, tea, cakes, juice)

16:30 - 17:10	PLENARY PART III • Green economy for our future and for future generations. The alpstar best practices / Darja Piciga (Ministry of Agriculture and the Environment) • How loud is too loud? / Sonja Jeram (Institute of Public Health of the Republic of Slovenia) • Wolves from Slovenian forests / Miha Krofel (University of Ljubljana, Biotechnical Faculty, Department of Forestry and Renewable Forest Resources) • Teaching guidelines for the future generation / Mojca Orel (Gymnasium Moste) Moderator: Alenka Perko Bašelj
17:10 - 17:20	Break (coffee, tea, cakes, juice)
17:20 - 19:10	100 MINUTES FROM TEACHERS TO TEACHERS • Examination paper in pair: an opportunity or a connivance? / Đulijana Juričić (Primary school Trnovo) • Inquiry based learning in chemistry / Ana Logar (Primary school Metlika) • Research activity at GESS Trbovlje / Darja Užmah (GESS Trbovlje) • Project?! Why? – Why not? / Tjaša Milijaš (Primary school Dravljje) • A survival camp for high school students / Matej Makar, Alenka Špan (Gymnasium Krško) • The evolution of learning and teaching / Mirela Kapetanović Mujkić (Primary school Polje) • Modernism on different way / Martina Golob (Primary school Sostro) • Basic statistical analysis in the 3rd and 9th grade with the help of IKT / Anita Smole, Sonja Strgar (Primary school Vide Pregarc) • Development of social and civic competences through intercultural cooperation / Iris Kravanja Šorli (Primary school Martina Krpana Ljubljana) • The use of »KWL« reading strategy at a regional geographic research / Tatjana Pecin Završan (Primary school Polje) • Communication skills and other Transactional analysis knowledge for better teaching / Irena Lukić (Primary school Spodnja Šiška) • Hot potatoes – retro, but usefull / Mladen Kopasić (Primary school Polje) • E-book as an interdisciplinary project work / Miha Vrčko (Primary school of national hero Maks Pečar) • Teaching poetry / Katja Rotar (Gymnasium Moste) • A poem about Carbohydrates / Tanja Vičić (Primary school Brinje Grosuplje) Moderator: Lovro Dretnik
19:10 - 19:30	• Quality teaching encompasses also efficient rhetorical appearance Tomaž Petek (Faculty of Education, University of Ljubljana)

THE CONFERENCE CONCLUSION

KAZALO

O KONFERENCI	4
PREDGOVOR	5
PREDGOVOR RAVNATELJICE	6
PROGRAMSKI IN RECENZENTSKI ODBOR MEDNARODNE KONFERENCE	7
ORGANIZACIJSKI ODBOR MEDNARODNE KONFERENCE	7
O FOTOGRAFIJAH V ZBORNIKU	7
PROGRAM KONFERENCE	8
PLENARNA PREDAVANJA	12
NEVROZNANOST V POUČEVANJU: BLAGOSLOV ALI PREKLETSTVO?	13
ZGRADBA IN OSNOVE DELOVANJA MOŽGANOV.	14
100 LET NEVROZNANOSTI 1914 – 2014	16
OBOGATENI KONTEKSTUALNI OKVIR ZA POUČEVANJE KEMIJE	
KEMIJA V UMETNOSTI.....	17
5 RITMOV KOT DINAMIČNA TELESNO-ORIENTIRANA GIBALNA PRAKSA V PODPORO OSEBNE INTEGRITETE UČITELJA	18
SAMOEVALVACIJA INFORMATIZACIJE ŠOLE	19
ZELENO GOSPODARSTVO ZA NAŠO BODOČNOST IN ZA BODOČE GENERACIJE.	
NAJBOLJŠE PRAKSE PROJEKTA ALPSTAR	20
KAKO GLASNO JE PREGLASNO?	22
VOLKOVI IZ SLOVENSkih GOZDOV	23
SMERNICE POUČEVANJA PRIHODNIJH GENERACIJ	25
H KAKOVOSTNEMU POUČEVANJU SODI TUDI UČINKOVITO GOVORNO NASTOPANJE.....	27
COMENIUS	31
4 ELEMENTS. HOW TO INTRODUCE ENVIROMENTAL	
EDUCATION TROUGH IBL IN AN INTERNATIONAL PROJECT	32
FOUR ELEMENTS IN THE PERSPECTIVE OF CROSS-CURICULAR CONNECTION.....	34
EUROPEAN PROJECTS AND OUR SCHOOL	34
SCIENITX2: EASY TO FIND HIGH QUALITY SCIENCE AND MATHS TEACHING RESOURCES	35
LANGUAGE - COGNITION - SCIENCE.....	36
ALTERNATIVE WAYS OF TEACHING ENVIRONMENTAL STUDIES.....	36
TEACHING SCIENCE TROUGH INQUIRY BASED LEARNING (IBL)	37
100 MINUT UČITELJI UČITELJEM	38
TANDEMKA KONTROLNA NALOGA: PRILOŽNOST ALI POTUHA?	39
RAZISKOVALNO EKSPERIMENTALNO DELO PRI POUKU KEMIJE.....	41
RAZISKOVALNA DEJAVNOST NA GESŠ TRBOVLJE	44
PROJEKT?! ZAKAJ? – ZAKAJ PA NE?.....	46
TABOR PREŽIVETJA V NARAVI ZA SREDNJEŠOLCE.....	48
EVOLUCIJA UČENJA IN POUČEVANJA	49
OBDOBJE MODERNE MALO DRUGAČE.....	50
UPORABA OSNOV STATISTIKE V 3. IN 9. RAZREDU.....	51
OSNOVNE ŠOLE S POMOČJO IKT-JA	51
RAZVIJANJE SOCIALNE IN DRŽAVLJANSKE KOMPETENCE SKOZI MEDIKULTURNO SODELOVANJE	53
UPORABA BRALNE UČNE STRATEGIJE »VŽN« PRI GEOGRAFSKEM RAZISKOVANJU POKRAJINE	55
KOMUNIKACIJSKE VEŠČINE IN DRUGA ZNANJA IZ TRANSKACIJSKE ANALIZE ZA BOLJŠE POUČEVANJE	56
HOT POTATOES – RETRO, AMPAK UPORABNO	57
E-KNJIGA KOT INTERDISCIPLINARNO PROJEKTNO DELO	58
POUČEVANJE POEZIJE.....	59
PESEM O OGLJIKOVH HIDRATIH.....	60



PLENARNA PREDAVANJA



NEVROZNANOST V POUČEVANJU: BLAGOSLOV ALI PREKLETSTVO?

NEUROSCIENCE IN TEACHING: BLESSING OR CURSE?

Zvezdan Pirtošek

Katedra za nevrologijo, Medicinska fakulteta, Univerza v Ljubljani

zpirtosek@gmail.com

Izveček

Čeprav dobro poučevanje ostaja dobro v vseh časih, pa so se paradigme poučevanja spreminjale skozi čas: od modela učenca kot "prazne posode", preko spoznanja, da mora učenec izgrajevati znanje sam (konstruktivizem) in da je inteligenc več, do novih spoznanj, ki izhajajo iz sodobne kognitivne nevroznanosti - da poznavanje možganskih procesov lahko bistveno olajša in obogati proces učenja. Med temeljna spoznanja, do katerih skupaj prihajata in jih potrjujeta kognitivni nevroznanstvenik in učitelj – prvi skozi študij zdravih in bolnih možganov, drugi v interakciji z učenci v učilnici, sodijo:

- nov pogled na odnos med čustvenim in razumskim
- dejstva in miti o vlogi različnih predelov možganov pri doseganju cilja (levi in desni možgani, prefrontalni režnji)
- razvojne razlike in individualna izraznost moči in slabosti
- biološke osnove empatije in jaza (vloga zrcalnih nevronov)
- različni spomini in vloga konteksta pri učenju
- nova spoznanja o motivaciji, pozornosti, reševanju problemov
- možganske osnove motenj pri učenju
- nova spoznanja o plastičnosti živčevja
- vpliv stresa na procese učenja in na spomin
- razvoj nevronske mreže za izvršitvene funkcije

Sodoben učitelj mora biti seznanjen z novimi spoznanji kognitivnega nevroznanstvenika; ta pa mora svoje hipoteze graditi na osnovi bogatih izkušenj, ki jih učitelj že skozi tisočletja pridobiva v učilnici, ob neposrednem stiku z generacijami učencev.

Ključne besede: učenje, kognitivna nevroznanost, možgani, čustva, razum, empatija, spomin

Abstract

Although good teaching remains good across all ages, its paradigms changed with time: from the model of a pupil as an "empty vessel" to the understanding of a pupil as a builder of his own knowledge (constructivism) and the notion of multiple intelligences to new concepts taken from recent findings in cognitive neuroscience – that understanding and knowledge about brain processes may importantly help and enrich the teaching process. Let us mention some basic findings – discovered and confirmed by both, cognitive neuroscientist and teacher:

- new understanding of the relationship between emotion and reason
- facts and myths on how the brain recruits its many parts to accomplish different tasks (right-brain/ left-brain, prefrontal cortex)
- developmental differences and individual profiles of cognitive strengths and weaknesses
- mirror neurons, empathy, and the self
- various memories and the relationship between performance and context in learning
- new findings about motivation, attention, problem solving
- brain mechanisms of learning disabilities
- new informations on brain plasticity
- the influence of stress on learning process and memory
- construction of neural networks for executive functions

A modern teacher must be informed about new findings from the field of cognitive neuroscience; and the cognitive neuroscientist must draw its hypotheses from the rich experiences that teachers are gaining across centuries, through an interactive contact with generations of pupils.

Key words: teaching, cognitive neuroscientist, brain, emotions, empathy, memory

ZGRADBA IN OSNOVE DELOVANJA MOŽGANOV. BRAIN ORGANISATION AND ITS FUNCTION.

Gregor Brecl Jakob

Klinični oddelek za bolezni živčevja, Nevrološka klinika, Univerzitetni klinični center Ljubljana.

grega.brecl@gmail.com

Izvilleček

Sprva smo se o možganih učili na podlagi poškodb živčevja pri posameznikih, nekoliko kasneje iz živalskih modelov, kjer smo opazovali spremembe v delovanju telesa in tako sklepali o organizaciji in delovanju živčevja. V zadnjih desetletjih lahko z novimi metodami preučevanja možganov odkrivamo vedno nove razsežnosti v ustroju živčevja. Človek se, v kolikor govorimo o živčevju, od drugih živih bitij razlikuje predvsem po nesorazmerno velikih in razvitih velikih možganih. Sestavlja jih 100-200 milijard živčnih celic. Vsaka od njih z drugimi tvori 1.000-10.000 povezav oziroma sinaps, ki skupaj tvorijo nepredstavljivo mrežo povezav, ki nam na eni strani omogočajo skoraj neomejen nabor sposobnosti, hkrati pa nam predstavljajo do sedaj nerešljiv izziv pri proučevanju in natančnem razumevanju mehanizmov delovanja možganov. Velike možgane, ki nas torej naredijo tako posebne v živalskem kraljestvu, lahko razdelimo na možganske režnje, leve in desne ali celo na sprednje in zadnje »možgane«. Posamezen režen je odgovoren za določene naloge, ki jih drugi ne zmorejo. Leva polovica govori, na podlagi izkušenj ocenjuje trenutne okoliščine in načrtuje, šteje ter računa, je organizirana, urejena in vsemu želi dodeliti imena. Desna polovica

poje, riše, se orientira v prostoru ter svet doživlja tu in sedaj. Zadnji možgani sprejemajo informacije o svetu okoli nas, sprednji ta svet spreminjajo. Vsak takšen pogled nanje nam skrivaj odkriva podrobnosti o razvoju možganov skozi evolucijo in organizaciji delovanja tega čudovitega organa. S predavanjem se bomo sprehodili po posameznih delih velikih možganov in odkrivali posebnosti, ki so značilne za določena področja.

Ključne besede: živčevje, veliki možgani, možganski režnji, možganske hemisfere

Abstract

At the beginning we learned about the brain from lesions of specific parts of the nervous system and a bit later from animal models, where we observed changes in the body functions and made conclusions about organisation and function of the nervous system. In the last decades we have been by the new methods able to look into new dimensions of brain function. Men are when the nervous system is considered distinguished from other species by disproportionately large brain. It consists of 100-200 billion nerve cells. Each one connects to other cells by 1.000-10.000 connections or synapses. Together they form an unimaginable network of connections, which allow us to perform almost unlimited number of actions but has on the other hand until now been insolvable challenge in studying and understanding the mechanisms of brain function.

The brain or cerebrum which makes us so unique in the animal kingdom can be divided into brain lobes, left and right or even front and back brain. Each lobe is responsible for the functions that cannot be performed by any other part of the brain. Left hemisphere talks, takes into account previous experiences and makes plans, it counts and calculates, it is organised and wishes to name everything. The right hemisphere on the other hand sings, draws, orientates itself in the space and perceives the world here and now. Back brain receives the information from the environment, while front brain changes it. Each of these views on the brain reveals a hidden details about evolution and organisation of this marvellous organ. Through the talk we will learn about different regions of the brain and discuss distinct features of specific brain areas.

Key words: nervous system, brain, brain lobes, brain hemispheres

100 LET NEVROZNANOSTI 1914 – 2014

100 YEARS OF NEUROSCIENCE 1914 – 2014

Jurij Dreo

*Laboratorij za Kognitivno nevroznanost,
Klinični oddelek za bolezni živčevja, Nevrološka klinika, UKC Ljubljana
jurij.dreo@gmail.com*

Izvleček

Zadnjih 100 let razvoja nevroznanosti ni prineslo samo napredka v tehnologiji in razumevanju podrobnosti delovanja možganov, ampak je vneslo tudi novo širino in svežino vprašanj, ki tradicionalno niso bila del naravoslovnih znanosti, a ki jih nevroznanost sedaj poskuša odgovoriti z empiričnimi metodami. Kontrast med jasnimi razdelitvami preteklosti in združevanjem različnih možganskih in umskih ved sedanjosti bo prikazan na primeru temeljnega fiziološkega gradiva, ki si ga uporabljali zdravniki leta 1914 in tistega, ki ga uporabljajo leta 2014. Izpostavljene bodo razlike v konceptih in področju delovanja nevroznanost nekoč in danes.

Ključne besede: nevroznanost, fiziologija, psihologija, znanost, možgani

Abstract

The last 100 years of neuroscience progress were not marked by merely technological developments and an ever deeper understanding of how the brain functions, but also brought about a novel and widened scope of the questions, traditionally not part of the natural sciences, which neuroscience now attempts to address empirically. The contrast between the clear demarcations of the past and the merging of different brain and mind-related sciences of the present will be demonstrated by comparing a piece of basic physiological literature widely used by physicians in 1914 and a more modern examples of the same published in 2014.

Key words: neuroscience, physiology, psychology, science, brain

OBOGATENI KONTEKSTUALNI OKVIR ZA POUČEVANJE KEMIJE KEMIJA V UMETNOSTI

ENRICHING CONTEXTUAL FRAMEWORK FOR TEACHING CHEMISTRY CHEMISTRY IN ART

*Margareta Vrtačnik
Univerza v Ljubljani, Naravoslovnotehniška fakulteta
metka.vrtacnik@guest.arnes.si*

Izvleček

Preživetje v sodobni, vse bolj tekmovalni družbi, terja od posameznikov visoko razvite spretnosti prepoznavanja potreb po informacijah, njihovo hitro pridobivanje, kritično vrednotenje ter vključevanje pridobljenega znanja v procese odločanja. Ena od učnih strategij, ki je ustrezna za doseganje navedenih ciljev, je problemsko učenje, povezano s sodobnimi tehnikami procesiranja informacij. Kot vir za pripravo problemov bo predstavljen celovit kontekstualni okvir, ki omogoča povezovanje pojmov v umetnosti s kemijski pojmi, poimenovan "Kemija v umetnosti". Okvir omogoča učiteljem v šestih stopnjah izpeljati pojmovne povezave med kemijo in slikarstvom, od prvih začetkov slikarstva do analize simbolnega pomena barv. Vsaka stopnja je predstavljena s prikazom tiskanih in elektronskih virov ali pojmovnih map, ki služijo učitelju za oblikovanje problema, hkrati pa so podani primeri rezultatov učenja, do katerih naj bi samostojno prišli dijaki. Na osnovi analize problema dijaki zasnujejo svoje lastne raziskovalne naloge ali projekte. Ob podpori učitelja prepoznajo, kaj o problemu že vedo in katero dodatno znanje še potrebujejo, da bi lahko prišli do rešitve problema. Na osnovi pridobljenih dodatnih informacij in njihove analize in sinteze s predhodnim znanjem, dijaki podajo predloge rešitve problema.

Ključne besede: kemija, umetnost, slikarstvo, problemsko učenje

Abstract

For societies to survive in today's competitive world, they need to equip individuals with skills to recognize when information is needed and to have the ability to locate, evaluate, and use effectively this information, to think critically and reflectively, and make higher order decisions. One of the teaching strategies suitable to cope with these challenges is problem based learning (PBL) linked with information processing techniques. As a resource for problem formulation, a contextual framework interlinking chemistry with art (more specifically painting) will be presented. A holistic approach for the interplay of artistic and chemical concepts within the topic "Chemistry in Art" is developed in sixth stages, starting with the exploitation of the dawn of artistic painting and ending with the symbolic meanings of colours. For each step some examples of teachers' input which should be used to formulate a problem statement, in the form of URLs of websites, articles, and concept maps are displayed together with expected students' output (sub-problem solution). For each stage the teacher should assign the problem, and based on this students should define their own research assignment or a research project. Supported by the teacher the students

identify what they already know about it and what information they need to collect in order to be able to solve the problem. By locating and analysing information resources they acquire new knowledge, construct understanding, and give proposals for the problem to be solved.

Key words: chemistry, art, painting, PBL

5 RHYTHMS AS A DYNAMIC BODY-ORIENTED MOVEMENT PRACTICE TO SUPPORT PERSONAL INTEGRITY OF A TEACHER

5 RITMOV KOT DINAMIČNA TELESNO-ORIENTIRANA GIBALNA PRAKSA V PODPORO OSEBNE INTEGRITETE UČITELJA

*Bojana Boh
Univerza v Ljubljani
bojana.boh@kii.ntf.uni-lj.si*

Izvleček

Kot učitelji smo izpostavljeni stresu. Ponavljajoči se stresni odzivi vplivajo na fizično telo, metabolizem, čustvena stanja in mentalne procese. Znale so številne tehnike, s katerimi lahko omilimo posledice stresa in podpremo svojo osebno integriteto. Prispevek v kratkem predstavlja eno od njih, gibalno-plesno metodo 5Ritmov ustanoviteljice Gabrielle Roth, ki kot telesno-orientirana dinamična praksa raziskuje, povezuje in integrira razsežnosti fizičnega telesa, čustev, racionalnega uma in duhovne ravni človekovega bitja. Temelji na petih načinih fizičnega gibanja (imenovanih pet ritmov - tekoči, staccato, kaos, lirčni, globoka tišina), ki jih je G. Roth v svojih zemljevidih povezala z razsežnostmi življenja, kot so na primer ravni bivanja (telesna, čustvena, razumska, duševna in duhovna), čustva (strah, jeza, žalost, veselje, sočutje), senčna razpoloženja (dolgočasje, frustracija, destruktivnost, površnost, otopelost), faze ustvarjalnosti (inercija, imitacija, intuicija, imaginacija, inspiracija), življenjski cikli (rojstvo, otroštvo, puberteta, zrelost, smrt), pet elementov (zemlja, ogenj, voda, zrak, eter), idr. Praksa temelji na zamisli, da vse temelji na energiji, se premika v obliki valovanj, vzorcev in ritmov, ter na izkustvu, da se z ozaveščenim gibanjem telesa v zaporedju vala petih ritmov samodejno premakne tudi psiha, se pri tem spreminja, naravno uravnoveša in postopoma ozdravi v uravnovešeno stanje. Metoda 5Ritmov črpa iz svetovnih staroselskih tradicij, ki uporabljajo načela šamanskega, ekstatičnega in mističnega plesa, iz vzhodnih tehnik meditacije, kakor tudi iz telesno-orientiranih metod psihoterapije, Gestalt terapije in transpersonalne psihologije. Za ples po metodi 5Ritmov niso potrebne predhodne plesne izkušnje, ni omejitev glede starosti ali zmogljivosti fizičnega telesa, ni se potrebno učiti plesnih korakov ali zapletenih teorij. Plesalec namesto tega uporablja svobodni gibalni vokabular, zakoreninjen v nepričakovanih, svežih načinih gibanja - tako postopoma pogloblja prakso in osebno izkustvo, širi svoje zavedaje in razumevanje telesno-psihičnih interakcij, izpopolnjuje osebno integriteto in vabi ustvarjalnost v izražanje.

Ključne besede: lajšanje stresa, telesno-usmerjena praksa, gibalno-plesna metoda, 5Ritmov® Gabrielle Roth

Abstract

As teachers, we are subjected to stress. When repeatedly triggered, stress responses affect our physical body, metabolism, emotional states, and mental processes. Numerous techniques can be used to alleviate stress and support personal integrity. This contribution shortly presents one of them, Gabrielle Roth's 5Rhythms® movement and dance method, which is a body-oriented dynamic practice that explores, connects and integrates physical body with emotions, rational mind, and spiritual dimensions of a human being. The method is based on five types of physical movement (called the five rhythms – Flowing, Staccato, Chaos, Lyrical, Stillness®), which G. Roth in her maps connected to dimensions of human life, such as levels of existence (body, heart, mind, soul, and spirit), emotions (fear, anger, sadness, joy and compassion), shadowy moods (boredom, frustration, destruction, superficiality, numbness), stages of creativity (inertia, imitation, intuition, imagination, inspiration), life cycles (birth, childhood, puberty, maturity, death), five elements (earth, fire, water, air, ether), etc. Fundamental to the practice are two basic ideas: that everything is energy-based, and therefore moves in waves, patterns and rhythms, and the experiential observation that by consciously moving the body in a sequence of the wave of five rhythms, the psyche also moves, changes and gradually balances/heals itself. The practice draws from indigenous world traditions, using tenets of shamanic, ecstatic and mystical dance, eastern meditation techniques, as well as from body-oriented psychotherapy methods, Gestalt therapy, and transpersonal psychology. For dancing 5Rhythms, no previous dance experience is required, and there are no limitations regarding age or physical body. There are no dancing steps or complex theories to be learned: instead, the dancer uses a freestyle movement vocabulary rooted in unexpected, fresh ways of moving – thus gradually deepening the practice and personal experience, expanding awareness and understanding of body-psyche interactions, improving personal integrity, and inviting the creativity into expression.

Key words: stress alleviation, body-oriented practice, movement and dance method, Gabrielle Roth's 5Rhythms®

SAMOEVALVACIJA INFORMATIZACIJE ŠOLE SELF-EVALUATION OF SCHOOL INFORMATISATION

Borut Čampelj

Ministrstvo za izobraževanje, znanost in šport

Borut.campelj@gmail.com

Povzetek

Informacijsko-komunikacijska tehnologija je ena najbolj učinkovitih orodij na področju modernizacije šolskih dejavnosti v razredu in administraciji. Šole potrebujejo smernice kako doseči e-kompetentnost na vseh nivojih in področjih življenja in dela šole. V ta namen je bil razvit večparametrski odločitveni model za evalvacijo informatizacije šole. Model omogoča celovit pregled obstoječega stanja in pomaga šolam prepoznati možnosti za nadaljnji razvoj in potrebne spremembe. Glavna tri področja informatizacije šole

v modelu so: šola in okolje, učitelji in e-skupnosti ter učenci in polje bivanja. Model smo preizkusili na šolah. Učitelji in ravnatelji so razviti model ocenili kot učinkovito orodje za oceno trenutnega stanja, ki lahko pripomore h kakovostnejšemu nadaljnjemu načrtovanju procesa informatizacije.

Ključne besede: IKT, šole, informatizacija, samoevalvacija

Abstract

Information and communication technology is one of the most effective tools in the modernization of the school's lessons and in increasing the efficiency of the school administration. Schools need guidelines on how to reach e-competences at all levels and in all areas. A hierarchical multiple attribute decision making model was developed for the evaluation of the school informatisation. The model presents in a comprehensive manner the existing situation of the informatisation at a school and helps recognize ways for further development and necessary changes. Three main areas of school informatisation are: school and environment, teachers and communities, pupils and environment. The model was tested in schools. Teachers and headmasters evaluated the model as an excellent tool for assessing the current situation which may lead to a higher level of further planning of the school informatisation.

Key words: ICT, schools, informatisation, self-evaluation

ZELENO GOSPODARSTVO ZA NAŠO BODOČNOST IN ZA BODOČE GENERACIJE. NAJBOLJŠE PRAKSE PROJEKTA ALPSTAR GREEN ECONOMY FOR OUR FUTURE AND FOR FUTURE GENERATIONS. THE ALPSTAR BEST PRACTICES

Darja Piciga

Ministrstvo za kmetijstvo in okolje / Ministry of Agriculture and the Environment

darja.piciga@gov.si

Izvleček

Zeleno gospodarstvo lahko opišemo kot gospodarstvo, ki vodi do izboljšane blaginje ljudi in socialne pravičnosti, hkrati pa občutno zmanjšuje okoljska tveganja in ekološke omejitve – na kratko, je nizkoogljično, učinkovito z viri in socialno vključujoče. Ekonomski model ozelenitve gospodarstva je v razmerah številnih kriz ter čedalje bolj ogrožajočega pomanjkanja virov pridobil izreden pomen v nacionalnih, regionalnih in mednarodnih procesih trajnostnega razvoja, kot na primer za kažipote EU do leta 2050 ter v strategijah in programih za obdobje financiranja 2014-2020 (s tematskimi cilji: Podpora prehodu v nizkoogljično gospodarstvo v vseh sektorjih; Spodbujanje blaženja podnebnih sprememb ter preprečevanja in prilagajanja nanje ter preprečevanja in obvladovanja tveganj; Varstvo okolja in spodbujanje učinkovite in trajnostne rabe virov; Spodbujanje trajnostnega prometa in odprava ozkih grl v ključnih omrežnih infrastrukturah).

Med leti 2007 in 2010 je globalni trg okoljskih tehnologij rasel povprečno 11,8% na leto; visoke rasti

trga ni ustavila niti globalna finančna in gospodarska kriza. V Sloveniji je leta 2012 36 % podjetij (več od povprečja EU) že ponujalo zelene izdelke in/ali storitve, 9 % jih je načrtovalo njihov razvoj v naslednjih dveh letih. Na podatkih in napovedih o hitrem razvoju zelenega gospodarstva temeljijo ocene, da bi bilo v Sloveniji mogoče do leta 2020 ustvariti več deset tisoč zelenih delovnih mest.

Območje Alp sodi s svojimi pobudami na področju zelenega gospodarstva med najbolj napredne regije v svetovnem merilu. Ker so temperature v Alpah v zadnjem stoletju porasle za skoraj dvakrat toliko kot je globalno povprečje, ne preseneča, da je dolgoročni razvojni cilj te makro-regije doseči podnebno nevtralnost v naslednjih 40 letih. Projekt "Alpstar. Za ogljično nevtralne Alpe - naj bo najboljša praksa minimalni standard", ki ga koordinira Slovenija, bo prispeval k temu ambicioznemu cilju s kapitalizacijo, širjenjem in uvajanjem dokazanih dobrih praks pri ukrepih zmanjševanja podnebnih sprememb in pripravi medsektorskih strategij in akcijskih načrtov za ogljično nevtralnost na regionalni in lokalni ravni.

Ključne besede: zeleno gospodarstvo, razvojno načrtovanje, zelena delovna mesta, projekt Alpstar, ogljična nevtralnost, dobre prakse

Abstract

Green economy can be described as one that results in improved human well-being and social equity, while significantly reducing environmental risks and ecological scarcities - in its simplest expression, as one which is low carbon, resource efficient and socially inclusive. The economic paradigm of greening the economy, against the background of multiple crises and accelerating resource scarcity, has gained paramount prominence in national, regional and international sustainable development processes, e.g. in the EU roadmaps by 2050 and in strategies and programmes for the 2014-2020 financing period (with thematic objectives: Supporting the shift towards a low-carbon economy in all sectors; Promoting climate change adaptation, risk prevention and management; Protecting the environment and promoting resource efficiency; Protecting the environment and promoting resource efficiency; Promoting sustainable transport and removing bottlenecks in key network infrastructures).

From 2007 to 2010, the global environmental technologies market grew by an average 11.8% per year; rapid market growth was not stopped even by the global financial and economic crisis. In Slovenia in 2012 36% of companies (above the EU average) offered green products and/or services; 9% were planning to develop them in the next two years. Based on data and predictions of the rapid development of the green economy, creating tens of thousands of green jobs would be possible for Slovenia by 2020.

The Alpine space is among the world most distinguished regions by its green economy initiatives. Since temperatures in the Alps have risen almost twice as much as the global average over the last century and they are set to rise even more, the long-term development goal of this macro-region is to achieve climate neutrality within the next 40 years. The project «Alpstar. Toward Carbon Neutral Alps – Make best Practice Minimum Standard», coordinated by Slovenia, will contribute to this ambitious goal through the capitalization, diffusion and implementation of proven good practice measures in reduction of climate change and preparation of cross-sectoral strategies and action plans toward carbon neutrality on regional and local level.

Key words: green economy, development planning, green jobs, Alpstar Project, carbon neutrality, good practices

KAKO GLASNO JE PREGLASNO?

HOW LOUD IS TOO LOUD?

Sonja Jeram
Nacionalni inštitut za javno zdravje
sonja.jeram@ijz.si

Izvleček

Sluh je pomemben za sporazumevanje in naše dobro počutje v vsakdanjem življenju. Sluh nam omogoča, da lahko prisluhnemo pripovedi drugega ali uživamo v zvokih narave in glasbe. Okvare sluha pa povzročijo težave pri govornem sporazumevanju in zmanjšajo našo sposobnost uživanja zvočni pestrosti glasbe.

Nepopravljivo škodo čutnih celic v našem notranjem ušesu lahko povzroči izpostavljenost hrupu. Novejši rezultati raziskav kažejo, da je v veliki meri za škodo, ki se kaže v povišanem slušnem pragu, odgovoren nastanek kisikovih in dušikovih reaktivnih vrst, to je oksidativni stres. Prav spojine, ki vplivajo na mehanizem oksidativnega stresa, ponujajo obenem velik potencial za razvoj terapij pri okvarah sluha. Zdravljenje s selektivnimi agonisti adenozin A1 receptorjev je pri podganah pokazalo izboljšanje stanja po povzročenih poškodbah slušnih celic zaradi hrupa, vendar le, če je bila terapija uporabljena v nekaj urah po izpostavljenosti hrupu.

Za razliko od sesalcev so ribe, dvoživke, plazilci, ptice ohranile sposobnost tvorbe novih lasnih celic in sposobnost obnove poškodovanih čutnic tekom celega življenja. Obnova poteka v nekaj dneh potem, ko je bila pri teh živalih dokazana poškodba sluha, ki bi bila za nas nepovratna. Znanstveniki zdaj v in vitro sistemu raziskujejo možnosti za razvoj dlačnih celic iz zarodnih celic notranjega ušesa.

Čeprav rezultati raziskav kažejo obetavne rešitve za zmanjšanje posledic poškodb sluha, je priporočljivo sluh pravočasno zaščititi. Raziskava med osnovnošolsko in srednješolsko mladino v Sloveniji je pokazala, da okoli 10 % vprašanih mladostnikov tvega, da bo pri njih prišlo do trajnih poškodb sluha zaradi pogostega in dolgotrajnega poslušanja glasne glasbe s prenosnimi predvajalniki glasbe. Znanstveni odbor za nastajajoča in na novo ugotovljena zdravstvena tveganja predlaga, da glasbe na ta način ne bi poslušali več kot 5 ur na teden, pri jakosti 89 dB(A). S tremi decibeli znižanja jakosti zvoka sprejemljivo trajanje poslušanja glasbe podvojimo, z enakim zvišanjem jakosti pa ga razpolovimo. Za popolno uživanje v glasbi ohranite dober sluh!

Ključne besede: sluh, poškodbe sluha, zdravljenje poškodb, poslušanje glasbe

Abstract

Hearing is of major importance for communication and satisfaction in our everyday life. We can listen to other people talking and enjoy natural sounds and music. Hearing impairment leads to problems with speech communication and reduces our ability to enjoy sound diversity of music.

Exposure to noise may lead to irreversible damage of sensory cells in our inner ear. Recent research results

show that oxidative stress, the production of reactive oxygen species and reactive nitrogen species, is responsible for a damage resulting in an increase in the threshold of hearing. Compounds that target the mechanisms underlying oxidative stress in the meantime offer considerable potential as therapies for hearing loss. Treatment with a selective adenosine A1 receptor agonist has shown to ameliorate noise-induced cochlear injury in rats but only if applied in few hours after noise exposure.

Unlike mammals, fish, amphibians, reptiles, and birds all have the ability to make new hair cells throughout life and they can regenerate damaged and lost hair cells. That occurs within a few days after those animals have experienced the same kinds of deafness that would be permanent for us. Scientists now search for a possibility to stimulate the inner ear stem cells to differentiate in hair cell in vitro.

Although research results show promising solutions to recovery of our hearing damage it is advised to protect our hearing. A survey among primary and secondary school youth in Slovenia showed that near 10 % of them might cause permanent damage of their hearing with frequent and prolonged listening of loud music with portable music devices. The Scientific Committee on Emerging and Newly Identified Health Risks suggests reducing listening to the music to 5 hours per week when the intensity reaches 89 dB(A). For each 3 decibels lower sound intensity the duration of listening may be doubled in time and for 3 decibels higher intensity the duration is halved. Save your hearing to better enjoy the music!

Key words: hearing, hearing damage, damage repair, listening to the music

VOLKOVI IZ SLOVENSKIH GOZDOV WOLVES FROM SLOVENIAN FORESTS

Miha Krofel

*Univerza v Ljubljani, Biotehniška fakulteta, Oddelek za gozdarstvo in obnovljive gozdne vire
miha.krofel@gmail.com*

Izvleček

Volkovi so živali, ki le malokoga pustijo ravnodušnega. Nekateri jih vidijo kot krvoločne zveri, drugi kot simbol divjine in utelešenje svobodnega duha. Marsikatera predstava o volkovih izvira iz pravljic, kjer pa nastopajo volkovi, ki so precej drugačni od tistih pravih, ki živijo v slovenskih gozdovih. V predavanju bomo bolje spoznali resnično plat življenja volkov v naših gozdovih, kot so jo spoznali slovenski raziskovalci, ki so štiri leta na različne načine proučevali volkove v okviru Life projekta »SloWolf« (www.volkovi.si). Med drugim bodo predstavljeni rezultati monitoringa s podatki koliko volkov in koliko tropov živi pri nas. Zvedeli boste, da volkovi v resnici ne napadajo ljudi, kako je mogoče z električnimi ograjami in pastirskimi psi učinkovito zaščititi domače živali pred napadi volkov in kakšne so posledice odstrela volkov. Predstavljene bodo tudi osnove sociobiologije volkov: volčji trop je običajno družina, ki jo sestavljata alfa samec in alfa samica (oče in mati tropa) ter njuni potomci. Predstavljene bodo tudi zgodbe nekaterih volkov, ki so jih strokovnjaki opremili s telemetričnimi ovraticami ter tako natančneje spoznali njihove življenjske zgodbe.

Med njimi je bil tudi mladi samec »Slavc«, ki je leta 2011 zapustil svoj rodni trop na Slavniku in se napotil iskati lasten teritorij in volkuljo, s katero bi ustanovil nov trop. Pri tem je prehodil preko 1000 km in prečkal kar štiri države, dokler ni v okolici Verone v Italiji srečal italijansko volkuljo, s katero sta si ustvarila novo družino. Ker je za dolgoročno preživetje volkov v Sloveniji pomemben predvsem odnos ljudi do te vrste, boste spoznali tudi rezultate javnomnenjskih raziskav. Te so pokazale, da si večina lokalnega prebivalstva, ki živi na območju stalne prisotnosti volkov, želi ohraniti tega karizmatičnega plenilca in da je pripravljena z njimi sobivati tudi v prihodnosti.

Ključne besede: volk, *Canis lupus*, velike zveri, Slovenija, naravovarstvo, biologija, SloWolf.

Abstract

Wolves are animals that elicit considerable interest among the public. Some people see them as bloodthirsty beasts, for others they are symbol of wilderness and embodiment of free spirit. Many widespread beliefs about wolves in the public originate from fairy-tales. However, these mythic wolves are very different from the real wolves living in Slovenian forests nowadays. In this presentation, a realistic life of Slovenian wolves will be presented, as it was learned by the Slovenian wildlife researchers during a 4-year Life project "SloWolf" (www.volkovi.si). Results of wolf monitoring will be presented with information about the number of wolves and wolf packs currently living in Slovenia. It will be revealed that in reality wolves do not attack humans, how it is possible with the use of electric fences and livestock guarding dogs to effectively prevent livestock depredations by wolves, and what are the consequences of culling of wolves. You will also learn about the basics of wolf sociobiology: wolf pack is usually a family consisting of alpha male and alpha female (father and mother of the pack) and their offspring. Life histories of some of the wolves monitored with the help of telemetry and non-invasive genetic analysis will be shown. Among them was also a young male named "Slavc", who in 2011 left his natal pack on Slavnik to search for his own territory and a female in order to establish his own pack. Slavc travelled over 1000 km and crossed four countries until he found an Italian she-wolf not far from Verona in Italy and together they started a new family. The most important factor for long-term survival of wolves in Slovenia is the attitude of people towards them. Results of human-dimension studies will be presented. These showed, among others, that majority of local people living in the wolf range in Slovenia support wolf conservation and are willing to co-exist with this charismatic carnivore also in the future.

Key words: grey wolf, *Canis lupus*, large carnivores, Slovenia, nature conservation, biology, SloWolf.

SMERNICE POUČEVANJA PRIHODNJIH GENERACIJ

TEACHING GUIDELINES FOR THE FUTURE GENERATION

Mojca Orel
Gimnazija Moste Ljubljana
mojca.orel@gmoste.si

Izvilleček

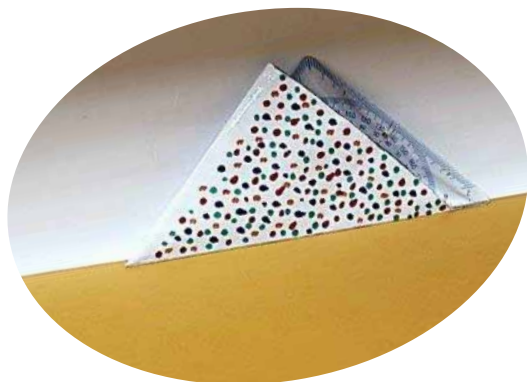
Smernice poučevanja prihodnjih generacij temeljijo na razvijanju sistemskega in kritičnega mišljenja ter ustvarjalnosti, poudarjajo pomen problemsko naravnane pouka, ki je podkrepjen s primeri iz vsakdanjega življenja in upošteva vrednote ter spodbuja delovanje k pozitivni spremembi posameznika in s tem družbe. Pri pouku je potrebno dati večji poudarek vključevanju sodobnih didaktičnih pristopov za učenje kot v samo kvantiteto vsebin, zato je priporočljivo pri poučevanju znanosti upoštevati načela učinkovitega učenja: učenje z upoštevanjem učenčevih obstoječih pojmov in predstav, spodbujanje raziskovalnega duha, vzpodbujanje učencev, da sodelujejo pri učni uri in da uporabijo nove pojme in veščine v različnih situacijah ter jim nuditi stalno preverjanje znanja in jim zagotoviti pravilno povratno informacijo ter vzpodbuditi sodelovalno učenje.

Ključne besede: učinkovito učenje, kritično mišljenje, ustvarjalnost, sodelovalno učenje, vrednote

Abstract

Guidelines for teaching the future generation, based on the development of systemic and critical thinking and creativity, stress the importance of problem-oriented teaching, which is supported by examples from everyday life and take into account the values and encourages action towards positive change in individual and in the society. When you teach, a greater emphasis should be given on the integration of modern didactic approaches of learning than just the quantity of learning materials. In the paper, therefore, principles of effective learning in science are presented: dealing with students' existing ideas and conceptions, encouraging research mind and critical thinking, encouraging students' participation in lessons and application of new concepts or skills into different contexts encouraging students' inquiry, offering continuous assessment and providing corrective feedback, and encouraging co-operative learning among students.

Key words: effective learning, critical thinking, creativity, co-operative learning, values



H KAKOVOSTNEMU POUČEVANJU SODI TUDI UČINKOVITO GOVORNO NASTOPANJE QUALITY TEACHING ENCOMPASSES ALSO EFFICIENT RHETORICAL APPEARANCE

*Tomaž Petek
Pedagoška fakulteta Univerze v Ljubljani
Tomaz.Petek@pef.uni-lj.si*

Izvleček

Jezikoslovje se je s sporazumevanjem in v njegovem okviru z javnim govornim nastopanjem začelo ukvarjati sorazmerno pozno. To se je zgodilo šele z razvojem teorije govornih dejanj in pragmatike ter s pojmovno-funkcijskim in komunikacijskim pristopom pri učenju jezika, ko je govorjeni jezik postopoma začel stopati v ospredje jezikoslovnega raziskovanja. Učiteljeva sposobnost učinkovitega sporazumevanja predstavlja eno izmed temeljnih kompetenc, v okviru katere ima pomembno vlogo tudi javno govorno nastopanje. Ozaveščenost na tem področju je lahko priložnost za profesionalni razvoj učitelja. Ker gre za zahtevno in pomembno spretnost, se nam zdi ključnega pomena, da so učitelji o tem ustrezno izobraženi in usposobljeni za to dejavnost. Pri razvijanju zmožnosti učiteljevega javnega govornega nastopanja je treba biti mdr. pozoren na sposobnost tvorjenja vsebinsko ustreznih, razumljivih, pravih in učinkovitih javnih enogovornih govorjenih besedil. Učitelj se mora zavedati: 1) da mora biti dobro seznanjen z merili za javno govorno nastopanje in da mora imeti znanje o tvorjenju učinkovitih javnih enogovornih govorjenih besedil; 2) da so izkušnje eden glavnih dejavnikov čim boljšega javnega govornega nastopanja in da je koristno, če čim več javno govorno nastopa, in sicer ne samo v razredu, ampak tudi v drugih dejavnostih, povezanih s šolo; 3) da mora ves čas sproti ugotavljati, katero znanje o javnem govornem nastopanju bi moral še pridobiti ali poglobiti, da bi bil še učinkovitejši govorec; 4) da se mora ves čas govorno izpopolnjevati; 5) da mora biti kritičen do svojega javnega govornega nastopanja in da mora na osnovi prepoznanih napak izboljševati lastno govorno zmožnost; 6) da mora imeti jasen načrt, kako izboljšati svojo lastno govorno zmožnost; 7) da vsem poslušalcem (učencem in drugim) predstavlja govorni zgled. **Ključne besede:** govorno nastopanje, enogovorno govorjeno besedilo, govorni zgled, učitelji, vzgojno-izobraževalni proces

Abstract

Linguistics started to deal with communication and public rhetorical appearance relatively late. This happened not earlier than with development of a theory of speech acts and pragmatics, and evolvement of conceptually functional and communicative approach to learning of language, when a spoken language gradually began to get a more prominent role in a context of linguistic research. Teacher's ability of efficient communication represents one of fundamental competences, where important part is also taken by public rhetorical appearance. Awareness in this field may be opportunity for professional



development of a teacher. It is demanding and important skill, therefore it seems crucial that teachers become adequately educated and trained for this activity. During evolvement of teacher's abilities of public rhetorical appearance attention should be, among other factors, paid to ability of production of understandable, correct and efficient public monological spoken discourses with a suitable content. A teacher should be aware: 1) that he or she needs to be well acquainted with measures for public rhetorical appearance and have knowledge about production of effective public monological spoken discourses; 2) that experiences present one of major factors of quality public rhetorical appearance, so it is useful to perform as many public discourses as possible, not only in a class, but also regarding other activities connected with a school; 3) that he or she needs to continuously find out which kind of knowledge about public rhetorical appearance he or she should additionally get or deepen to improve efficiency of his or her speaking; 4) that he or she needs to permanently enhance his or her rhetorical skills; 5) that he or she needs to be critical to his or her rhetorical appearance and learn from recognised mistakes; 6) that he or she needs to have a clear plan for improvement of his or her rhetorical ability; 7) that he or she provides a rhetorical example to all listeners (pupils, students and others).

Keywords: rhetorical appearance, monological spoken discourse, rhetorical example, teachers, education process





COMENIUS

4 ELEMENTS. HOW TO INTRODUCE ENVIRONMENTAL EDUCATION THROUGH IBL IN AN INTERNATIONAL PROJECT

Daniel Aguirre-Molina
Colegio Pedro Poveda de Jaén (Spain)
daniel@colegiopedropoveda.org

Summary

One of the main objectives of the European Union is to improve the scientific literacy of its inhabitants. Schools also have the opportunity to create joint projects within the LLP (Life Long Learning program) designed to promote among non-university students a better understanding of other cultures and countries of the Union.

Uniting all this, and being aware of the importance of generating profitable results for all, the Comenius "The 4 elements" project was born. Such projects require the participation of at least 3 schools in different countries working together on a project for obtaining joint outcomes.

In our case we moved the improvement of scientific literacy in our classrooms introducing methodologies of inquiry based learning (IBL) to improve environmental education of our students. We have joined seven schools in Portugal, Spain, Italy, Slovenia, Czech Republic, Poland and Latvia for two years (2012-2014). The "4 Elements" is so named because 4 major themes work from the point of view of the environment and relates each of them with the elements that make up the universe, according to the Greek scientific tradition. So, study the energy is associated to fire, recycling and solid waste management is related to earth, greenhouse gas emissions is like the air and water remains as important as ever.

Within each topic we are generating proposals for educational use in the classroom, which are put together in each project meetings and will be available to all on the website www.the4elements.eu. Offered herein is a description of some of them, as well as general ideas of this project.

Key words: European projects, environmental education, Comenius, water, earth, energy, air, greenhouse gasses



FOUR ELEMENTS IN THE PERSPECTIVE OF CROSS-CURRICULAR CONNECTION

Irena Šterman
Gimnazija Moste
irena.sterman@guest.arnes.si

Abstract

Cross-curricular links are an extremely important part of the learning process at high school. They are indispensable to the attainment of an integrated knowledge of students. We decided that we will include the content of the project Comenius: The Four Elements into our educational practice by creating a set of different cross-curricular lessons.

We want to make sense of the project itself, bring it closer to the students and at the same time create a database of useful and varied lessons, which will be used in the school work in the future.

Our work within this international project also allows us to disseminate our ideas, at least in these six European countries which are with us in the project.

The title of the project has allowed us to connect the sciences to everyday life, technology and the various challenges of modern life.

Key words: Cross-curricular links, 4 elements, Comenius

EUROPEAN PROJECTS AND OUR SCHOOL

Monika Bartova
Zakladni skola, Klasterec nad Ohri, Skolni 519, okres Chomutov
reditelka@skolaklasterec.cz

Abstract

In the nowadays it is necessary to renovate the pedagogy in schools, use new methods to increase students' interest especially in science and mathematics. Our region is in the industrial zone of CR with many mines, coal power stations and factories. That is why our school has been involved in several projects supported and co-ordinated by European Schoolnet (EUN). Our school has been taking a part in some projects supported by the Department of the Environment of CR and other local and national institutions too. It is a good opportunity for our school to use new methods, share experience and practice with other teachers from other European countries. In this presentation we would like to show you some of them and something from our experience with their realization. We would like to mention project Spice, InGenious, iTEC, Comenius projects and Project of our school arboretum.

Key words: Spice, InGenious, iTEC, Comenius projects, new teaching methods, science education, good practice, school arboretum

SCIENTIX2: EASY TO FIND HIGH QUALITY SCIENCE AND MATHS TEACHING RESOURCES

*Carlos Cunha
Escola Secundária Dom Manuel Martins
cjcunha@sapo.pt*

Abstract

The objectives of the Lisbon declaration (2000) and the affirmation of the European Commission that there is a need to promote more widely inquiry based science education methodologies in primary and secondary schools and to support teachers' networks (2007), were the basis for launch by European Schoolnet (EUN) of Scientix, a web-based information platform for science education in Europe. Its aim is to ensure the regular dissemination and sharing of progress, know-how, and best practices in the field of science education and providing a feedback mechanism.

Scientix2 is a three-year project run by EUN since September 2013 on behalf of the European Commission Directorate – General for Research and Innovation and is funded under the 7th Framework Programme. The portal (<http://scientix.eu>), available in six European languages, offers a resource repository containing hundreds of teaching materials from European projects, but also research reports and policy-making documents; a translation on demand service for the teaching materials towards any of the 23 languages of the European Union; a community including a forum and chat rooms; an online news service featuring international science education topics and a calendar of forthcoming events and training opportunities; and also a newsletter sent once a month to registered users. The portal allows for interaction among the registered users in the public profiles directory and for searching, commenting and rating the resources. Scientix targets mainly teachers, providing teaching materials, scientific support and documentation that give them some quality tools for the development and implementation of inquiry based science education teaching methodologies.

This workshop will help the participants creating an OpenId account as well as a public profile in the members directory and show them examples of what they can do with this platform. The communities of practice will be shown and entrances will be asked to the participants. They can benefit by experimenting some resources available on the platform.

The workshop will be carried out in a room with one computer/ two participants with Internet access, in order to allow them to participate actively to the workshop.

Since resources are online, no materials will be distributed to the participants either than the web links to the platform.

Key words: Science, portal, stem, resources, traduction, european comission, EUN

LANGUAGE - COGNITION - SCIENCE

*Malgorzata Zajackowska
Zespol Szkol Integracyjnych No 1, Bialystok (Poland)
mazajka@interia.pl*

Abstract

Scientific research now gives us greater understanding of the role of 'acquiring language' in relation to 'learning language'. Successful language learning can be achieved when people have the opportunity to experience real-life situations in which they learn by doing. When we consider effective communication, it is clear that 'dual-focussed' education is better when there are two main goals, one related to the subject, and one linked to the language (CLIL methodology).

Science is a form of distributed cognition. Perhaps the greater part of the things we know are things we have learned from others. How do students learn Science from others, how is scientific knowledge related to the way in which we work? We would like to answer the questions considering the importance of teamwork and international cooperation based on the projects run by European Schoolnet, Brussels.

Key words: Scientix, CLIL, language, ELL, Science, cognition, cooperative learning

ALTERNATIVE WAYS OF TEACHING ENVIRONMENTAL STUDIES

*Baiba Karlsberga
Priekulji Secondary School Latvia
karlsberga.baiba@gmail.com*

Abstract

Currently, the ecological situation in the world is like a huge, loaded cart - it is the problem of waste, the air pollution, the global warming and the extinction of species and many other painful issues.

And who is able to stop it when it becomes so global, so all the world's problems? Each one we certainly can not, but all together - definitely. We can do it by changing our daily habits, choosing environmentally friendly solutions, and actively influencing political decisions.

Eco School program is one of the most comprehensive and the most popular models of environmental education in the world. It is a program that promotes environmental awareness by associating it with a multitude of subjects, consisting of a personal attitude and engages the surrounding community diverse activities. Eco School has the ability to influence public awareness both locally and globally.

Eco School essence is to create an effective school environment management system that will not only provide additional educational opportunities for young people, but also effective and valid real work of the school environment and the management of the organization.

Key words: Scientific, language, Science, cognition, cooperative learning

TEACHING SCIENCE THROUGH INQUIRY BASED LEARNING (IBL)

*Daniel Aguirre-Molina
Colegio Pedro Poveda de Jaén (Spain)
daniel@colegiopedropoveda.org*

Abstract

In the European educational context, reports by expert groups have identified the necessity of a renewed pedagogy in schools to overcome deficits in science and mathematics teaching and to raise the standards of scientific and mathematical literacy. Inquiry-based learning (IBL) is considered the method of choice. Inquiry-based learning involves exploring the world, asking questions, making discoveries, and rigorously testing those discoveries in search of new understanding. Inquiry-based learning can have many faces, dependent on context, target group and learning aims. However, inquiry-based learning approaches all have the shared characteristics of aiming to promote curiosity, engagement and in-depth learning.

In this presentation we will expose the main features of the IBL process. We will check this methodology, student-centered, versus teacher-centered approaches in the use, for example, of ICT resources. We will show examples about how to introduce this method in our lessons and present didactic resources for a direct use in the classroom, such as the offered in the context of the PRIMAS project (<http://www.primas-project.eu>).

Key words: IBL, inquiry, science education, scientific literacy, methodology

100 MINUT UČITELJI UČITELJEM



TANDEMKA KONTROLNA NALOGA: PRILOŽNOST ALI POTUHA? EXAMINATION PAPER IN PAIR: AN OPPORTUNITY OR A CONNIVANCE?

Đulijana Juričič
Osnovna šola Trnovo
julijana.juricic@guest.arnes.si

Izveček

Med mnogimi generičnimi kompetencami, ki jih razvija pouk fizike, so tudi sposobnost reševanja problemov, verbalna in pisna komunikacija, medsebojna interakcija ter timsko delo. Le-te lahko razvijamo z uporabo različnih strategij in pri različnih dejavnostih, kot so eksperimentalno delo, projektno delo, raziskovalne dejavnosti, kjer učenci zadano delo opravljajo v timih, sestavljenih iz dveh ali več članov.

V prispevku bodo predstavljene desetletne izkušnje s pisanjem kontrolne naloge v paru kot dejavnosti, ki omogoča intenzivni razvoj omenjenih kompetenc v sicer za učence zelo stresni situaciji. Opisan bo postopek sestavljanja parov, potek pisanja kontrolne naloge ter evalvacija takega načina ocenjevanja znanja. Izpostavljene bodo prednostni in morebitne pasti takega načina ocenjevanja znanja.

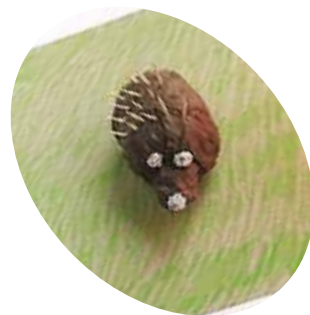
Ključne besede: generične kompetence, kontrolna naloga, fizika, timsko delo, delo v paru.

Abstract

Among many generic competences being developed during education in Physics the ability of problem solving, verbal and written communication, mutual interaction and teamwork competencies can be found too. They can be developed using different strategies and activities, such as experimental and project work, research and problem solving activities which can be fulfilled by student teams consisting of two or more members.

The contribution presents ten years of experience with pair work writing assessment as an activity that provides intensive development of mentioned skills in, for students, a very stressful situation. The criteria for pair combining, the assessment procedure and evaluation are presented. The benefits and potential pitfalls of such assessing method are emphasized.

Key words: generic competences, writing examination, Physics, team work, pair work



RAZISKOVALNO EKSPERIMENTALNO DELO PRI POUKU KEMIJE

INQUIRY BASED LEARNING IN CHEMISTRY

Ana Logar
Osnovna šola Metlika
ana.logar@gmail.com

Izvleček

Eksperimentalno delo ima že vrsto let ključno vlogo pri učenju in poučevanju kemije. Z eksperimentalnim delom spodbujamo radovednost in motiviranost učencev za učenje naravoslovja, učence navajamo na upoštevanje navodil in varnostnih ukrepov, razvijanje laboratorijskih spretnosti, usvajanje eksperimentalnih tehnik in metod, pravilna uporaba laboratorijske opreme, učenci lahko teoretično znanje preverijo z ustreznimi eksperimenti, razvijajo naravoslovni načina razmišljanja, približamo jim pojme in jih usvojijo preko izkušenj, ter s tem olajšamo razumevanje in učenje kemije, navajamo na opazovanje, obdelavo, prikaz in vrednotenje rezultatov (Gibson et al., 2002, Hofstein in Lunetta, 2004, Johnstone in Al-Shuaili, 2001, Josephsen, 2003).

Novost v posodobljenem učnem načrtu za kemijo v osnovnih šolah je uvajanje raziskovalno eksperimentalnega pristopa. Pri raziskovalno eksperimentalnem pristopu učence postopno in sistematično prek raznolikih dejavnosti in izkušenj vpeljujemo v metodologijo raziskovanja, pouk je procesno ciljno usmerjen s poudarkom na razvijanju miselnih procesov, kreativnega in kritičnega mišljenja, učenci so v vlogi aktivnih reševalcev problemov in ob tem konstruirajo svoje lastno znanje in hkrati prevzemajo odgovornost za svoje učenje (Skvarč in Bačnik, 2012).

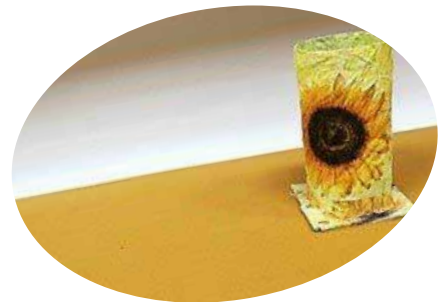
V prispevku je predstavljen primer raziskovalno eksperimentalnega dela pri pouku kemije, vsebinski sklop Kisline, baze in soli.

Ključne besede: eksperimentalno delo, laboratorijsko delo, kemija, raziskovalno eksperimentalno delo, kisline, baze in soli

Abstract

Experimental work has a crucial role in teaching and learning chemistry for a long time. The experimental work encourages interests and motivation of the students for learning science, the students are taught to follow instructions and safety rules, to develop laboratory skills, and also to learn experimental techniques and methods. The students are also taught to use the laboratory equipment in an appropriate manner, they can check their theoretical knowledge with proper experiments, they can develop the scientific way of thinking, we can make science terminology more understandable for them and they can learn about it through experience - all this assists in understanding and learning chemistry. The students also get used to observation, display and evaluation of the results (Gibson et al., 2002; Hofstein and Lunetta, 2004; Johnstone and Al-Shuaili, 2001; Josephsen, 2003).

The novelty in an updated curriculum for chemistry in primary schools is an introduction of "a research





and experimental approach - inquiry based learning". With this approach, with the use of various activities and experience, the students are gradually and systematically introduced to a methodology of research. The learning lessons are process and goal oriented with an emphasis on developing thinking processes, creative and critical thinking, and at the same time the students are put into active solution-providers of the problems. They also simultaneously construct their own knowledge and take responsibility for their learning. (Skvarč and Bačnik, 2012).

The article presents inquiry based learning in chemistry, the learning unit is called: Acids, bases and salts.

Key words: experimental work, laboratory work, chemistry, inquiry based learning, acids, bases and salts

RAZISKOVALNA DEJAVNOST NA GESS TRBOVLJE RESEARCH ACTIVITY AT GESS TRBOVLJE

*Darja Užmah,
GESS Trbovlje
darja.uzmah@gess.si*

Izвлеček

Naravoslovec prihaja do novih spoznanj na ta način, da opazuje, postavlja hipoteze in jih preverja z eksperimenti. Nekateri dijaki želijo sami izvajati raziskovalno delo, seveda je pri tem pomembna njihova radovednost in želja po pridobivanju novih spoznanj. Delo mentorja, ki vodi dijake pri raziskovalnem delu, je ključna pri tem procesu.

Na naši šoli, GESS Trbovlje se lotevamo raziskovalnih nalog že zadnjih 30 let. Glede na to, da živimo v Zasavju, ki spada med močno degradirana območja, je bila večina raziskovalnih nalog povezana z okoljsko problematiko. Tako sta bili pod mojim mentorstvom uspešno opravljeni dve raziskovalni nalogi: Določanje vsebnosti kovin v laseh zasavskih srednješolcev in Meritve pljučne kapacitete pri zasavskih srednješolcev. V letošnjem šolskem letu je v teku še ena raziskovalna naloga z naslovom Zlivanje celic pod vplivom visokonapetostnih električnih pulzov, ki pa je vezana na nove tehnologije.

Raziskovalna dejavnost pomeni veliko dodano vrednost za dijake, ki želijo s pomočjo eksperimentov najti odgovore na svoja vprašanja.

Ključne besede: raziskovalno delo, hipoteza, eksperimenti, okoljska problematika, določanje vsebnosti kovin, meritve pljučne kapacitete.

Abstract

Naturalist leads to new insights in this way, to observe, to make hypotheses and verified them by experiments. Students who want to carry out the research work, of course, is important in this context their curiosity and desire to acquire new knowledge. The role of the mentor who leads students in research work is very important. In our school, GESS Trbovlje are undertaking research projects over the last 30 years. Given



that we live in Zasavje, which is a heavily degraded areas, the majority of research projects related to environmental issues. Two research tasks were successfully completed under my mentorship: Determination of metal content in the hair of zasavje students and Measurements of lung capacity of zasavje students. In this school year, another research project is carried out and it is called Fusion of cells under the influence of high-voltage electric pulses, which is linked to new technologies. Research activity is suitable for students who wish through the experiments find answers to their questions.

Keywords: research, hypothesis, experiments, environmental issues, the determination of the metal content measurements of pulmonary capacity.

PROJEKT?! ZAKAJ? – ZAKAJ PA NE?

PROJECT?! WHY? – WHY NOT?

*Tjaša Milijaš
OŠ Dravlje, Ljubljana
tjasa.milijas@gmail.com*

Izveček

»Šola prihodnosti« je »projekt«, ki traja že desetletja, zdi pa se, da nikakor ne najde poti iz teorije v prakso. Spremembe v osnovni šoli so tudi na področju vloge učenca v vzgojno-izobraževalnem procesu: od pasivnega prejemnika in reproducenta znanja v aktivnega osebk, odgovornega za svoje znanje. Kako to doseči, je izziv tako za učitelje kot za učence.

Ena izmed možnosti aktivnega učenja je projektno delo. Učitelj lahko izkoristi prednosti projektne dela ob učeniku, lahko pa delovanje razširi na med-šolsko ali na mednarodno raven. Prav tako lahko v projektu sodelujejo vsi učenci, lahko je to v okviru interesne dejavnosti, lahko pa tudi kot primer diferenciacije in individualizacije pouka.

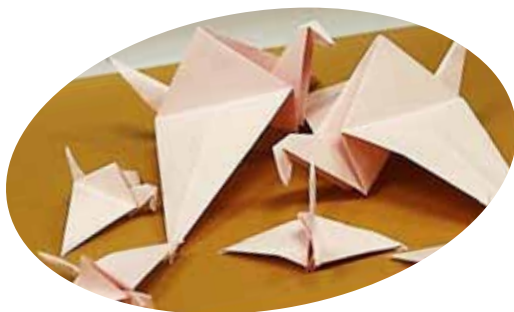
Učitelj lahko sproti spremlja, preverja in vrednoti napredek učencev, ki ga lahko ob zaključku projekta tudi bolj realno in pravično oceno. Vključena je lahko tudi samorefleksija učencev in spremljanje lastnega napredka.

Ključne besede: šola, projekt,, aktivni učenci, preverjanje, ocenjevanje

Abstract

“School of the future” is a “project” that has been going on for decades, it would seem, however, that in no way finds its way from theory into practice. Changes in primary school are also in the field of the role of the pupil in the school-educational process: from a passive recipient and reproducer of knowledge into an active person, responsible for his knowledge. How to achieve this, is a challenge for both, teachers and students.

One of the options for active learning is project-based work. Teachers can take advantages of the project



work and plan it on the basis of a textbook, or the project work can be expanded on the interschool or an international level. Project work allows all students to participate, either during the regular classes, as an extra-curricular work or as a sample of a differentiation and individualization.

Teacher can monitor students' progress and evaluate his work, which can be, at the end of the project, more realistically and fairly assessed. Students themselves can monitor and self-assess their work.

Key words: school, project, evaluation, assessment, active learners.

TABOR PREŽIVETJA V NARAVI ZA SREDNJEŠOLCE A SURVIVAL CAMP FOR HIGH SCHOOL STUDENTS

Matej Mlakar, Alenka Špan

Gimnazija Krško

matej0104@gmail.com, spanlenka@gmail.com

Izveček

V okviru obveznih izbirnih vsebin na Gimnaziji Krško v drugem letniku izvajamo projektne dejavnosti vezane na neposreden stik človeka z naravo. Bivamo na prostem v šotorih ter vse dejavnosti in vsebine izvajamo v naravi, taborni prostor nam služi kot učilnica na prostem, v kateri po vnaprej določenem urniku izvajamo večino eksperimentalnega dela, v bližnji okolici pa večino športnih dejavnosti. Spoznavanje naravnih in kulturnih posebnosti kraja je problemsko naravnano; dijaki jih morajo spoznati s samostojnim delom in skozi primarno izkušnjo stika z naravo. Pri delu poleg tradicionalnih pripomočkov za preživetje v naravi uporabljamo tudi nekatera sredstva sodobne tehnologije, kar nam omogoča objektivno analizo rezultatov, hkrati pa tudi evalvacijo potrebnosti uporabe tehničnih pripomočkov. Enotedensko druženje je možnost, da se učitelji od dijakov naučijo kakšne manj znane veščine taborništva, kar še bolj utrdi pedagoško vez učitelj-dijak ter se pokaže v kasnejših obdobjih poučevanja. Dodaten čar projektnemu tednu, ki vedno poteka zadnji teden v šolskem letu, dajejo predprojektne dejavnosti, kjer se v okviru naravoslovno-športnih dni dijaki urijo v osnovah veščin preživetja v naravi, ter samoiniciativne akcije zbiranja materialnih sredstev v toku šolskega leta, s katerimi dijaki sami poskrbijo, da se stroški izvedbe projektnega tedna ustrezno zmanjšajo.

Ključne besede: tabor preživetja v naravi, zdrav način življenja, naravoslovne delavnice

Abstract

Gimnazija Krško organizes required elective activities for the second-year students as a project week based upon immediate contact with nature. We live outdoors in tents, all activities and projects are conducted in natural environment, camping site serves as an outdoor classroom with a predetermined timetable for experimental work, most sport activities take place in the camping site's immediate surroundings. Students learn about the natural and cultural sites through independent work and primary

sensory experience of nature. Besides traditional survival equipment we also take advantage of modern gadgets for scientific research, which enable us to analyse the results objectively, at the same time we can also evaluate the necessity of using technical equipment. Teachers and students spend whole week together outside in nature, this experience provides the opportunity for teachers to learn some less known camping skills from the students. Such experience strengthens the pedagogical bond between the teacher and the learner and positively influences the next years of teaching and studying together. What adds to the charm of the project week, which traditionally takes place in the last week of the school year, are the activities organized during the school year complimenting the goals of the project week. Namely, we organize sports days focused on acquiring survival skills while students organize fundraising recycling drive and make their own contribution to diminishing the overall cost of the project week.

Key words: a survival camp in nature, healthy lifestyle, science workshops

EVOLUCIJA UČENJA IN POUČEVANJA THE EVOLUTION OF LEARNING AND TEACHING

*Mirela Kapetanović Mujkić
Osnovna šola Polje
mirela.kapetanovic.mujkic@ospolje.si*

Izvleček

Tradicionalni model učenja in poučevanja, kakor tudi vloga osnovnih subjektov, ki sodelujejo v tem procesu, se v zadnjih letih pospešeno spreminjajo. Z razvojem znanosti so v današnjih učilnicah svoje mesto našli novi pripomočki in tehnologije, ki so odprli pot drugačnemu načinu poučevanja. Novi pristopi usvajanja in podajanja učne snovi so mladim zanimivi in bistveno vplivajo na njihovo motivacijo. Vloga in poslanstvo današnjega učitelja ni več izključno posredovanje in utrjevanje znanja, temveč usmerjanje učenca v procesu pridobivanja znanja in pridobivanja aktivne vloge v družbi. Zato čutimo učitelji potrebo po stalnem izobraževanju, ki nam omogoča korak s časom. Prav učiteljeva osebnost in njegovo aktivno sodelovanje, ki ga prepoznamo v različnih oblikah interaktivnega sodelovanja v procesu edukacije, vplivajo na formiranje učenčevih vrednot in kritičnega mišljenja s pomočjo katerega bo lažje spreminjal in oblikoval svet, v katerem bo živel.

Kot primer dobre prakse bom predstavila različne oblike dela in njihove prednosti v procesu poučevanja: praktično in ozaveščevalno delo v projektu Ekošola, sodelovalno delo na daljavo s pomočjo metodologije učnih krogov, uporaba spletnih aplikacij pri raziskovalnem delu in razvoj matematične in računalniške pismenosti na področju obdelave podatkov.

Kljub novim, modernim oblikam poučevanja, želim opozoriti na pasti, ki jih skrivajo nove tehnologije, kajti vzporedno, s kopičenjem znanja je potrebno delati tudi na razvoju osebnosti šolarja, ker bo le tako postalo njegovo znanje uporabno na najbolj human način.

Ključne besede: modeli poučevanja, vloga učitelja, razvoj osebnosti šolarja, razvoj učiteljeve osebnosti, formiranje učenčevih vrednot

Abstract

Traditional model of learning and teaching as the role of the basic subjects that are part of this process are changing rapidly in the last few years. With a development of science new accessories and technologies found their spot in the current classrooms, which enabled the way to a different type of teaching. New approaches to assimilation and distribution of the learning material are interesting to young and have a significant effect on their motivation. The role and the mission of a teacher today is no longer merely passing on and strengthening of their knowledge but directing a pupil in the process of learning and taking on an active role in the society. Therefore teacher feel the need to constantly educate ourselves, which enables us to keep step with the times. It is actually the teacher's personality and his active cooperation, which can be recognized in different forms of interactive work in the educational process, that have an effect on the formation of pupil's values and critical thinking, which will help him to change and form the world he will be living in.

As a good practice I will present different types of work and their benefits in the learning process: practical work and work acknowledgement in the »Eco-school project«, collaborative distance work with the help of learning circles methodology, the use of the online applications in the research work and the development of the mathematical and computer literacy in the area of data processing.

Despite new and modern ways of teaching I would like to warn on traps that are hidden by new technologies because in parallel, with the knowledge accumulation it is necessary to work also on development of a pupil's personality because only in this way his knowledge will become useful in the most human way possible.

Key words: models of learning, teacher's role, pupil's development of personality, teacher's development of personality, formation of pupil's values

OBDOBJE MODERNE MALO DRUGAČE MODERNISM ON DIFFERENT WAY

*Martina Golob
OŠ Sostro
golobmartina@gmail.com*

Izvleček

Učitelj lahko pogloblja, povezuje in razširi učenčevo znanje, ki ga le-ti pridobi(va)jo v osnovni šoli, na zanimiv in ustvarjalen način. Pozna in poveže vsebine iz drugih učnih področij na horizontalni in vertikalni ravni, poveže vsebino obravnavane snovi v sodelovanju z zunanjo kulturno ustanovo (muzejem), vključi

učence z govornimi nastopi in njihovim individualnim raziskovanjem ter digitalno tehnologijo. V prispevku je prikazan primer obravnave slovenske moderne pri slovenščini.

Ključne besede: slovenska moderna, slovenščina, digitalna tehnologija

Abstract

A set of primary school Slovene lessons treating modernism in Slovene literature is presented in the article. A teacher can deepen, intertwine and broaden the student's knowledge in an interesting, creative way. What is more, the teacher can link that knowledge to different fields of education on a horizontal and vertical line. Moreover, the teacher can also include a set of various cultural facilities (e. g. museums, etc.) into the teaching process. Last but not least, the teacher can encourage students to become active participants in Slovene lessons by engaging them in speaking performances and individual researches, using ICT.

Key words: Modernism, Slovene lesson, ICT

UPORABA OSNOV STATISTIKE V 3. IN 9. RAZREDU OSNOVNE ŠOLE S POMOČJO IKT-JA BASIC STATISTICAL ANALYSIS IN THE 3RD AND 9TH GRADE WITH THE HELP OF ICT

Anita Smole

Osnovna šola Vide Pregarc

anita.smole@gmail.com

Sonja Strgar

Osnovna šola Vide Pregarc

sonja.strgar@guest.arnes.si

Izvleček

Dejavnost utrjevanja znanja sva izvedli z učenci 3. in 9. razreda. Izkoristili sva prednosti, ki jih ponuja sodelovanje med različno starimi učenci in delo z IKT-jem. Združili sva dve učni uri matematike. V razred sva prinesli osem prenosnikov in učence razdelili v osem heterogenih skupin. V vsaki skupini so bili učenci tretjega in devetega razreda. Dejavnosti so temeljile na ciljih, zapisanih v letnih učnih pripravah za posamezni razred. Učenci so se ukvarjali z matematično preiskavo in spoznavali osnove statistike, podatke pa so obdelovali s pomočjo računalniškega programa. Vodilo je predstavljala izkustvena matematika, pri zastavljanju raziskovalnih vprašanj sva izhajali iz življenjskih situacij. Raziskovali so, koliko učencev, vključenih v dejavnost, ima nogo določene velikosti, koliko so stari, koliko vrst pisal imajo v puščicah in na katerih hišnih številkah stanujejo. Najprej so podatke zbrali, jih obdelali ter prikazali v obliki preglednice ter množic, vrstičnega, stolpčnega prikaza in tortnega diagrama. Naloge so bile nastavljene tako, da so se

nadgrajevale. Tretješolci so skupaj z devetošolci reševali naloge, povezane z obravnavano snovjo v tretjem razredu, drugi del nalog je bil namenjen le devetošolcem, saj se njihovo znanje skozi leta šolanja pogloblja. Podatke pa so nato skupaj interpretirali s pomočjo v naprej pripravljenih vprašanj različne zahtevnostne ravni. Na koncu so sodelujoči evalvirali izvedeno delo. Evalvacijski vprašalnik so reševali v računalniški učilnici, kjer je bila tudi povezava do interneta. Vprašalnik sva učiteljici pripravili v google drive. Nato sva še učiteljici naredili evalvacijo načrtovanja in izvedbe ur. Pridobljene izkušnje skupnega načrtovanja in izvajanja bova uporabili pri novih izzivih.

Ključne besede: utrjevanje, IKT, medvrstniško sodelovanje, matematična preiskava, evalvacija

Abstract

All the revision exercises were done in the 3rd and 9th grade. The different age groups of pupils and ICT served as an advantage which we used in class. We joined two Math classes and divided the pupils into eight mixed ability groups. All the groups (comprised of 3rd and 9th grade pupils) used lap tops while doing the exercises. All the exercises were based on the objectives written in the annual lesson plans for an individual class. The pupils dealt with mathematical investigation and the basics of statistics and later they used a computer programme to process the data gathered. The empirical mathematics was the basis for our work and the research questions were formed using real life situations. The pupils had to find out how many of their peers have a particular shoe size, how old they are, how many different kinds of pencils they have and what their house numbers are. First, they gathered and processed the data, then they presented the data in the form of tables and sets as well as line, column and pie charts. All the tasks were graded in difficulty. The first set of tasks (third grade curriculum) involved the ninth graders helping the third graders. The second set of tasks was designed for ninth graders only, since their level of knowledge is higher each year. Finally, they interpreted the data together with the help of pre-prepared different level questions. At the end, each pupil evaluated their work using an online questionnaire. The questionnaire was prepared by using the Google Drive tools. The teachers involved also evaluated the planning and execution of the lessons. We will use these new experiences when facing new challenges in our work.

Key words: revision exercises, ICT, peer cooperation, mathematical investigation, evaluation

RAZVIJANJE SOCIALNE IN DRŽAVLJANSKE KOMPETENCE SKOZI MEDKULTURNO SODELOVANJE DEVELOPMENT OF SOCIAL AND CIVIC COMPETENCES THROUGH INTERCULTURAL COOPERATION

*Iris Kravanja Šorli
OŠ Martina Krpana Ljubljana
iris.sorli@gmail.com*

Povzetek

V šoli že tretje leto izvajamo projekt medkulturnega sodelovanja »Počnimo skupaj«, ki zapolnjuje potrebe po medvrstniškem in medkulturnem povezovanju in druženju učencev ter hkrati pomaga razvijati socialne in državljanske kompetence otrok in mladostnikov. Socialna in državljanska kompetenca vključuje osebne, medosebne in medkulturne kompetence in zajema vse oblike vedenja, ki usposablja posameznika za učinkovito konstruktivno sodelovanje z drugimi.

V letošnjem šolskem letu smo projekt obogatili z »Makedonskim tednom«, kjer smo skozi različne dejavnosti v duhu radovednosti, strpnosti in medsebojnega dialoga poglobljeno spoznali makedonsko zgodovino, običaje in navade, naravne in kulturne znamenitosti, ples, glasbo, literaturo in kulinariko. V projektu so sodelovali vsi učenci in učitelji v šoli, na pomoč pa so nam priskočili tudi člani Makedonskega kulturnega društva Makedonija.

Skozi dva tedna so učenci pri pouku plesali makedonske plese, prepevali makedonske ljudske pesmi, kuhali makedonske jedi, se učili cirilice, spisali priročni slovar najbolj osnovnih besed, brali pravljice v makedonskem jeziku in ob njih poustvarjali, se spoznavali z njihovo mladinsko literaturo, spoznali Republiko Makedonijo v sliki in besedi, skozi floro in favno, in se družili s člani Makedonskega društva. Aktivno vlogo pri predstavitvi makedonske kulture so imeli učenci naše šole, ki imajo makedonske korenine, ali pa je makedonščina njihov materin jezik in jim je bilo na ta način omogočeno, da dobijo potrditev in spodbudo pri ohranjanju svoje kulture in jezika.

Vse dogajanje so učenci pridno fotografirali in snemali in na koncu ustvarili kratki film. Pri pouku so preko dostopnih elektronskih virov raziskovali različne makedonske ljudske običaje in navade, umetnost in arhitekturo, sami naredili predstavitve, jih pri urah pouka predstavili sošolcem in s tem nadgrajevali svoje računalniško znanje, znanje nastopanja in veščine timskega dela. Kot investicija v prihodnost pa spoznavanje novih kultur prinaša večjo strpnost, boljše razumevanje in sožitje med učenci v šoli in v njihovem življenjskem okolju.

Ključne besede: socialne in državljanske kompetence, medkulturno sodelovanje, učenci, šola, kultura, strpnost, Makedonija

Abstract

In school we conduct for the third year now an intercultural cooperation project “Let's do together”, which fills the need for peer and intercultural integration and socialization of students and at the same time it helps to develop social and civic competences for children and adolescents. Social and civic competences include personal, interpersonal and intercultural competence and they cover all forms of behavior that equip individuals to participate effectively and constructively with others.

In this school year we have enriched the project with the “Macedonian week” where we became more familiar with Macedonian history, customs and habits, natural and cultural attractions, dance, music, literature and cuisine through various activities in a spirit of curiosity, tolerance and mutual dialogue. The project involved all the pupils and teachers in school, members of the Macedonian Cultural Association “Macedonia” also helped.

For two weeks, the students have danced Macedonian dances, have sung traditional Macedonian songs, have cooked Macedonian cuisine, have learned the Cyrillic alphabet, have written the glossary of the most basic words, have read fairy tales in the Macedonian language and have gotten acquainted with Macedonian youth literature, have learned about the Republic of Macedonia from the images and text, through the flora and fauna and they have been interacting with members of the Macedonian Society in the classroom. Students from our school who have Macedonian roots had an active role in the presentation of the Macedonian culture or their Macedonian mother tongue and were thus able to obtain confirmation and encouragement in maintaining their culture and language.

All events were diligently photographed and filmed by students and at the end a short film was created. In the classroom they studied a variety of traditional Macedonian customs and habits, art and architecture through available electronic sources and they made presentations for their classmates. Thus they built their computer skills, speaking skills and skills of teamwork. Learning about new cultures also brings greater tolerance, better understanding and harmony among the students in the school and in their living environment.

Key words: social and civil competences, intercultural cooperation, students, school, Macedonia, culture, tolerance

UPORABA BRALNE UČNE STRATEGIJE »VŽN« PRI GEOGRAFSKEM RAZISKOVANJU POKRAJINE

THE USE OF »KWL« READING STRATEGY AT A REGIONAL GEOGRAPHIC RESEARCH

*Tatjana Pecin Završan
Osnovna šola Polje
tatjana.pecin@guest.arnes.si*

Povzetek

Vsi, ki se vsakodnevno srečujemo v šolskih stavbah ali smo na kakršenkoli način povezani z delovanjem v njej, imamo nekakšen skupni imenovalac. To je ustvarjalnost. Ne glede na to ali si vzgojitelj, učitelj ali profesor na srednji šoli ali celo na fakulteti, svojega poklica ne moremo dobro opravljati, če nismo ustvarjalni. Navdušenje za pedagoško delo je treba stalno negovati in se pri tem odpirati mnogim inovacijam, ki se nam ponujajo.

Primer inovacije, ki ga vključujem v svoje pedagoško delo je tudi spodbujanje in večanje bralne pismenosti pri učencih z geografskim raziskovalnim delom. Najbolj učinkovita strategija, ki je spodbudila učence k samostojnemu geografskemu raziskovanju pokrajine, je bila metoda »VŽN«. Le-ta vključuje tri vprašanja, ki jih lahko neposredno povežemo z geografskim raziskovanjem pokrajine: »Kaj že vemo?«, »Kaj želimo izvedeti?« in »Kaj smo se naučili?«. Z metodo »VŽN« so učenci spoznavali pokrajino preko različnih podatkov (grafični, slikovni), preko različnih medijev (knjige, članki, spletno gradivo, ekskurzija kot najvišja oblika geografskega terenskega dela...), jo opisovali in predstavljali v razredu ali na geografskem taboru, kjer so izvajali večji del neposrednega terenskega raziskovanja pokrajine.

S to obliko dela so bile ob spodbujanju bralne pismenosti in razvijanju sposobnosti branja, poslušanja ter govornega in pisnega sporočanja, dosežene tudi višje stopnje znanja. Le-te so trajnejše in uporabnejše, saj so bile pri slehernem učencu spodbujene posebne raziskovalne dejavnosti, ki so se kazale tako v doseženih ugotovitvah kot tudi v zanimivih oblikah poročanja.

Ključne besede: bralna pismenost, metoda »VŽN«, geografsko raziskovanje, terensko delo, delo z učenci

Abstract

All that meet each other in schools or are in any way connected to the school work have some sort of a common ground. It is called creativity. Regardless of whether being a preschool teacher, primary or secondary school teacher, or even a university professor nobody can do his job well if he lacks creativity. Enthusiasm over the pedagogic work needs to be constantly taken care of and by doing so one needs to be opened to various innovations that present themselves.

An innovative example used in my pedagogic work is also the use of the geographic research work for stimulating and increasing the reading literacy of children. The most efficient strategy that encouraged

pupils for individual regional geographic research was »KWL« method. This method involves three questions that can be directly related to regional geographic research: »What we know?«, »What we want to know?« and »What we learned?«. With »KWL« method pupils got to know the region through different data (graphic, visual), via different media (books, articles, online material, excursion as the most developed form of geographic fieldwork, etc.), described it and presented it to the class or at the geographic camp, where they performed most of their direct field regional research.

With this type of work connected with a stimulation of the reading literacy and a development of the reading capability, listening, verbal and writing communication, higher levels of knowledge were achieved. This kind of knowledge lasts longer and is more useful because special research activities were stimulated with each pupil that were seen with the results achieved and through some interesting ways of reporting.

Key words: reading literacy, »KWL« method, geographic research, fieldwork, work with children

KOMUNIKACIJSKE VEŠČINE IN DRUGA ZNANJA IZ TRANSAKCIJSKE ANALIZE ZA BOLJŠE POUČEVANJE

COMMUNICATION SKILLS AND OTHER TRANSACTIONAL ANALYSIS KNOWLEDGE FOR BETTER TEACHING

Irena Lukić

Osnovna šola Spodnja Šiška

irena.lukic@guest.arnes.si

Povzetek

Transakcijska analiza (TA) je teorija osebnosti, ki se je razvila iz psihoanalize, in, ki nam ponuja možnost za razumevanje sebe in drugih. Zavedamo se, da poučevanje nima le akademskega cilja, temveč vključuje tudi razvijanje odnosa z učenci in pomoč učencem pri razvijanju lastnih emocionalnih veščin. Neprimernega obnašanja učencev ne smemo tolerirati, a takemu vedenju se tudi ne smemo zoperstaviti na agresiven način. Kako voditi učence k primernemu vedenju? Gre za situacijo, ko učitelj ščiti svojo avtoriteto in vzpostavlja kontrolo nad razredom npr. 30 učencev. Preventiva, pregovori in kompromis so verjetno boljše možnosti kot neprestano prepiranje z učenci. Ključne ideje TA, o katerih bomo govorili v predavanju so: strouki (pogojni in brezpogojni strouk ter negativni in pozitivni strouk), potreba po pozornosti, učenje po modelu in ego stanja (ego stanje otroka, ego stanje odraslega in ego stanje starša). Z znanji iz omenjenih področij lahko lažje upravljamo s svojim vedenjem in z vedenjem učencev. Posledično lažje dosežemo akademske cilje ter opremimo sebe in učence s socialnimi veščinami, kar je znanje pomembno za celotno življenje. Dodatna nagrada učitelju je preventiva pred lastnim emocionalnim izgorevanjem.

Ključne besede: poučevanje, transakcijska analiza, strouki, ego stanja, upravljanje z vedenjem, komunikacijske veščine

Abstract

Transactional Analysis (TA) is a theory of personality which has its beginnings in psychoanalysis giving us a way of psychologically understanding ourselves and others. Teaching has not got just academic goal. Teaching is also about forming a relationship with (all) pupils and helping them develop their emotional skills. Bad pupils' behavior must never be ignored, but it does not always need to be confronted in an aggressive manner. How can teachers get the pupils to behave? It is a case of one individual asserting their authority and control over a class of (let us say) 30 pupils. Prevention, negotiation and compromise are maybe better alternatives than continually arguing with pupils. The key ideas in TA which we shall discuss in our class are strokes (conditional stroke, unconditional stroke, negative stroke, positive stroke), stimulus hunger, role modelling, and ego states (Child ego state, Adult ego state and Parent ego state). With this knowledge we can easier manage our and pupils' behavior. Consequently, we can easier achieve academic goals and equip ourselves and pupils with social skills important for life. Additional award for teacher is emotional prevention.

Key words: teaching, Transactional Analysis, strokes, ego states, behavioral management, communication skills

HOT POTATOES – RETRO, AMPAK UPORABNO HOT POTATOES – RETRO, BUT USEFULL

*Mladen Kopasić
Osnovna šola Polje
mladenkopasic@gmail.com*

Povzetek

Hot Potatoes je brezplačen program za izdelavo spletnih nalog. Namenjen je uporabi v šolstvu. Prvič je bil predstavljen leta 1998 v Belgiji. Izdelal ga je raziskovalni oddelek Univerze v Viktoriji iz ZDA. V zadnjem času smo priče ogromnemu razcvetu aplikacij in programov predvsem za tablične računalnike. Postajajo čedalje bolj sofisticirani, kar pomeni tudi bolj zapleteni za uporabnika. Vendar pa uporabniki želimo preproste in učinkovite zadeve. Zato je pametno razmisliti, preden »retro« IKT zadeve, tudi Hot Potatoes bi lahko uvrstili v to kategorijo, enostavno zavržemo. Omenjeni program je ravno tak, kot ga uporabniki želimo - relativno enostaven za izdelavo in reševanje nalog, po drugi strani pa je končni izdelek, t.j. spletna naloga, zadosti atraktivna, da učence, v konkretnem primeru petošolce, motivira za branje knjig, ki jih sicer zagotovo ne bi prebrali. Na ta način širijo svoje znanje ter si razvijajo bralno in digitalno pismenost.

Ključne besede: Hot Potatoes, splet, kviz, bralna pismenost, digitalna pismenost

Abstract

Hot Potatoes is a free programme for creating online tasks. It is designed to be used in education and was first presented in 1998 in Belgium. It was made by the research department of the University of

Victoria in the USA. In the past few years we have witnessed an enormous expansion of applications and programmes designed especially for tablets. They have become more and more sophisticated and consequently more complex to be used. However, users want simpler and efficient things. It is wise to reconsider before “retro” ICT matters (Hot Potatoes could be placed in this category) are simply discarded. This programme is exactly the kind that we, users, want –it’s relatively easy to create and solve online tasks with. Furthermore the final product, i.e. an online task, is attractive enough to motivate students, in particular case 10-year-old pupils, to read books that without online tasks they would definitely not read. In this way, they learn and develop both their reading and digital literacy.

Key words: Hot Potatoes, internet, quiz, reading literacy, digital literacy

E-KNJIGA KOT INTERDISCIPLINARNO PROJEKTNO DELO E-BOOK AS AN INTERDISCIPLINARY PROJECT WORK

Miha Vrčko

Osnovna šola narodnega heroja Maksa Pečarja

miha.vrcko@guest.arnes.si

Izvleček

V prispevku je opisano interdisciplinarno projektno delo z IKT kot oblika dela z nadarjenimi učenci. Vloga IKT je pri takšnem delu večplastna, saj služi kot vir informacij, orodje in medij. Učenci samostojno zbirajo podatke, jih obdelujejo, ustvarjajo nove vsebine in oblikujejo multimedijske izdelke. Ker je njihova vloga pri tem aktivna, se odpira možnost za doseganje višjih taksonomskih ciljev. Prispevek oriše nastajanje e-knjige kot enega izmed ciljev projekta. Pri tem postreže s konkretnimi metodami in oblikami dela, imenuje orodja in pripomočke, ki so bili pri tem uporabljeni ter nakaže prednosti in slabosti programov, ki omogočajo izdelavo e-knjige. Glavna ugotovitev prispevka je, da je projektno delo z IKT odličen način, kako nadarjene učence motivirati za drugačno delo, ki z vidika samostojnosti in napredka učenca predstavlja velik korak naprej.

Ključne besede: projektno delo, interdisciplinarno povezovanje, nadarjeni učenci, e-knjiga, multimedijski izdelek

Abstract

The article describes interdisciplinary project work with ICT as a form of work with gifted pupils. The role of ICT is multilayered as it serves as a source of information, as a tool and as a media. On their own, pupils gather information, process them, create new materials and multimedia products. As the pupil has an active role in the process, the possibility to achieve higher taxonomic levels is at hand. The article illustrates the process of creating an e-book as one of the goals of a project. While doing this it explains the methods and forms used in the process, it names the tools and applications that were used, and

reveals the advantages and disadvantages of software which can be used to create e-books. The main conclusion of the article is that project work with ICT is an excellent form which can be used to motivate gifted pupils for a different kind of work – work which from the viewpoint of the pupil's autonomy and progress represents a major step forward.

Key words: project work, interdisciplinary approach, gifted pupils, e-book, multimedia product

POUČEVANJE POEZIJE TEACHING POETRY

*Katja Rotar
Gimnazija Moste
katja.rotar@gmoste.si*

Izvleček

Poučevanje poezije je obvezno v šolskem kurikulumu za materni jezik, Slovenščino in prvi tuji jezik, angleščino. Običajno učitelji poučujejo samo predpisano poezijo in učenci pogosto povejo, da imajo slabe izkušnje s poezijo. Ne marajo je ne zato, ker je ne bi razumeli, ampak zato, ker se na koncu naučijo učiteljevo interpretacijo pesmi. Ne iščejo pomena in humorja, ne uživajo v iskrivih besednih igratih in ritmu, čeprav niso imuni nanju. To je velika škoda, saj je poezija najbolj prečiščen jezik. Je zgoščen in premišljen in zato idealen za učenje jezika.

Predlagam več rabe poezije, ker je najboljša kar jezik ponuja, preko zanimivih nalog, ki učence omogočajo, da se z jezikom igrajo in so ustvarjalni. Pesem lahko na primer prepíše tako, da vključijo svoj besednjak, lahko jo ilustrirajo, jo prilagodijo glede na svoje izkušnje, ali jo prevedejo. Vse te aktivnosti zahtevajo pozorno branje in tako pilijo občutljivost za jezik. V nekaterih šolah po svetu spodbujajo branje in pisanje poezije tako, da učitelj vsak dan najprej prebere eno pesem, o kateri se nato na kratko pogovori z učenci, organizirajo dneve pisane poezije in celo tržnico poezije, kjer učenci lahko primerno zapakirane in okrašene pesmi prodajo. To je le nekaj idej kako uporabiti poezijo tudi takrat, ko vam je ni treba.

Ključne besede: poezija, poučevanje, jezik, motivacija, naloge.

Abstract

Teaching poetry is a part of the school curriculum in the mother tongue, Slovenian, and in the first foreign language, English. Generally, teachers bring to class only the prescribed poetry and students report about having unpleasant experience with poetry not only because it is difficult to understand but mostly because what they actually do is learn the teacher's interpretation of the poem. They do not try to look for meaning or the funny bits, they do not enjoy in clever words plays and rhythm, although they are sensitive to it. This is quite sad because poetry is language at its best. It is condensed and well thought out so perfect for learning about the way language works.

I suggest the use of poetry as an example of the best of what a language can offer, with challenging tasks that allow students to play with the language creatively. Rewriting a poem in your own words, illustrating it, changing it according to your own experience, or even translating a poem all require careful reading. In various schools around the world teachers start a day by reading a poem and discuss it with students, or organize poetry writing days, or even poetry supermarkets where students decorate poems and sell or trade them. These are just a few ideas on how to use poetry, even when you do not have to.

Key words: poetry, teaching, language, motivation, tasks.

PESEM O OGLJIKOVIH HIDRATIH A POEM ABOUT CARBOHYDRATES

*Tanja Vičič
OŠ Brinje Grosuplje
tanja.vicic@guest.arnes.si*

Izveček

Poleg vsebin učencem pri pouku predstavimo tudi različne načine učenja. Ustvarjalno preoblikovanje vsebine vpliva na motivacijo in pomnjenje. Tak primer je pisanje tematske pesmi. Rime nudijo dobro spominsko oporo, pri kemiji pa se redko uporabljajo. Vsebino poglavja o ogljikovih hidratih sem zapisala v verzih. Pesem uporabljam ob zaključku poglavja kot ponovitev. Učenci rešujejo naloge na osnovi posameznih verzov, ki predstavljajo spominsko oporo za vsebino. Ob verzu lahko narišejo sliko ali se preizkusijo v »repanju«. Poseben izziv za učitelja je izvedba dramatizacije, pri kateri osnovnemu besedilu dodamo zgodbo. V taki obliki je pesem lahko motivacija za obravnavo nove vsebine.

Ključne besede: ogljikovi hidrati, rime, spominske opore, dramatizacija, motivacija

Abstract

To motivate students and jog their memory, we can take creative approaches to teaching, for instance, writing a poem about a topic. Although rhymes are a helpful memorization technique, they are rarely used in chemistry classes. I used them to revise the topic of carbohydrates with my students. Later, students can do tasks based on individual verse lines to improve knowledge of the subject; they can illustrate a verse or rap the content of the poem. To make it more challenging for the teacher and the students, a storyline can be added to the poem (i. e. dramatization), which can then be used to generate initial motivation when introducing new subject content to the students.

Key words: carbohydrates, rhymes, memorization technique, teaching drama, motivation

